
Eels and People in Ireland: From Mythology to International Eel Stock Conservation

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Pleistocene glaciations left their mark on many aspects of Ireland's flora and fauna. The biodiversity of the island's freshwater fauna reflects the incomplete post-glacial recolonization by many taxonomic groups following their total displacement during the time Arctic and boreal conditions prevailed. The absence of many species of freshwater fish, widespread in the nearby landmasses of Great Britain and northwestern Europe, has often been noted in biogeographic discussions on Ireland's fish. Giraldus Cambrensis, a British monk who was chaplain to English King Henry II, came to Ireland with the invading Norman army in the twelfth century and commented on this aspect of Ireland's natural history, chronicling the events he witnessed then (O'Meara 1951).

The indigenous fish species of Irish inland waters are typically euryhaline migratory forms or landlocked populations of migratory species. The catadromous European eel *Anguilla anguilla* is one of the most common and widespread fish of Irish lakes and rivers, and lives also in marine, littoral and estuarine habitats; it was recorded in 33 of 38 coastal lagoons surveyed by Healy (2003). Moreover, studies on otolith microchemistry (Arai et al. 2006) and stable isotope ratios (Harrod et al. 2005) have revealed the life-history flexibility of eels and their facultative catadromy. The main Irish populations of eels are in larger mesotrophic/eutrophic lowland lakes and rivers, where exploitation has taken place for about at least eight millennia. The changing environmental conditions that allowed faunal colonization to proceed about 10,000 years before present also provided opportunity for the human settlement that marked the start of Mesolithic communities in Ireland. The broad current geographic range of the European eel, from Norway to North Africa, suggests that eels might have extended their range north as the ice masses retreated, if oceanic circulation patterns favoured

such dispersal by their oceanic larvae. New information on the spatiotemporal evolution of the Irish Ice Sheet and of the effects of changes in relative sea levels allows coastline dynamics to be modelled (Edwards and Brooks 2006). Palaeogeographic maps can now be drawn, permitting better understanding of the early colonization of Ireland's inland waters by fish of marine origin, such as eels.

The apparently reciprocal distribution of European eels and the more-marine conger eel (*Conger conger*) might be explained when ecological studies of both in adjacent estuarine habitats progress. Indeed, studies on the parasites of Irish eels provide insights into their biogeographic status (McCarthy et al. 2009). Like other indigenous fish host species, eels in Ireland are infested by more parasite species than more-recently introduced fish. Irish eel parasite communities include host-specific specialists and generalist forms that are typically noted in recent additions to the island's freshwater fish fauna. Adverse effects of species introductions include those of the invasive swimbladder parasite *Anguillicoloides crassus* that was brought accidentally from Asia to Europe.

Eels and Irish Place Names (*Dinnsheanchas*)

Most place names (*logainmneacha*) used today in Ireland are anglicized versions of old Irish language (*Gaeilge*) names, though some Viking, Old English or Norman names have survived to modern times. Some even older names, such as those of some mountains and rivers, appear to have been adapted from some used by non-Gaelic speaking predecessors. Many place names refer to features of the physical landscape, tribal occupants of a territory, personal names, historical battles or man-made structures, such as fortifications or monastic settlements. Place names have regularly been celebrated in mythological tales, songs and poetry. With the establishment of the cartographic Ordnance Survey in Ireland in 1824, there was a comprehensive systematic naming of Irish places, and many older names were adapted

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to standard anglicized forms. This provided nineteenth century scholars with a wealth of information. Toponymic studies continue to fascinate modern researchers and local historians (Ó Murchada and Murray 2000; Flanagan and Flanagan 2004). An official body (*An Coimisiún Logainmneacha*) and specialized units in higher education institutions provide researchers and the general public access to extensive databases and expert knowledge on the subject.

In general, animal names are not commonly incorporated in place names in Ireland. The Gaelic word for eels (*Eascann*) is, though, represented in some place names, including Carricknaskin (*Carraig na nEascann*; meaning the rock of the eels), Cloneska (*Cluain Eascann*; eel meadow), Annaghaskin (*Eanach Eascann*; eel marsh), Loughanaskin (*Loch na nEascann*; the lake of eels), and Trasruhannaskin (*Trá Shruthán na nEascann*; the strand of the eel stream). There may be other places too with names associated with eels and eel fishing, but no systematic study of this topic has been undertaken yet. Nineteenth century cartographers recorded many eel weirs on their maps, and owners of restaurants (e.g. “The Silver Eel” near the River Shannon, Co. Roscommon) and holiday cottages have more recently made use of the word eel in the names of their buildings. A bridge on a Co. Cork road between Mallow and Buttevant, for instance, was known locally in the 1920s as “The Eel Weir Bridge.”

The Gaelic word for a weir is “*cora*” and this is a component of names of many sites that formerly had fishing weirs nearby. Although many such locations appear well-suited to eel fishing, the types of fish captured are not indicated in the place names and in many cases the primary target of fishers may have been salmon or other indigenous species. Such place names may refer also to localities near or at estuaries, as well as sites located well inland. A simple example of such a name is Corry, which is in Co. Leitrim. However, the name form is generally more complex, as in Corrofin (*Cora Finne*), in Co. Clare, which has been variously interpreted as “Finn’s weir” or the “Weir of the white water.” Other widespread place names that refer to weirs include those that indicate a townland associated with weirs (*Baile na Cora*) which may be in the form Ballinacurra, as in Co. Cork, or Corbally, as in Co. Cork, Co. Limerick and elsewhere. Likewise, the presence of a fishing weir is suggested by place names such as Drumcar (*Droim Chora*; meaning the ridge of the weir), in Co. Leitrim. Association of an eel weir with its owner’s residence may be indicated by the names of fortified buildings such as Castlecor, the “Castle of the weir,” on the River Blackwater, Co. Cork, or Carrigacurra Castle, the “Castle at the rock of the weir” in the upper River Lee in Co. Cork (Flanagan and Flanagan 2004). The existence of an ancient eel-fishing weir there is mentioned by Smith (1774) in his *History of the County and City of Cork*.

In some cases, the old name has been replaced by an entirely different English one, as for example in Co. Cork

where the town of Middleton is still called *Mainistir na Corann* (the monastery of the weir) in Gaelic. Presumably, the establishment of a Cistercian abbey by Anglo-Norman monks in the twelfth century led to the acquisition of fishing rights by the monastic community and the developing town took its name from the religious settlement. The River Owenacurra, which flows through the town, takes its name from former fishing (*Abhann na Cora*; the river of the weirs) activities. Another example of an Irish town with an English name that is not derived from its original Gaelic one is Newmarket on Fergus, in Co. Clare, which was formerly known as *Cora Chaitlín* (translated as Cathaleen’s weir). According to local historians, an eel weir on the small river that flows nearby was an important source of food during Ireland’s devastating famine of the 1840s.

A place name familiar to many Irish people, though rarely visited nowadays, is Kincora (*Cinn Coradh*; the head of the weir) and this refers to a historical site a short distance upriver from the well-known River Shannon eel fishing weir at Killaloe. The site is known because of its association with Brian Boru, a High King of Ireland in the eleventh century. The long history of eel fishing in that section of the river illustrates how names associated with the word weir (*cora*) can be based on that fishing activity.

A place name in the inner part of Cork harbour may also derive from a term used for a fishing weir. The term “kettle” is an archaic Anglo-Norman word for a fish trap still used in English phraseology (“a different kettle of fish”) to imply a different set of circumstances. Whereas the name Dunkettle, a short distance from the city of Cork, has been generally assumed to mean the “fort of *Ciotal*” (referring to a personal name), its earliest spelling (Dunkytill in 1301) may suggest a Viking or Anglo-Norman source.

Eels and Irish Folklore

The eel has a generally negative image in Irish folklore, perhaps related to its superficial resemblance to a snake. Ireland has no snakes, though, and this was popularly attributed to a story about St Patrick who was believed to have banished them from the island in the fifth century. It seems that giant eels are among the most common of the various types of lake monster described as inhabiting Irish lakes and that they may be said to exist still in the collective Irish imagination (Danagher 1964; Dunne 2009).

Some of the many wells associated with religious events and local festivals throughout Ireland may have been regarded as sacred in pre-Christian Ireland. The Festival of Lughnasa was celebrated from prehistorical times on mountain tops, lakeshores and at other sites at the end of July or beginning of August and seems to have been an important festival throughout the Celtic world. The subject was comprehensively

Fig. 2.1 A modern print of a lake monster being driven by St Finnbar from Lough Allua in the River Lee by Keith Kennedy (private collection)



reviewed by MacNeill (1962) and, in dealing with assemblies at wells, she described the dread that local people had of Poll Taighe, a place in Co. Leitrim where a mountain stream disappeared deep into a limestone fissure where they believed a horrible “worm” lived. The recurring term “Wormhole,” and the more specific term “Eel Hole” in the Diocese of Clogher suggest association with large eel-like monsters. Such demons, often in the form of eel- or serpent-like creatures, featured in many folktales and were often said to live in local lakes. “Lough Sunday” was the term given to the celebrations that took place at Lough Owel in the River Shannon catchment area, where a multitude of people assembled annually even in the nineteenth century. According to local accounts noted by MacNeill (1962), a monster was said to have caused the drowning of a man called Peter O’Donoghue, who in 1818 was indulging in the ancient custom of swimming his horse in the lake during the festival. Nowadays, the lake is known for its very large eels, but folklore and belief in the monster is largely forgotten. In many instances, a lake monster (“*péist*” or “*píast*”) is confronted in folktales by a saint, who kills or confines the creature to the depths of a lake (Danagher 1964). A well-described example relates how Saint *Cúán* tricked a much feared *píast* into going to the bottom of Loch Chráilí with a cauldron on her head till “*Lá an Luan*,” which the saint meant as “The Monday of Judgement Day” rather than the more usual “Monday” interpretation. Therefore, it is said that the angry creature is still confined to the lake bed (MacNeill 1962). St Finnbar, patron saint and founder of the City of Cork, spent many years at a remote hermitage in Gougane Barra Lake in the upper reaches of the River Lee, and local folklore credits him with having driven a *píast* downriver and out to sea (Fig. 2.1). St Ciarán of Clonmacnoise is said to have, with book and candle, driven away a monster that infested the valley of the River Shannon in the sixth century and that he banished it forever to the depths of Lough Ree. However, even as recently as 1960, local newspapers reported claims by anglers that the giant 6-m-long serpentine lake monster had been seen again (Dunne 2009). Sometimes, lake monsters were described as being of the waterhorse type, but the eel form was also prevalent and in Connemara there are

well-publicized nineteenth century accounts of giant eels being seen, though notably not captured. In small lakes near Clifden in Co. Galway, a local man reported seeing a “horse-eel” in 1961, and this prompted visits by TV crews and zealous monster-hunters/cryptozoologists. However, despite much wishful observation of the lakes, and reference to historical accounts of horse-eels and other lake monsters, there were no further sightings (Dunne 2009). A recent Irish language TV documentary dealing with the Connemara horse-eels kept the stories alive for another generation.

Frequently, interesting folklore and superstitions have been recorded concerning special “holy wells,” and quite a few of them are said to have been inhabited by “supernatural” fish. Sight of the fish was often taken to indicate that a pilgrim’s wish would be granted. Often the fish is described as being a trout or a salmon. In some cases, however, an eel is said to inhabit the well. Near Dingle in Co. Kerry, a holy well called Tobermanaghan (*Tobar Mancháin*) is said to be inhabited by a special eel. Likewise, near Walshestown in Co. Cork, there is a holy well known as Sunday’s Well where a remarkable eel is said to be seen occasionally. It has been claimed in the past that water taken from some wells inhabited by such eels could not be boiled (Logan 1980). St Fanahan’s Well, named after the patron saint of Mitchelstown in Co. Cork, is now marked by a sculpture showing the warrior monk with his battle staff (“*Cinn Cathach*”). The statue has a carved eel that reminds pilgrims of the possibility that they might see an eel, a sacred fish, in the well. Local folklore suggests that sight of an eel in the well will result in a prayer being answered and that this would be especially true if the eel swam in a cross-pattern. Although pilgrims visit the well in much smaller numbers now than in former times, a special feast day is still recognized locally on 25 November. The well is said to be especially associated with cures for diseases of eyes, throat and forehead. St Sylvester’s Well, at Malahide in Co. Dublin, was also thought to provide cures for ailments and up until at least the 1890s, an eel was placed annually in the holy well.

The records of the Irish Folklore Commission have many references to published and unpublished information collected in the early twentieth century by folklorists talking to

local people in remote rural communities. Among the accounts recorded are many about remarkably large eels and lake monsters. There are also many accounts of folklore associated with freshwater and conger eels. Some tell about cures possible using eels. For example, it was reported that a cure for a swollen and sore wrist could be obtained by binding the wrist with an eel skin. Lough Neagh eel fishers still use eel skin in this way (Donnelly 1986). Another folklore account stated that a bald person should “Put an eel in a bottle. Cork it tight and bury it to a dung-hill. Let it there for a fortnight and when you take it up the eel will be turned into oil, an awful lot of oil. Rub that into your scalp and your hair will grow again as good as ever.” This liquid was also recommended for treatment of injuries to horses that had cut their knees by falling. To cure deafness, it was suggested that a few eels should be put in cabbage leaves under the fire until they softened, then to squeeze the juice out of them and put that in the ear to cure the deafness. A local Donaghue family had, according to a contributor from Co. Leitrim, received their witchcraft and healing powers from eels. He claimed that “At certain times of the year the eel used to visit the Donaghue houses. It always came flying in the air.” It was believed that an ancestor, the original Donaghue, would always return an eel when fishing and that the reputation his descendants had for folk medicine and as healers derived from that habit. Eel fishers are also a source of many stories about eels. Went (1945) noted that River Erne eel fishers liked to fry eels and that they carefully retained the oil and fat from the pan and bottled it, because it was in great demand as a cure for rheumatism. A folk cure for ear-ache described by Wilson (1943) involved heating an eel in a jar placed in a pot of boiling water so that its oils and fat could be obtained. This oily material was then placed in a diseased ear.

In Ireland the traditional lifestyle of travelling communities, as in Roma and Gypsy communities elsewhere in Europe, is undergoing rapid change. Many Irish Traveller families are settling in urban homes and caravan-halting sites, and no longer follow the rural roaming habits of their ancestors. However, unusual examples of their folklore remain to be fully documented. This is illustrated by a recent event observed by eel researchers monitoring a fishing crew involved in eel conservation fishing at Portora near Enniskillen, on the River Erne. A Traveller, who had approached with his wife and infant child from Co. Longford in the Irish Midlands, came to the fisher and asked for an eel. The fisher gave him one and the Traveller proceeded to his vehicle, where he touched the eel’s head to the child’s tongue. He then took the eel to the river, released it and observed it swimming away downstream. He explained that the child was inclined to protrude her tongue excessively and that this was a traditional cure. It is not known if the cure was successful, because the travelling family left and made no

further contact with the fisher. However, someone familiar with the family of the Traveller’s wife commented at the scene that he thought this habit was a family trait and that no medical treatment, whether with conventional medicine or folk cures, could affect a change in the child’s behaviour. This curious example of folklore involving eels may reflect a wider interest in eels among travelling communities in the past than was the case in the general Irish population, and it merits further study.

Irish folklore records also include stories about eels that came back to life, sometimes sought revenge, and which made their way back to the river or sea. For instance, there are accounts of eels having been seen travelling with pots on their heads or rolling in hoop form away from the house where they were being cooked. Sometimes they are said to have entered houses and eaten food. One was said to have eaten four chickens but that these were recovered alive from the inside of the eel when it was killed. A remarkable story told by local writer Roderic O’Flaherty in the seventeenth century involved an eel fisher who caught an eel at Cong on Lough Corrib. He secured it through a gill with his belt, which had his knife and purse attached. However, it escaped, carrying away his belt, knife and money. Luckily for him, according to O’Flaherty, the eel was recaptured more than 30 km downstream at Galway (Hardiman 1844; Moriarty 1997).

Many Irish folklore records report explanations for why large eels are found in isolated wells and pools away from rivers. They were thought to have originated from horse hairs that turned into small eels. One informant stated to the folklorist that “when they get too big they leave the hole and make for the river making hoops of themselves—tail in mouth-go like that as long a slime lasts.” Some folklore references are to the association of eels with dead animals in water and this is given as a reason for not eating eels. Other reasons why eels were said to be unpopular include suggestions that they had a connection with the devil. It was also suggested that a reason for the aversion to eating eels may be the supposed similarity to snakes, reputed to have been driven from Ireland by St Patrick, or to the many lake monsters mentioned in folk tales (Dunne 2009). In contrast, some entries refer to the fine flavour of eels when grilled, and there are many published accounts of eels being eaten in areas where they were captured in fishing weirs or by other methods.

A folklore report in the records of the Folklore Commission in Dublin mentions practical uses for eel skin in the western Irish Aran Islands, where they were used to make ties for sheep and goats, covers for balls and a gun case. Elsewhere, a folklore reference is made to a giant eel that was killed and from the skin of which dozens of purses were made. Eel skin was also thought to make fine thongs and razor strops (Danagher 1964). According to Evans (1967), eel skins were

often used as tough but flexible hinges for wooden flails used in threshing corn.

A wealth of Irish folklore relates to the superstitions of fishing communities. In the case of the Lough Neagh fishing community, a survey by Donnelly (1986) revealed that >40 % of fishers interviewed believed in a variety of superstitions. Many such beliefs were of the type widespread in maritime fishing communities, such as a fear of meeting a red-haired woman on the road when going to fish. There was also a belief that it was unlucky to turn back, for instance if they had forgotten something ashore, and a reluctance to bring the body of a drowned person into a boat (they would prefer to drag it ashore behind the boat). Lough Neagh fishers once used to tie a small piece of flannel to their net, to keep a curse away, and also considered it lucky to place donkey manure in the “tail” of a net. There were many beliefs about fishing in particular parts of the lake at specific times, which may have reflected experiences in previous generations. There was also reluctance to start fishing on a Saturday. However, according to Donnelly (1986), older fishers were typically more superstitious and by the 1970s, many of the traditional superstitions were being increasingly ignored.

Some proverbs mentioning eels were also documented by Irish folklorists including *Bean, muc agus eascú tríur nach féidir a smachtú*, which translated means “A woman, a pig and an eel, three that cannot be controlled”!

Eels and Irish Art

Irish people have been exposed to a variety of artistic images of eels for a long time. Although his views are regarded as being controversial, one author (Kaulin 2006) claimed that grooves on the surface of Irish prehistoric megalithic monuments, such as the Ardristan standing stone and a nearby portal dolmen grave capstone, represent eels. He believes that the eel’s heads and other points on the megalithic stones provided the ancient population with information on celestial constellations. Celtic art, seen in many illuminated manuscripts produced in Irish monasteries, often includes strange zoomorphic forms, including some that appear to represent eels. A contemporary print-maker, Keith Kennedy, recently produced a representation of the River Lee monster (*píast*) reputedly driven from the river basin by St Finnbar, and the image is essentially that of a giant eel-like creature (Fig. 2.1).

A painting by Simon Dick (Fig. 2.2a) was used by O’Sullivan and Breen (2007) to illustrate how by visual reconstruction a prehistoric or medieval fishing activity might have looked at a weir on the Shannon estuary. The eighteenth century Irish landscape artist Thomas Roberts (1748–1778) painted a series of landscapes that include rivers and lakes. One, represented in his “A View of

Ballyshannon, County Donegal,” and two similar paintings, shows the lower section of the River Erne, in which a series of eel fishing weirs can be seen (Fig. 2.2b). That Roberts painting is on public exhibition at the National Gallery in Dublin. A similar drawing, unsigned but attributed to the same artist, is retained in the collections of the National Library, Dublin. The valuable eel fisheries of the lower River Erne were adversely affected by construction of hydroelectric dams in the twentieth century. Some eighteenth and nineteenth century engravings, often used to illustrate travel books, show other Irish fishing weirs. One 1840 example, showing eel weirs in the River Shannon at Athlone, was mentioned by Went (1950, 1951). A painting entitled “Eel weir at Athlone” by the famous Irish landscape artist Paul Henry (1877–1958) depicts a view of the River Shannon, with clear eel-weir stakes, and is on public display in the Athlone Library.

Pauline Bewick (b. 1935) a well-known British-born but Irish resident artist produced an interesting painting called “Woman fish and eel” (Fig. 2.2c). Though dated June 1984–August 2000, this painting was recently sold at an art auction in Dublin and is now in a private collection. Painted in acrylic, water colours and including pen and ink features on paper, it was signed and inscribed by the artist on a label on the reverse side as follows: “Woman Fish and Eel. She contemplates in the green darkness of an overhanging wood sitting in a flowing stream. The eel has always captured my imagination as a most mysterious creature. A local farmer told us an eel will develop in the bog waters far away from any stream from a hair of a horse’s tail, I’m sure it’s not true but I believe mystifies us human beings in general. I’ve painted many a picture of women comfortable in nature, it is a wish that we could be so relaxed without fear of being frightened or disapproved of and that we could be at one with nature’s creatures as they would be with us. Pauline Bewick.”

Sabine Springer, a zoology graduate and artist, provided the Galway-based poet Moya Cannon with a copper etching of eel spears (Fig. 2.2d) as an illustration for a recent poetry collection (Cannon 2011).

A contemporary Northern Irish metal sculptor, Eamon Higgins, recognized the importance of the Lough Neagh eel fishing community. A large roadside steel sculpture of a fisher sitting on the ground with his typical Irish longliner’s equipment, baiting a longline, by Higgins is located at Derrytrasna on a main road near the lake’s eastern shore (Fig. 2.2e). A modern metal sculpture (Fig. 2.2f), located on the banks of the River Bann opposite the Mesolithic Mount Sandal site, serves to remind people of the importance of lunar periodicity in eel migration. A stone sculpture by Ken Thompson that depicts the warrior monk St Fanahan bearing his battle staff (*Cinn Cathach*), erected in 1989 near Mitchelstown in Co. Cork, has a carved eel on its base.



Fig. 2.2 (a) Painting by Simon Dick illustrating how a reconstructed fish trap at Bunratty might have looked. (b) Thomas Roberts (1748–1777) painting of the lower River Erne and Ballyshannon with eel fishing weirs in the foreground. (c) Woman, fish and eel by Pauline

Bewick (from a private collection). (d) Copper etching of eel spears by Sabine Springer. (e) Metal sculpture by Eamon Higgins of a Lough Neagh fisher baiting a longline. (f) Metal sculpture on lower River Bann near Coleraine

The Honan Chapel (Fig. 2.3a) on the campus of University College Cork is regarded as a treasurehouse of the finest arts and crafts available in Ireland during the years preceding its consecration in 1916. Although that time was a turbulent period in Ireland, in the years preceding the declaration of independence from British rule, Celtic Revival influences were developed in the arts and literature. The church's stained glass windows, wood carvings, enamel panels, silver artefacts, printed matter and embroidered cloth items are richly adorned with illustrations of motifs similar to those seen in the illuminated manuscripts and high-crosses of the early Christian period of Irish history. The floor mosaics lead visitors along a remarkable central riverine aisle of the church. The mosaic river, arising from the mouth of a fearsome beast (Fig. 2.3b), has many different types of fish (Fig. 2.3c; Hawkes 2004), all directed downstream towards the sea, which is clearly inhabited by a large but strangely eel-like sea creature (Fig. 2.3d). Also, among the river's fish, an eel is clear (Fig. 2.3c). However, although a scriptural link is made in Latin to the sea creature (*Dracones*) by reference to Psalm 148:7 near the church entrance, the eel is just one element of the biodiverse riverine fish iconography. Eel-like creatures are also in evidence in some early Irish Christian manuscripts and were one of the many zoomorphic motifs used by monastic scribes, silversmiths and sculptors of the "Golden Age" when Irish monasticism provided inspiration and leadership in a wider European context. Irish silversmiths, especially in the early nineteenth century and Celtic Revival period associated with early twentieth century Irish nationalism, often produced work with elongated zoomorphic ornamentation that appears to represent eel-like forms (Bowen and O'Brien 2005). Examples of fish on stone High Crosses are generally of a salmon-like appearance, although putatively eel representations are to be seen on the base of the High Cross of Moone. Although early Irish artists seem to have been familiar with eels, however, little information on eel fishing or associated activities of Irish people in the period can be gained from the study of Irish art.

There are stone sculptures of animal forms on several Irish ecclesiastical and secular buildings. A historical neo-classical Dublin building, the Custom House (Fig. 2.3e), designed by James Gandon (1743–1823) and dating from 1781 to 1791, is adorned by a series of 14 fine allegorical capstones over doors and windows. They represent the Atlantic Ocean and 13 principal rivers of Ireland. The stone heads were made by the sculptor Edward Smyth (1749–1812) and are generally referred to as River Gods of Ireland (Scott 1991). The one representing the River Erne has eels in place of hair and has been represented as line drawings in various old prints. However, it was also used on the Irish £100 note (Fig. 2.3f), which was in circulation from 1928 to 1977, and may be the most widely seen artistic representation of an eel in Ireland.

Eels and Irish literature

Celtic mythology influenced many writers, including those important in Anglo-Irish tradition, such as W. B. Yeats, Lady Augusta Gregory and J. M. Synge, but they rarely made reference to eels in this context or otherwise. Likewise, Lafcadio Hearn (Koizumi Yakumo), whose father was Irish and who spent his boyhood in Ireland and holidayed near Lough Corrib, a lake with abundant eels, does not seem to have made much reference to eels in accounts he published on the folklore of Japan. However, eels were familiar to him, and he noted the "baskets of squirming eels" being carried on the coastal steamer that took him to the Oki Islands on a trip that, like that of his relative Synge to the western Irish Aran Islands, introduced him to the wonderful folktales of his adopted country (Hearn 1894; Ronan 1997).

The ancient stories or sagas of Ireland are divided into four cycles; one of them, the Ulster Cycle, revolves around the heroic warrior *Cúchulainn* who was trained as a warrior by Scathach ("the Shadowy One") on the Scottish Isle of Skye. One well-known tale, the *Táin Bó Cualainge* tells of a cattle raid during the reign of King *Aillil* and Queen *Meadhbh*, rulers of Connacht, the western Irish province. The queen, though owning a magnificent white-horned bull called *Finbheannach*, desired the famous Black Bull of Cooley (*Donn Cuailigne*) that belonged to *Concobhar mac Neasa*, the King of the northern province of Ulster. The tale tells how she sent her army to do battle with the warriors of Ulster and steal the bull, and describes many encounters with *Cúchulainn*. The tale, set in the first century BC, like other Celtic myths provides extraordinary insight into the folklore of the early Iron Age in Ireland, with lots of details of place names, the Celtic pantheon, and the life style and warfare of the inhabitants of Iron Age Ireland. During the *Táin*, *Cúchulainn* encountered the Goddess of War *Mór-Riogháin* when he single-handedly contended with *Maedhbh's* army. She initially approached him as a beautiful temptress, but when he rejected her advances and was fighting a great warrior called *Loch*, she took the form of an eel and coiled herself around his feet, causing him to fall. However, he rose and broke the eel's ribs. She later confronted him in other forms, but he managed to rebut her attacks. Finally, she transformed herself into a milking cow and her milk helped him recover from his wounds (Smyth 1988; O hOgain 1991). This is the best-known example of an Irish myth in which eels feature. Some accounts of *Cúchulainn's* weaponry, which included a harpoon-like javelin that he used to deliver upwards from under water using his foot, to fatally wound an opponent, such as when he fought his old friend *Fer Diad* at a river ford (Carson 2007). In some stories, it is said to resemble a silver eel. Legends such as the *Táin* may have had origins in ancient myths of Mediterranean or Middle Eastern origin, as suggested by the miraculous birth of the two bulls which had fairy cows

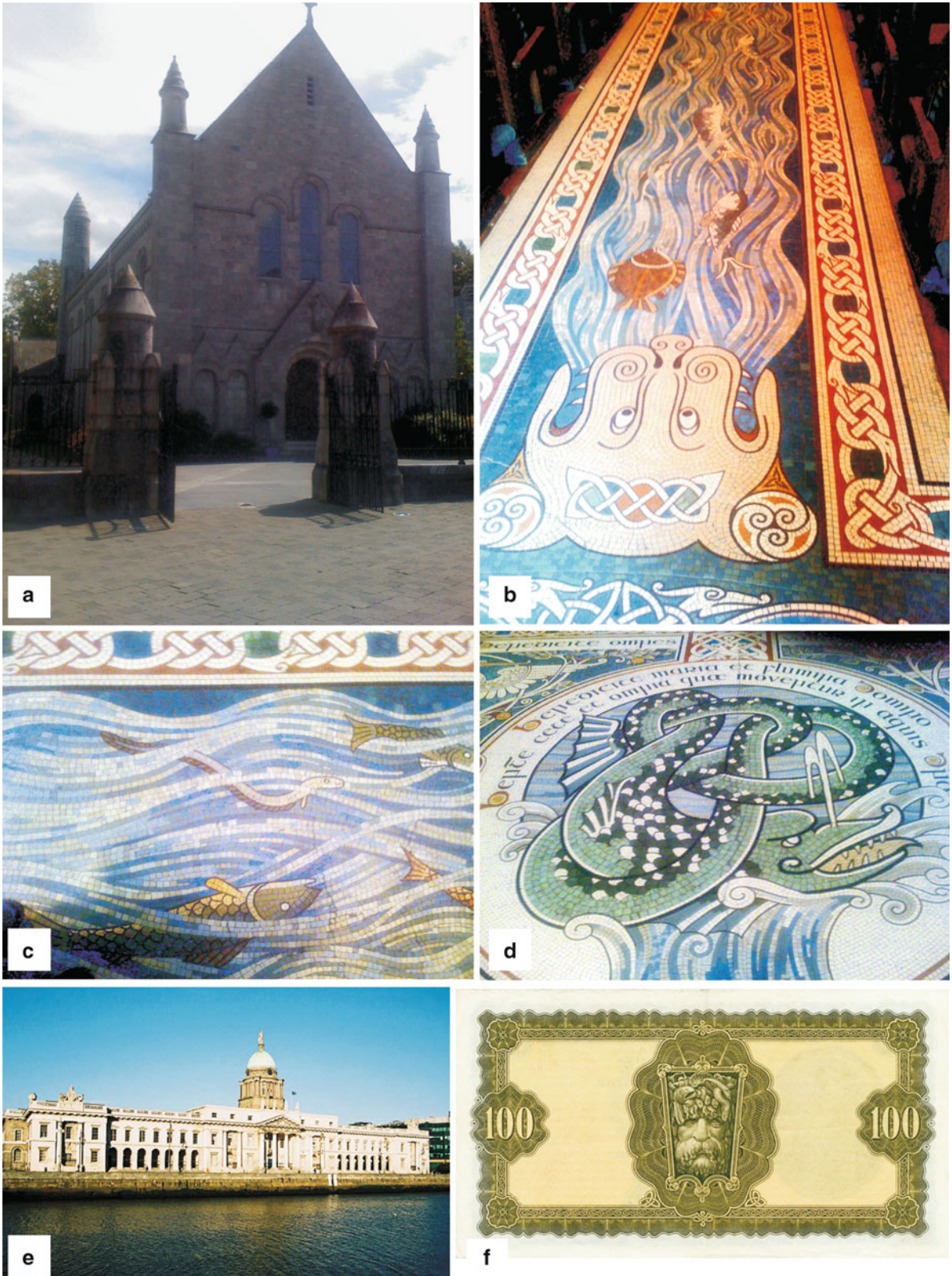


Fig. 2.3 Eels and Irish art. (a) Honan Chapel, Cork; floor mosaic, with (b) river god forming river, (c) fish, including eel, moving downstream, and (d) river entering sea, with eel-like monsters; (e) Dublin Custom House; (f) £100 note showing River Erne head, with eels

as mothers (MacKenzie 1907). In Irish mythology they were said to have previously taken the form of ravens, water monsters and humans, then turned into eels. One of the eels went into the River *Cruind*, where it was swallowed by a cow belonging to *Cuailgne*; the other went into the spring of *Uaran Garad* in Connaught, where it passed the belly of a cow of Queen *Maedhbhs* (Squire 1905). Thus, these two important animals in Irish mythology had spent a significant part of their existence in eel form, although this aspect of the *Táin* story is less widely known today. Ancient tales such as these were recorded from the seventh century on by monastic scribes.

According to the *Acallam na Senórach* (“The Colloquy of the Ancients”), a twelfth century narrative recorded in later manuscripts (Ó’Cuív 1983) such as The Book of Lismore (The Book of *MacCárthaigh Ríabhach*), some surviving *Fianna* warriors met St Patrick. In the course of conversations with the saint, one of them, named *Caeilte*, described the food eaten by the *Fianna* as including “Rapid salmon out of *Linnmhuine*, the eels of the noble Shannon; woodcocks of *Fidhrinn*, otters out of the Deel’s hidden places” (MacNickle 1933). In addition to the Ulster Cycle, the Fenian Cycle, the Mythological Cycle and the Historical Cycle, Irish sagas have included stories of visions, adventures and travels to imaginary places such as the “Otherworld” and “Land of the Young” (Dillon 1948). One such saga, or “immram,” tells of the voyages of the *Uí Corra* for which the text, in the fifteenth century Book of Fermoy, seems to have originated in the middle Irish period (probably the eleventh century). Stokes (1893) edited and translated it. In an extraordinary tale, which involves a pact with the devil and travels in the Otherworld, experiencing visions of hell and wonders, at one stage led by birds that represent the “souls that come on Sunday out of hell,” they see three wondrous rivers. These were a river of otters, a river of eels and a river of black swans. The otters, eels and black swans represented devils pursuing the souls of the persons enduring punishment in hell. Knowledge of this saga might in part account for the fear that many Irish people had of eels in the past. Apart from manuscript references, ancient mythological stories such as these also survived in the oral tradition and were told until the early twentieth century by traditional storytellers. An interesting folk-tale, recounted by Joyce (1911), called the “Blind eel Fisher at Clonmacnoise,” involved a blind man who could reputedly dive into the River Shannon and return with eels caught between his fingers and toes.

John McGahern, who died in 2006, has been acclaimed widely as one of the most notable Irish writers of the later twentieth century. Many of his stories are set in the Irish midlands (McGahern 1992), where he grew up as the son of a widowed policeman who acquired a farm. One of McGahern’s best-known short stories, “Korea,” seems to

have been set in an area in the upper part of the River Erne. It provides insights into the changing relationship of a father and his son in the complex rural environment of Ireland in the early 1950s, when memories of the bitter Irish civil war still influenced local politics (Cowie 2009). The father and son happen to be eel fishers, and much of the story revolves around their activities on the local lake. McGahern gave few interviews, but in one of them mentioned, when asked about his childhood, that he knew the McMorroughs, one of the traditional eel fishing families in the upper River Shannon (Collinge and Vernadakis 2003). Moreover, he said that he had set eel lines using a boat belonging to the police barracks where his father worked. To him it was a way of “escaping from the house” and unhappy childhood experiences. In fact, eel fishing was, according to the writer, just one of those things that “everybody did.” This explains his intimate knowledge of the life of an eel fisher. A feature film “Korea,” based on the McGahern short story of the same name, directed by Cathal Black and produced by Darryl Collins in 1995, won the Asta Nielsen Film Award at the 1996 Copenhagen Film Festival. The film includes many references to eel fishing and the loss of a fishing licence by one of the main characters. The fisher and his son are shown setting and lifting longlines on an Irish midlands lake, and the filmmaker also repeatedly shows eels swimming in a typical storage container. Even the simple external latrine at the house of the fisher was full of boxes of earthworms that were used as bait.

Many Irish children have been entertained by the story of Alice in Wonderland, originally written by Lewis Carroll in 1865, which usually has an illustration of old Father William balancing an eel on the tip of his nose (see the UK chapter in this book). Such extraordinary imagination is typical of children’s storybooks in the past two centuries. A modern story (Higson 2005) in the Young James Bond Series called “Silverfin,” which has impressed Irish boys, tells about a special type of eel that acquired a taste for human blood and that devoured the villain “Meatpacker” at a castle in Scotland! However, not all references to eels in the books read by Irish children are so strange, and they mainly mention as an aside the eels in Ireland’s lakes and rivers, or as them being eaten by aquatic birds or otters. Typically, although they may be squeamish about handling eels, Irish children are fascinated by eels and their long-distance trans-Atlantic migrations. In Galway in western Ireland, the children of a primary school recently undertook a project on eels, and in former times, stories of giant eels in lakes served to ensure that children stayed away from dangerous lake shores in the evening; nowadays, however, the eel generally has a more benign image.

Eddie Lenihan a well known West of Ireland storyteller, in a popular story book (Lenihan and Green 2003) tells the story of a hardworking thatcher who witnessed a huge eel

rolling past like a wheel, holding its tail in its mouth. The thatcher's wife refused to believe him. Therefore he later catches and cruelly kills the eel to prove to her that he was not confused or drunk and not telling lies. The eel was >3 m long and with "a long mane of hair down its back, just like a horse." Subsequently, the thatcher suffered greatly through injury and could no longer work. He received no sympathy from his neighbours, because they believed the eel was really a person from the Otherworld and was rolling on land as it was passing messages from those that lived beneath one lake to those in another.

Lady Augusta Gregory (1852–1932) was, with her friend the poet Yeats, an important figure in the Irish Literary Revival movement of the early twentieth century. She was a dramatist and folklorist. Her books retell in English stories taken from Irish mythology. She was actively involved in promoting theatrical productions in Ireland and wrote 28 plays (Malone 1924). One of her plays, called "Kincora," was first produced in 1905. It took its name from a historical site near Killaloe on the River Shannon where eels were fished for a long time and which is now an important research location for eels. This tragedy took an eleventh century episode in Irish history for its theme. Among the characters in the play is Gormleith, wife to the High King Brian Boru and formerly wife to Malachi, whom Brian later deposed as High King. A servant, called Brennain, comments that she was seen going upriver in a boat and he says:

Spearing eels she went, up in the shallows of the river.
She is not one would take her ease and leave the
Friday without provision. And there are many
Not having as much as her, wouldn't walk the
Road with pride

On her return she gives her eel spear and net to Brennain. Gormleith was from a Viking family that had settled in Dublin. Went (1964) referred to historical accounts that reported the death of Turlough O'Brien, a kinsman of Gormleith's husband, during the battle of Clontarf (1014), when he was trapped by the incoming tide against a fishing weir. King Brian Boru was also slain after the battle by a Viking warrior. According to The Annals of *Tigernach*, there was in 1061 "A hosting by Aodh Ó Conchobhair (Aodh O'Connor) into Munster, where he burned Killaloe and demolished the weir of Kincora, and they ate up the salmon that lived in the well of Kincora and afterwards the well was destroyed" (Westropp 1892).

O'Sullivan (2003) wrote a short fictional account of the activities of medieval fishers based at Bunratty in the Shannon estuary, as an introduction to an article in which he reflected on his own personal and professional archaeological experiences there. The strong continuities in work practice over the centuries in which fish traps were in operation, and what he termed "the sense of place," had made a significant impression on the writer. However, he recognized that

fictional texts can easily convey false impressions of the manner in which people in the past experienced and perceived the landscape in which they lived.

Eels and the Law in Ireland

The early laws of Ireland, often called the Brehon Laws, are known from a series of law-texts that originated in the seventh–eighth century, which survived (often incompletely and corruptly) in fourteenth–sixteenth century manuscripts (Kelly 1988), and these contribute to our understanding of many aspects of the social history of the island. The Brehon Laws deal with a wide variety of issues and specify penalties. Many of the law-texts illustrate the importance of fish in early Irish economy and, although no law-text specifically dealing with fishing rights still exists, there are many references to issues associated with estuarine or riverine fishing weirs. Early Irish weirs made of stone or wickerwork (stakes and wattle), were called *corae* ("stone wall"), *aire* ("woven fence") or *sód*. These were not all constructed for fish capture and the legal references also relate to structures put in place to divert a current towards a bank to drive a watermill (Kelly 1997). Eel fisheries and watermills have been associated at sites until comparatively recently in Ireland. Fishing weirs were used in Ireland to catch both ascending salmon (*Salmo salar*) and downstream migrating silver eels. Kelly (1997) reviewed the Brehon law-text references to fishing, which mention ancient methods used for fish capture that included spearing, gaffing, strokehauling, tickling, netting, hooking with rod and line and poisoning, as well as the use of fishing weirs. The capture of eels seems to have been done mainly at fishing weirs, although the use of fishing spears or lines may have taken place on a more local and limited scale in lakeshore communities, and the weirs were often also sites at which salmon were fished. Nets used to block the gaps, "eyes," in medieval fishing weirs were similar to those used to the present day and were termed *cochall éisg* in some sixteenth century legal texts. This is a term derived from the Latin word *cuculus* meaning "hood" (as worn by monks), which was anglicized to "coghill" a term still used (Kelly 1997).

There have been various disputes about eel fishing rights in the long and complex history of Ireland. Many were of minor or local significance, and most in the past century involved breaches of bylaws concerning fishing seasons or methods. However, others had greater importance and resulted in consideration of constitutional rights and historical events. Claims to the ownership of the fishing rights to the River Bann and Lough Neagh from the seventeenth century on, resulting from displacement of old Gaelic families, are well documented (Donnelly 1986) and have been discussed recently by Fort (2003). With the development of

a lucrative export trade in live Lough Neagh eels to Billingsgate Market in London in the middle of the nineteenth century, the issue of ownership became intense. Local fishers, following cases heard in the British House of Lords and the Dublin High Court, were denied the right to fish freely on the lake, and this encouraged them to resort to illegal fishing. Other legal disputes followed in Northern Irish courts, including an 8-week case in 1962. This led to local conflict with fishery managers and police, which was not resolved until 1971 when a cooperative movement of fishers and local residents succeeded in buying the fishing rights. The Lough Neagh Fishermen's Society Ltd, established under the stewardship of local priest Father Oliver Kennedy, has operated the eel fishery since then (Kennedy 1999). It has been very productive, the largest fishery for wild eels in Europe, and currently is the only river basin in which commercial fishing for eels is now permitted on Ireland. The Society, however, faces great challenges at present. Although the quality of lake eels has been recognized, in the granting of Protected Geographical Indication (PGI) status under EU law, the continued dearth of natural recruitment and the need to ensure the level of spawner biomass escapement required by the River Basin District Eel Management Plan render sustainability of the fishery highly uncertain. The increased reliance on expensive imported glass eels presents serious economic problems (see chapters elsewhere in this book). There are also serious concerns that supplies may not be obtainable from the River Severn or continental Europe within the constraints placed by the EU regulation for restoration of European eel stocks. A further concern expressed by fishery managers in Ireland is that continued importation of live foreign-sourced juvenile eels could result in unforeseen biosecurity problems for the lake and other Irish freshwater habitats.

Another noteworthy legal dispute arose in the case of the River Erne salmon and eel fishing rights when, a few years after the formation of the Irish Free State following signing of an Anglo-Irish treaty in 1921, the entitlement of the Erne Fishery Company was challenged by local commercial salmon fishers. This led to a District Court, a High Court and ultimately a Supreme Court Case (*Moore vs. The Attorney General*) in 1927, in which reference was made to Brehon Law, the *Magna Carta*, the nature of Gaelic society prior to the Anglo-Norman conquest of Ireland and historical controversies concerning the Plantation of Ulster. The case encouraged the Irish Free State to legislate important constitutional matters and to establish that the Irish Supreme Court was immune from interference by the Privy Council in London. This legislative change was recognized, but not welcomed, in Great Britain as being constitutional by the Privy Council in 1933. Apart from the implications for other fishery ownership legal cases in Ireland, the decision of the Privy

Council was internationally seen as a tremendous advance for Irish sovereignty (Mohr 2002).

The Supreme Court decision in respect of the *Moore vs. The Attorney General* case had huge implications for management of salmon populations, but commercial fishing for eels was continued on the lower River Erne. Ultimately, the eel fishery was largely destroyed when in the 1950s, the weirs were purchased and removed to allow the Electricity Supply Board to build two hydroelectric dams on the river. On the River Shannon, the Electricity Supply Board acquired statutory responsibility in 1935 for the salmon and eel fisheries, with compensation being paid to fishers, following recognition of the decline in fish stocks that had resulted from the building of a hydroelectric dam at Ardnacrusha in 1929 (Cullen 2002).

The EU Council Regulation (EC Reg. 1100/2007) concerning restoration of European eel stocks required the Republic of Ireland and the Northern Irish Assembly to legislate for eel fishery closures and in respect of other measures contained in the Irish National Eel Management Plan and the International River Basin District Eel Management Plans that involve cross-border river systems such as the River Erne. These have not been welcomed universally, however, and some commercial fishers are currently seeking to challenge the constitutional legality of the bylaws involved.

A challenge by eel fishers in the Shannon region to bylaws banning commercial eel fishing there since 2009 has been rejected by the High Court recently. In a judgement rejecting arguments by James McArdle of the Shannon Eel Fishermen's Association, Mr Justice Daniel Herbert said the purpose of the 2007 regulation was to ensure "effective and equitable" eel-recovery measures. He stated that the two bylaws at issue were not unreasonable or incapable of objective justification by reference to scientific evidence [on causes of depletion of eel stocks], "however lacking in certainty that might be." He rejected arguments that the bylaws meant that the Minister had permanently closed the Shannon river basin area to European eel fishing. Future improvements to eel stocks may allow the reopening of Irish commercial fisheries, of course, but the consensus view among those researching eels is that this will not be at best for many decades because of ongoing poor recruitment in Ireland and the overall poor status of the species throughout Europe.

Eels in Irish Songs and Poetry

Eels are mentioned in popular songs such as the Irish ballad "Nell Flaherty's drake," written in the nineteenth century (O Lochlann 1939) and whose words are said to refer in code to an uprising against the English in Dublin in 1803 by the subsequently executed patriot Robert Emmet. Colourful curses are expressed in the lines

May every old fairy from Cork to Dunleary
Dip him smug and airy in river and lake,
That the eel and the trout, they may dine on the snout
Of the monster that murdered Nell Flaherty's drake.

Moya Cannon, a contemporary Irish poet, included in her collection "Oar" a poem entitled "Holy Well," in which she evocatively captures images from the karstic Burren landscape in western Ireland (Cannon 1990). The final lines of the poem include a brief mention of an eel:

Yet sometimes,
swimming out in waters,
that were blessed in the hill's labyrinthine heart,
the eel flashes past.

Such short, at times almost incidental, references to eels are usually as much as one can expect to find in Irish poetry, with one notable exception. Seamus Heaney, who was born in 1939 in County Derry and who grew up close to Lough Neagh, is recognized as one of the leading poets of his generation. Among the many honours bestowed upon him was the Nobel Prize for Literature in 1995. As a young man he became familiar with the famous Lough Neagh eel fishery, where hundreds of fishers caught yellow eels by longlining and netting. Fishing for silver eels at the Toomebridge weir on the River Bann at the outlet from Lough Neagh was also a familiar sight to Heaney. In many of his poems he mentions eels or eel fishers (Heaney 1998), but perhaps the best known references to eels are in the Heaney poem "A Lough Neagh Sequence," published in 1969, in which he wrote of the famous eel fishing weir:

At Toomebridge where it sluices towards the sea.
They've set new gates and tanks against the flow.
From time to time they break the eels' journey
And lift five hundred stone in one go.

Heaney also gives a wonderful visual sense of fishers gathering earthworms as bait, in his lines

Lamps dawdle in the field at midnight.
Three men follow their nose in the grass,
The lamp's beam their prow and compass.

Likewise, he gives a great sense of the longline setting and lifting activities in lines such as

A line goes out of sight and out of mind
Down to the soft bottom of silt and sand
Past the indifferent skill of the hunting hand.

and

Drawn hand over fist
Where every three yards a hook's missed
Or taken (and the smut thickens, wrist-
Thick, a flail
Lashed into the barrel
With one swing). Each eel
Comes aboard to this welcome:
.....

Although he has lived in Dublin for many years, and has been unwell, he has continued to write about the lake and its

eels, for instance in his most recent poetry collection called "Human Chain" (Heaney 2010), which includes the poem "Eelworks" (a term used locally for the eel Fishermen's Cooperative buildings and weir structures at Toomebridge). In this short poem the heavy, old fashioned eel fisher's boats on the lake are described in the lines

Cut of diesel oil in the evening air,
Tractor engines in the clinker-built
Deep-bellied boats,
Landlubbers craft,
Heavy in the water
As a cow down a drain.

Irish Eels as a Natural Resource

Since Mesolithic hunter-gatherers arrived in Ireland around 10,000 years ago, the island's marine and freshwater natural resources have been exploited as a source of food and other material. Relatively little is known about early Irish people, but research has expanded rapidly since the pioneering work in the 1970s at the Mount Sandel site on the River Bann (Woodman 1978; McCartan et al. 2009; Waddell 2010). Analyses of shell middens and vertebrate bones, including fish, birds and mammals, provide useful insights, and it is clear that fishing was important throughout the Irish Mesolithic (10,000–6,000 BP; before present). Faunal remains have only been detected in 13 of 180 Irish Mesolithic sites known to Waddell (2010), so the recent discoveries of organic material such as the fish traps at Clowanstown and in the River Liffey estuary at Dublin are of great interest. Eel bones were recorded in the early Mesolithic sites at Mount Sandel and at Lough Beg just downstream from Lough Neagh. A dugout wooden boat, found on the western shore of Lough Neagh at extreme low water, has been dated to the sixth millennium BC, and these finds, together with records from excavations at Lough Boora in the River Shannon catchment area, show that eels were among the few species of freshwater fish exploited by these earliest inhabitants of the island of Ireland. An early Mesolithic cemetery has been found near Castleconnell, a village on the banks of the lower River Shannon that has been inhabited by eel and salmon fishers for centuries (Carroll and Touhy 1991; O'Sullivan and Breen 2007). However, with the development of farming, it is often assumed that the subsequent Neolithic communities of Ireland "turned their backs on the sea." It is assumed that the Mesolithic people at Mount Sandel chose the site, near a waterfall just up from the estuary, because it was a good place to catch migratory salmon and eels. Likewise, it may have been that progressive use of inland sites rather than coastal ones was in part associated with exploitation of seasonal peaks in availability of these fish species.

Knowledge of inland fishing activities is limited, but many Mesolithic sites (O'Sullivan 1998), such as Lough

Kinale, Lough Derrvarragh, Lough Iron and Lough Allen, are close to areas fished for migrating silver eels until relatively recently. In Clowanstown, Co. Meath, structures interpreted as Mesolithic fishing/mooring platforms were discovered in 2004 and are being investigated carefully. The site, a raised bog area when excavated, would have been a lake in the early post-glacial period. Among the most significant finds were beautifully preserved remains of conical fish baskets (Fitzgerald 2007). Following specialist conservation, some are now on public exhibition in the National Museum in Dublin. The manner in which they were used, or whether some such baskets were used in primitive fishing of weir structures, is not known, but it seems reasonable to speculate that eels could have been among the fish species being captured. Another recent exciting archaeological find was the discovery in Dublin of a wooden fish trap, dated to the late Mesolithic (McQuaide and O'Donnell 2009) and which seems to have been similar to the stake-and-wattle fish traps used to capture salmon, eels and other species from pre-history until modern times. An example of a medieval fishing weir in the River Fergus estuary is shown in the painting reproduced here as Fig. 2.2a.

Hunter-gatherers presumably had good knowledge of seasons and lunar cycles, the determinants of peaks in fish migrations. Prehistoric people in Ireland had an impressive knowledge of astronomical phenomena, and the dates of festivals, determined by lunar and solar cycles, reflected this throughout recorded history. Alignment of many prehistoric monuments such as the Bronze Age passage grave at Newgrange on the banks of the River Boyne to the winter solstice illustrate how accurately a calendar of seasonal fish migrations would have been available in the distant past. There is evidence from analyses of an Iron Age midden near the River Foyle estuary that during a year, seasonally available food was sequentially used, with salmon caught from April to August and eels being in late summer/early autumn (O'Sullivan and Breen 2007). The types of boat used, such as dugout wooden canoes known from the Neolithic to relatively recent times and the possible use of skin-covered, willow-framed boats has been suggested by some. The types of boat used by Irish fishers have varied over the millennia, and even till the late twentieth century, many unusual local designs were in use. In addition to secular community interests in fisheries, monastic communities were, following the introduction of Christianity from the fifth century on, establishing religious and educational centres that were often in estuarine or riverine areas with good fish resources. Apart from fishing weirs, there is direct evidence of the methods used to capture fish, e.g. discoveries of stone weights, fishing hooks and fishing spears. However, from the arrival of the Anglo-Normans in the twelfth century on, when titles to fisheries and disputes were increasingly recorded, the support provided to archaeologists from written and pictorial records increased immensely.

Fish bones recorded during excavations suggest that the medieval inhabitants of the city of Cork included both marine and freshwater species in their diet. Marine gadids such as hake (*Merluccius merluccius*) and cod (*Gadus morhua*) dominate fish bone collections recovered by archaeologists. However, although both European eel and conger eels feature, it seems that the larger marine conger eels were eaten more often than freshwater eels (McCarthy 2003); excavations in Galway, at the Courthouse lane site, revealed a similar pattern. Marine fish such as cod and other gadids dominate both medieval and post-medieval faunal samples, whereas eels and conger eels were of just minor importance. This is an intriguing result, because although there are written records relating to an eel weir in Galway, conger eel remains were more common during the archaeozoological studies (Hamilton-Dyer 2004). Perhaps, therefore, there could be technical problems associated with sampling protocols or relative survival of bones of different fish species in deposits that account for the apparently low level of utilization of eels in Galway then.

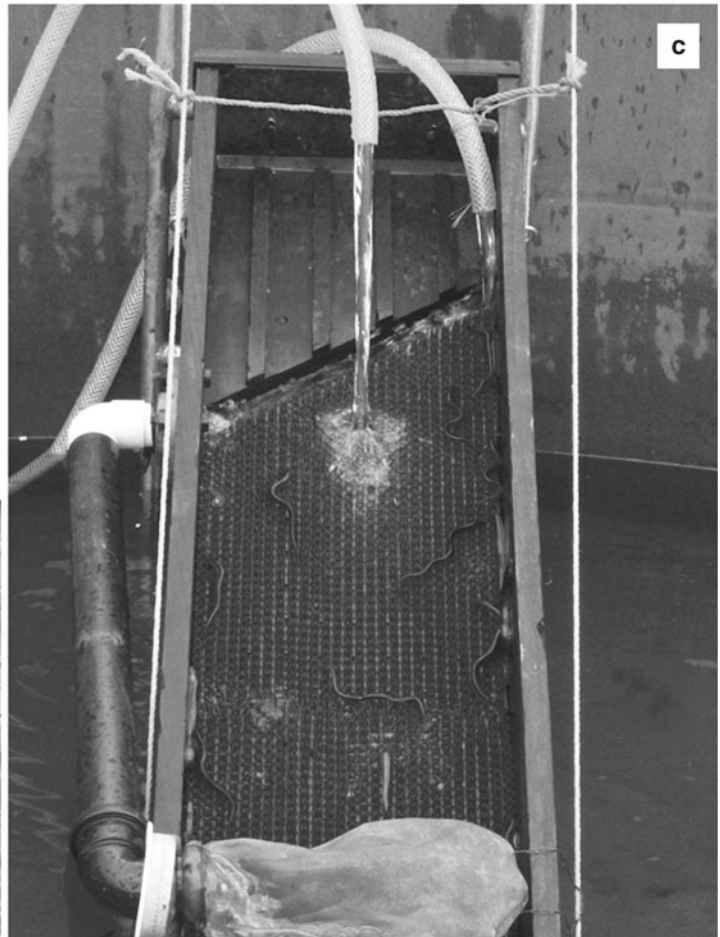
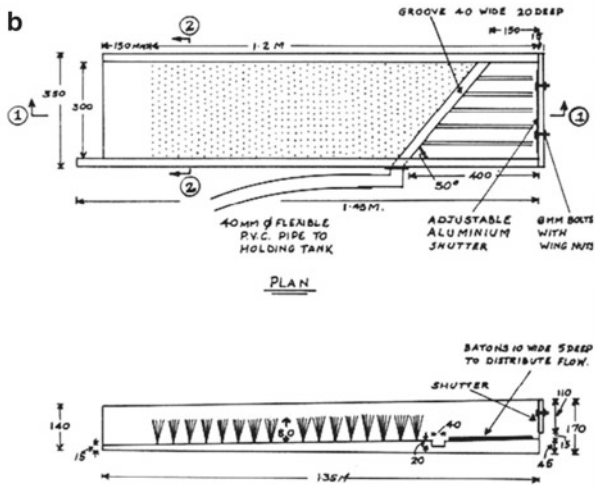
Eel Fishing

Young Eels

According to Went (1944), fishing for “eel fry” (glass eels or elvers) for food took place in many Irish rivers in medieval times. Went cites O'Flaherty (1844) as saying that in the River Corrib, at Galway, “an abundance of yelvers or eele frey is taken in Lent time, till they wax black and stiff about May.” According to local fishers, glass eels, cooked and pressed to form “elver cakes,” were eaten in the twentieth century in some places along the River Shannon. Accounts in old Irish natural history books provide further evidence of juvenile eel consumption, with Boate (1726) mentioning “eel fry” being pressed into cakes and Thompson (1856) describing them as being cooked in milk and pressed into a sort of “cheese.” However, it has been illegal to fish commercially for “eel fry” in Ireland since 1842. Glass eels and elvers, as well as small yellow eels (fingerlings), called “bootlace eels” in Ireland, are trapped (Fig. 2.4) as they undertake natural upstream migration and are stocked into lakes. This has been an important fishery management practice in Lough Neagh since 1933, but with declining catches in the past two decades, stocking the fishery now relies increasingly on glass eels imported from the United Kingdom. In two rivers used for hydroelectricity, the Shannon and the Erne, similar conservation trapping has been undertaken since 1959 in an attempt to mitigate for adverse effects on eel population recruitment, and until recently this also involved trapping on adjacent rivers. Special traps are used at the dams, but catches have declined dramatically recently (McCarthy et al. 2008a). Experimental



a



c



d

Fig. 2.4 Juvenile eel capture in Ireland. (a) Glass eel fishing at Bunratty River estuary bridge; (b) the design of O'Leary's (1970) low head elver trap; (c) O'Leary trap showing small ("bootlace") eels ascending (d) the elver trap at Ardnacrusha hydropower dam, River Shannon

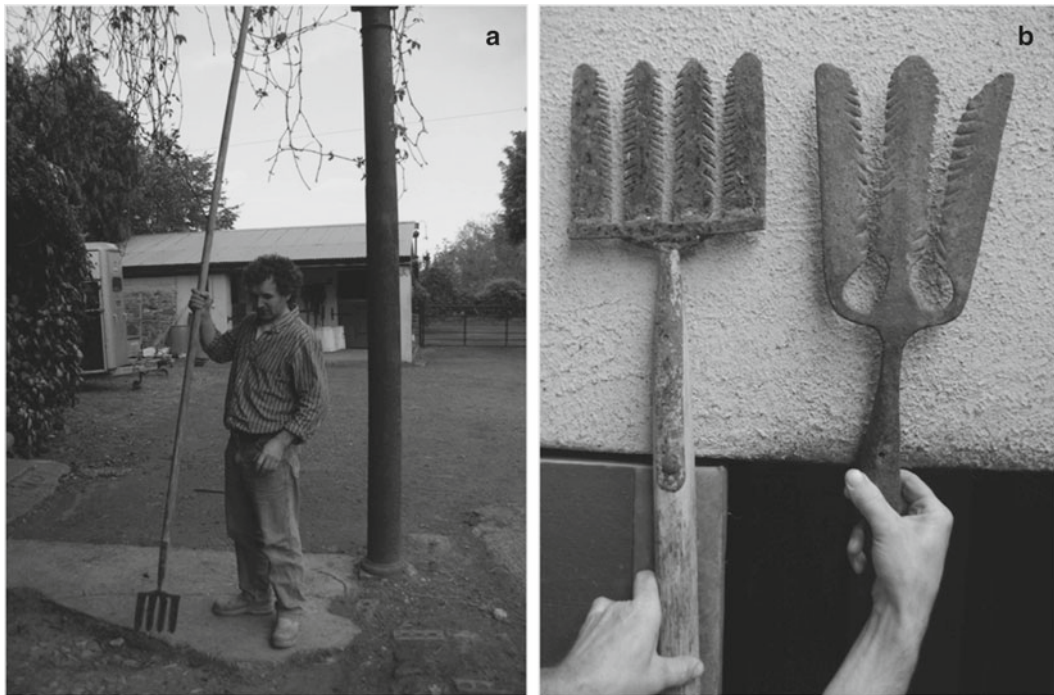


Fig. 2.5 An eel fisher (B. Connell) showing eel spears used by his grandfather and grand uncle on Lough Ree on the River Shannon

use of alternative trap types has been undertaken (McCarthy et al. 1999, 2008b; Matthews et al. 2001) with a view to increasing recruitment to those rivers.

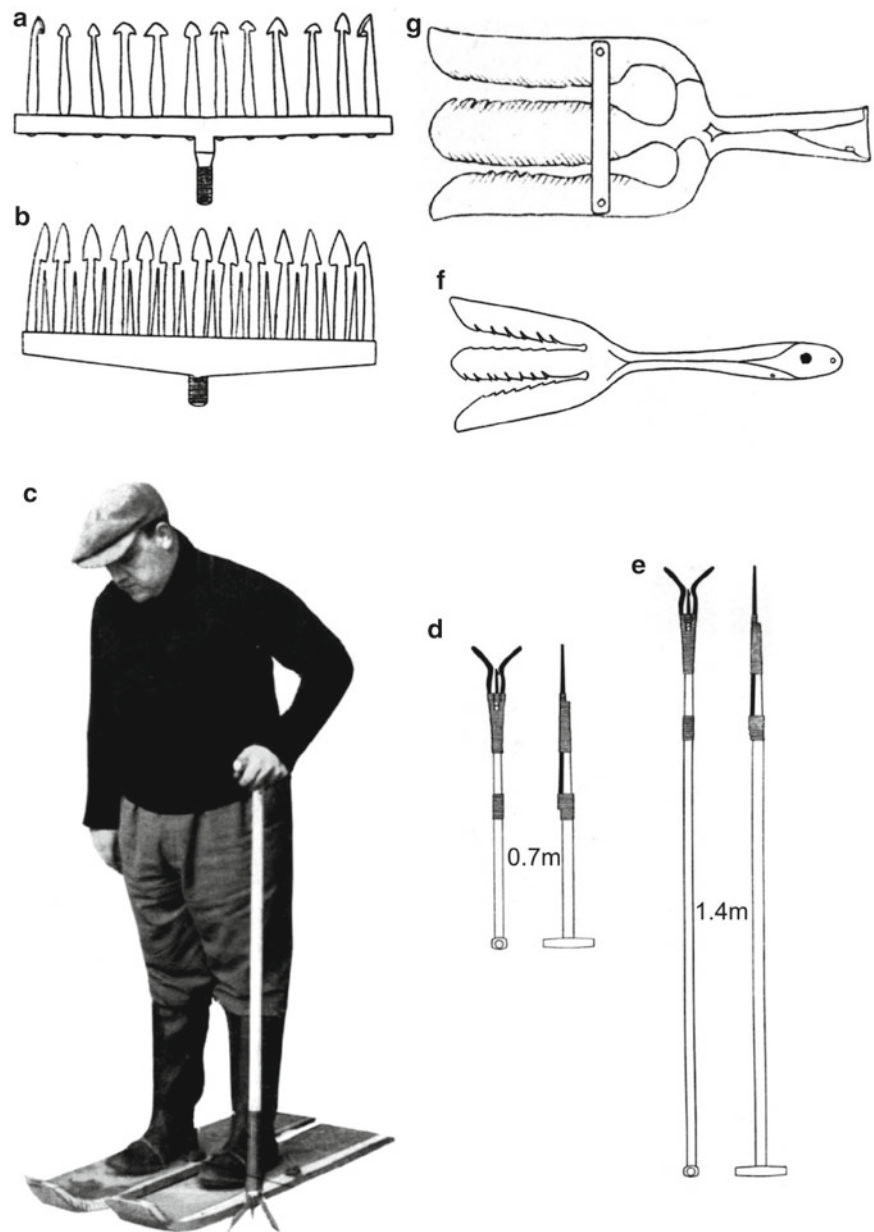
The decreasing recruitment of European eels can be seen in the dramatic decline in the size of the annual catches made at elver traps in the lower River Shannon, where Ardnacrusha catches declined from 4,574 kg in 1980 to 49.4 kg in 2010, and the River Erne, where the corresponding Cathaleens Fall catches declined from 1,352 kg to 93.9 kg.

Yellow Eels

Fishing for eels with spears was legitimate in Ireland until comparatively recently, although the practice had almost died out when Went and Mitchell (1952) published a comprehensive review of Irish fishing spears. However, the technique although then illegal was still in use in some midland lakes in the 1990s and in some estuaries (Fig. 2.5). Eel fishing spears were grouped by Went and Mitchell (1952) into two categories. The first group were transfixing spears called sunspears or rockspears because of the hard substrata upon which they were used. Their handles were often >6 m long and they were used in bright weather when eels could be seen more readily and stalked. Examples of such spears, possibly dating from the early Christian period, have been found in crannogs (lake-dwellings on man-made islands) at

several sites in the River Shannon system (O'Sullivan 1998). Sunspears (Fig. 2.6a) were multi-pronged (up to 14) and some had pointed teeth (Fig. 2.6b) between the barbed prongs (Went and Mitchell 1952). A special type of sunspear was used on muddy slobland areas in Wexford Harbour and used by fishers who used ski-like structures (Fig. 2.6c) called "scootches" attached to their boots. Wexford sunspears (Fig. 2.6d) had T-shaped handles <1 m long, or longer if used from a boat, and they were thrust at eels in mud. A pair of outer prongs guided the eel to a single barbed central prong on which the fish was impaled. The other group listed by Went and Mitchell (1952) was termed mudspears, and these were sometimes favoured because they did less damage to the eels. Examples are known from many parts of Ireland and they vary (Fig. 2.6e) in form, some having a circular aperture (Fig. 2.6f) at the bottom of the gap between adjacent tines to facilitate removal of the eel from the spear. Typically there were 3–5 toothed tines. The length of the handle varied and it could be >6 m in the case of those used by bargemen in canals. They were used by blindly thrusting the hand-held spear into lake, river or canal mud and were also sometimes used to gather eels in river meadows to which the fish had moved in large numbers during flood conditions. According to Went and Mitchell (1952), only a single example of an ancient mudspear exists, but future aquatic archaeological research may provide a better knowledge of the antiquity of this fishing method.

Fig. 2.6 Irish eel fishing spears. (a) Sunsppear, Lough Ennell; (b) sunsppear, Lough Key; (c) Arthur Went wearing “scootches” and holding a Wexford sunsppear; (d) short-handled Wexford sunsppear; (e) long-handled Wexford sunsppear for boat use; (f) mudsppear, Lough Sheelin; (g) mudsppear, Ballynacarriga (after Went and Mitchell 1952)



Angling for eels has generally not been popular in Ireland, where gamefish such as salmon and trout have generally been the preferred target species and many anglers dislike eels. However, a specialist interest in eel fishing did develop in the twentieth century among relatively few recreational anglers who focused on catching exceptionally large eels. Records compiled annually show that “specimen”-sized fish (i.e. >1.4 kg) were regular catches and that the record size for a rod-caught eel in Ireland was 2.86 kg (6 lb 5 oz). In contrast, the specimen fish weight for conger eels is 18.144 kg (40 lb) and the rod-caught record 32.7 kg (72 lbs). The use of eels as deadbait by anglers trying to catch large pike (*Esox lucius*) seems to have been widespread

in the past, with special “flight” arrangements of wire and multiple hooks used to generate a life-like spinning movement of the bait.

Went (1944) described how fishers at a canal in Galway in the first half of the twentieth century used to catch eels using simple equipment by a method called bobbing (or “blobbing”). This involved a large number of earthworms threaded on about 28 m of woollen or hempen thread, which was then rolled into a ball and fastened to about 8–11 m of strong line itself attached to a light pole (Fig. 2.7a). Holding the pole, the fisher lowered the bait into the water and as soon as he felt an eel pulling the worms he rapidly lifted the bait with the eel attached to it onto the bank or into a boat. Went (1944)

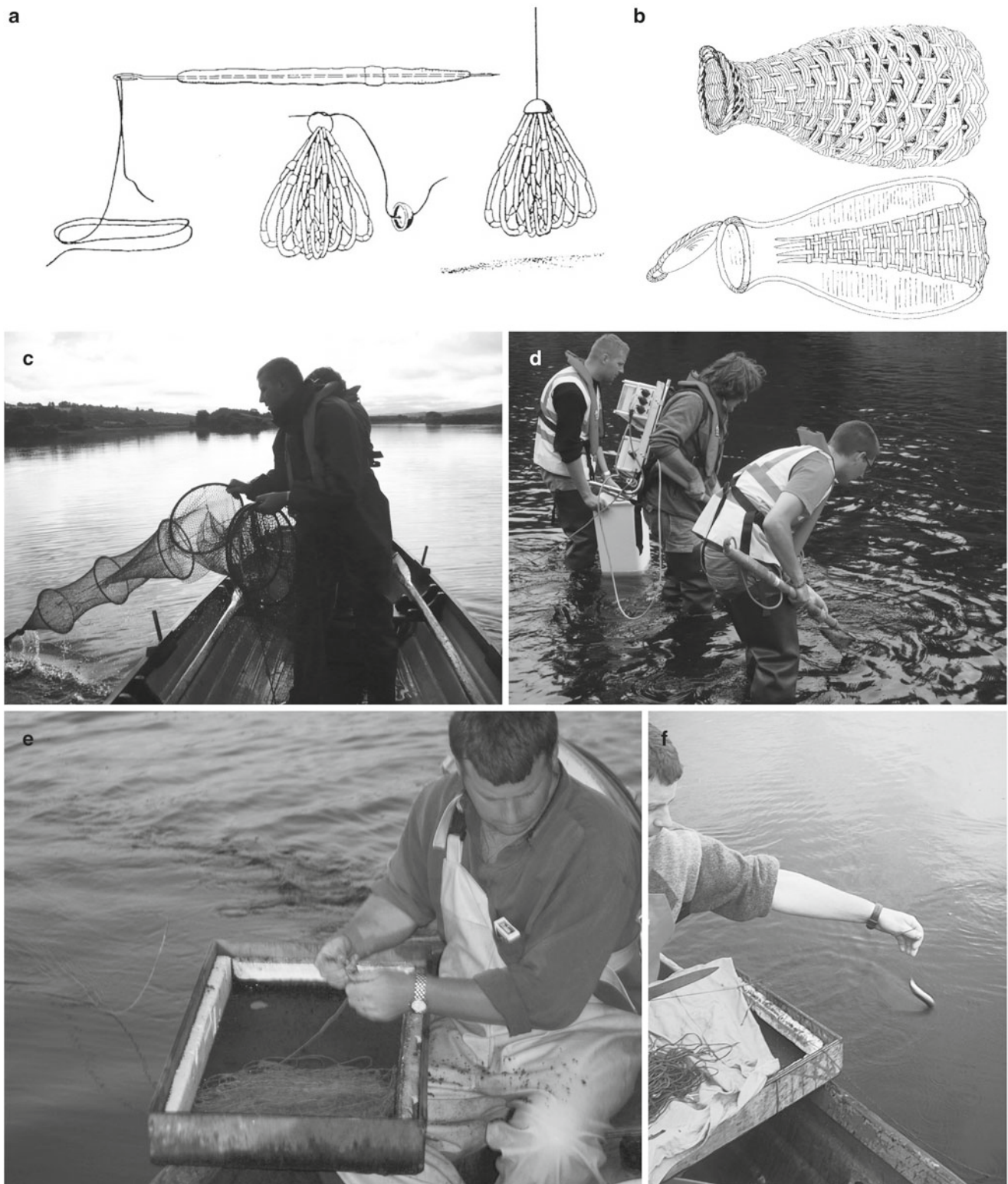


Fig. 2.7 Fishing for yellow eels in Ireland. (a) Bobbing with earthworms; (b) wicker eel pots; (c) fykenets; (d) electrofishing; (e) setting longlines; (f) lifting longlines

commented that, though no historical records were available, it appeared to have been more prevalent in earlier years. The practice continued for several decades longer in other parts of the country (T. Callanan, personal communication).

Went (1944) also commented on a peculiar fishing technique seen by naturalist William Thompson in 1834 when he visited Galway. In that case, eels were attracted to garbage and caught on hooks attached to long rods.

The use of summer fykenets (Fig. 2.7c) has been an important standard trapping method for comparative surveys of eel abundance in Ireland, and used to monitor population trends, since the 1960s, when the use of trains of unbaited traps by commercial fishers of yellow eels was recommended by government fishery advisors (Moriarty 1996; McCarthy et al. 1999). These are paired hoopnet pots connected by a leader, linked to form a netted wall of traps. Sets can be deployed randomly for scientific surveys or to target habitats of high density selectively for commercial fishing or targeted sampling. They are now recognized as having scientific limitations associated with the variation in catchability of eels in different habitats and differences in the fishing skills of experimental or commercial crews. Prior to the introduction of fykenets to Ireland, basket traps (Fig. 2.7b) were widely used (Evans 1967), and skilled basketmakers were still producing examples of this type of trap into the early 1980s, as illustrated by Shaw-Smith (1984) and examples on display in the Irish Museum of Country Life. In fishing the mixohaline Lady's Island lagoon, local fishers used to stake fykenets in shallow water perpendicular to the shore. In Waterford harbour, these were replaced by baited pots of the type illustrated by Tesch (2003), deployed in series and held from collapse by hazel rods and with dead-fish baits, in quiet backwater areas of the estuary or attached to whitefish (or sprat) weirs (Went 1959).

Longline fishing (Fig. 2.7e, f) has been a popular eel fishing technique in Ireland since at least the mid-nineteenth century. It may have been used earlier, but good archaeological and historical evidence is not available. It is favoured by the management of the highly successful Lough Neagh fishery, because catch sizes can be predicted accurately and traditional fishers generally regard it as a cost-effective and efficient method. However, many administrative and inspectorate staff in much of Ireland disliked the method intensely because it was used widely in illegal fishing and because of their fears about inclusion of salmonid fish in the longline bycatch. Longline fishing can involve the use of 1,000–2,000 hooks baited with earthworms or fish attached by short lines ("snoods" or "drops") to the main line at regular intervals (e.g. 2 m) and set along the lake bottom using stone weights as anchors. The method has been effective in research surveys of Shannon lakes to examine patterns of eel distribution by depth (Yokouchi et al. 2009) and to estimate eel density/biomass by depletion fishing (McCarthy et al. 1999, 2008b).

In the Lough Neagh fishery, the use of trawls and drift (seine) nets is permitted for the capture of yellow eels. However, the former technique was considered to be disruptive and unsuited to the carefully regulated fishery and is no longer permitted (Rosell et al. 2005).

Electrofishing techniques have been widely used in scientifically surveying streams and small rivers in Ireland (Fig. 2.7d), with assessments of density and biomass obtained

by depletion fishing, and in some cases lake shoreline eel population studies have been undertaken using similar protocols (McCarthy et al. 2008b). Electrofishing was also undertaken in lower reaches of the River Shannon, below hydroelectric barriers, for transfer to upper catchment lakes as a stock enhancement measure (McCarthy et al. 1999).

Crushing sacks of the poisonous plant known as Irish spurge (*Euphorbia hiberna*) and placing them in rivers was a traditional method once used for illegal fishing in southwestern Ireland (MacCoitir 2008). The plant's latex has ichthyotoxins that are used to stupefy all fish close by, and although the target may have been salmonids, it is likely that other common species such as eels were also taken and eaten.

Silver Eels

Fishing weirs, for salmon, eels and other species, have been operated for thousands of years. The earliest known example of such a trapping system is a Mesolithic one, recently found in Dublin in the estuary of the River Liffey (McQuaide and O'Donnell 2009). Other Bronze Age and Medieval examples (Fig. 2.8a) have been found in the estuaries of the Rivers Fergus and Shannon in the southwest and in Strangford Lough intertidal areas in northeastern Ireland. At present, however, just three weirs, one on the River Shannon and two on the River Bann, still operate. Many former estuarine fishing weirs, which included ebb and flow types, were used to catch salmon. However, these would also have captured other species of estuarine fish that at some sites would have included eels. Construction methods and materials used differed from place to place. Mitchell (1965) described the remains of an ancient wooden stake and brushwood (wattle) fishing weir at Lough Beg on the River Bann and noted how similar its construction was to the eel fishing weir still operated by the Lough Neagh Fishery at Kilrea (Fig. 2.9) and to the former structure of the well-known Toomebridge eel fishing weir. The modern Toomebridge weir is an impressive mechanized steel structure equipped with special storage containers and hydraulic lifting facilities (Fig. 2.9c). Many eel weirs of the old stake and wattle type (Figs. 2.8a, c) are known to have been fished on Irish rivers, and their history was detailed by distinguished fishery scientist Arthur Went in a series of publications from 1944 to 1969. Among those he described were some that had structures for catching both ascending salmon and descending silver eels at the same location (Fig. 2.8b). Some weir barriers were made of stone, others of wood/brushwood. In the gap, or eye, of a weir, a basket or long coghill net would be set to retain the eels trapped. Many eel weirs caused navigational problems for barges and other boat users of the rivers, however, and there were many disputes about eel fishing for that reason. River drainage, for flood control and other reasons, resulted in the

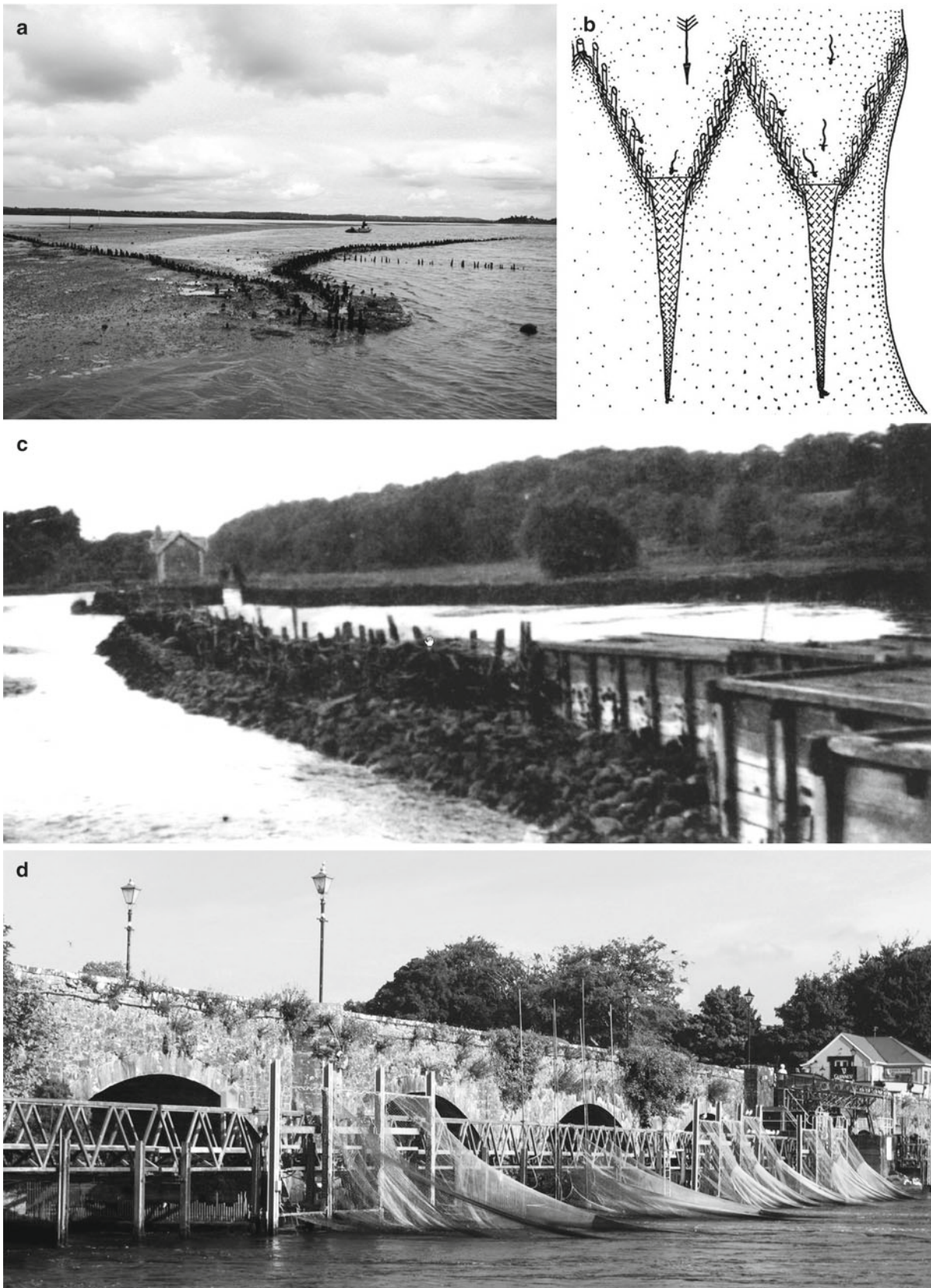


Fig. 2.8 Fishing for silver eels in Ireland. (a) Medieval fishing weir, River Fergus estuary; (b) reconstruction of a medieval fishing weir at Galway city (after Went 1945); (c) former eel fishing weir on the lower River Erne; (d) Killaloe eel fishing weir, lower River Shannon



Fig. 2.9 The Lough Neagh Fishery. (a) Preparing a line for eel fishing, c. 1915; (b) Northern Ireland Agriculture Minister at Lough Neagh Eel Fishermen's Cooperative with Father Oliver Kennedy (photo courtesy

Tyrone Times); (c) Toomebridge weir; (d) Lough Neagh Fishermen's Cooperative buildings; (e) an elver trap at the Cutts weir on the lower River Bann; (f) gate with Lough Neagh Eel Fishermen's Cooperative logo

removal of many weirs (Delany 2008). Also, the wooden structures required much annual maintenance and if they ceased to be used, they disappeared rapidly, leaving no indication of their location. Old property title deeds, documents

concerning fishing weir leases, estate records, wills and old ordnance survey maps are, however, important historical sources of information on weirs. References to old weirs in local history books, old travel books and some public

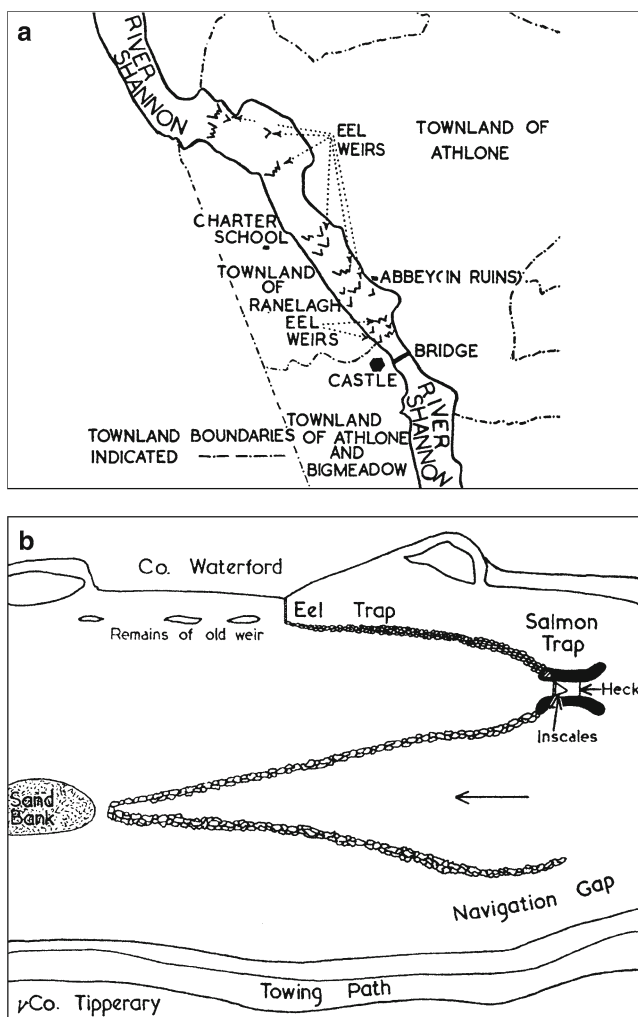


Fig. 2.10 Old Irish fishing weirs. (a) Location of numerous old fishing weirs at Athlone on the River Shannon (after Went 1945); (b) fishing weir on the River Suir, used for capture of both salmon and eels (after Went and Mitchell 1956)

records also provide a sense of the scale and value of such eel fishing weirs (Fig. 2.10). Modern aquatic archaeological research (O’Sullivan 1998; O’Sullivan and Breen 2007) also contributes to knowledge of former fishing weirs.

Hardiman (1844) and Went (1944) described the Galway fishery and the history of eel fishing weirs (Fig. 2.8b) along the lower section of the River Corrib, which was first mentioned in official documents in 1283. At that time the salmon fishery was valued at £11 and the eel fishery at £10. The fishery was bought in the late twentieth century by the Irish government as a measure to conserve local salmon stocks, however, and at that time it was said that the eel and salmon fisheries were of approximately similar value in terms of their commercial catches. The value of eel fisheries controlled by religious orders is well documented, especially when during the Reformation the dissolution of the abbeys resulted in the transfer of lands and fishing rights to those

favoured by the British monarch and his Irish representatives. At Galway, eel fishing weirs were operated by monks from two abbeys in the city, as well as by monks from as far away (29 km) as Abbeyknockmoy. Some leases of eel fishing weirs were paid by presentation of a portion of the catch to the owner, others by cash payment for long-term lease. Operators of fishing weirs were only entitled to block a portion of the river (e.g. one-sixth).

Several fishing weirs were operated at Castleconnell, on the lower River Shannon, until the 1990s to catch silver eels. These were the last of the privately operated weirs that were common along the Shannon in the nineteenth century. The development of the hydroelectricity generating station at Ardnacrusha resulted in a decline in salmon and eel stocks, and the company acquired the fishing rights and compensated fishers for their loss. However, in addition to its own eel weirs at Killaloe and Athlone, a few independently operated fishing weirs were authorized to fish for silver eels, and the Castleconnell ones were among these. A series of more than ten weirs had been fished on the Shannon downstream of Killaloe in the nineteenth century. A colourful account of the Castleconnell area and its eel fishers was published by Carroll and Touhy (1991). In the first half of the twentieth century, up to 30 men were employed in autumn/winter in fishing or fishery-related activities, and catches were good. The best night’s fishing at that time involved a catch of 12 t. The eels were dispatched by rail and boat to the Billingsgate Market in London.

The eel weir operated by the Electricity Supply Board at Killaloe on the lower River Shannon (Fig. 2.8d), initially commercially but now for research and conservation, is a steel-framed structure attached to a historical bridge. Silver eel migrations have been monitored there for decades, providing information on the environmental factors affecting seasonality and population dynamics of silver eels (McCarthy et al. 1999, 2008b; Cullen and McCarthy 2003). The site is also an important location for ongoing research focused on eel management plan data requirements. It was also used from 2000 to develop a silver eel trap and transport programme in respect of the Ardnacrusha dam downstream (McCarthy et al. 2008a). Catches, made with winged river nets, at upper catchment conservation fishing sites are also being monitored.

Many weirs were primarily intended for guiding water to watermills but secondarily used for fish-trapping. In the early twentieth century, special eel traps of the type illustrated by Tesch (2003) were common at mills in some parts of Ireland, and one was operated in Lough Rea, Co. Galway, until recently. These effectively screened all water entering the mill and diverted eels to a storage container.

Silver eels have also been captured in Ireland using winged river nets and large D-framed fykenets set at lake outlets. At the outlet of lower Lough Erne (Fig. 2.11a, b), a complex silver eel fishing system is still operated as a silver

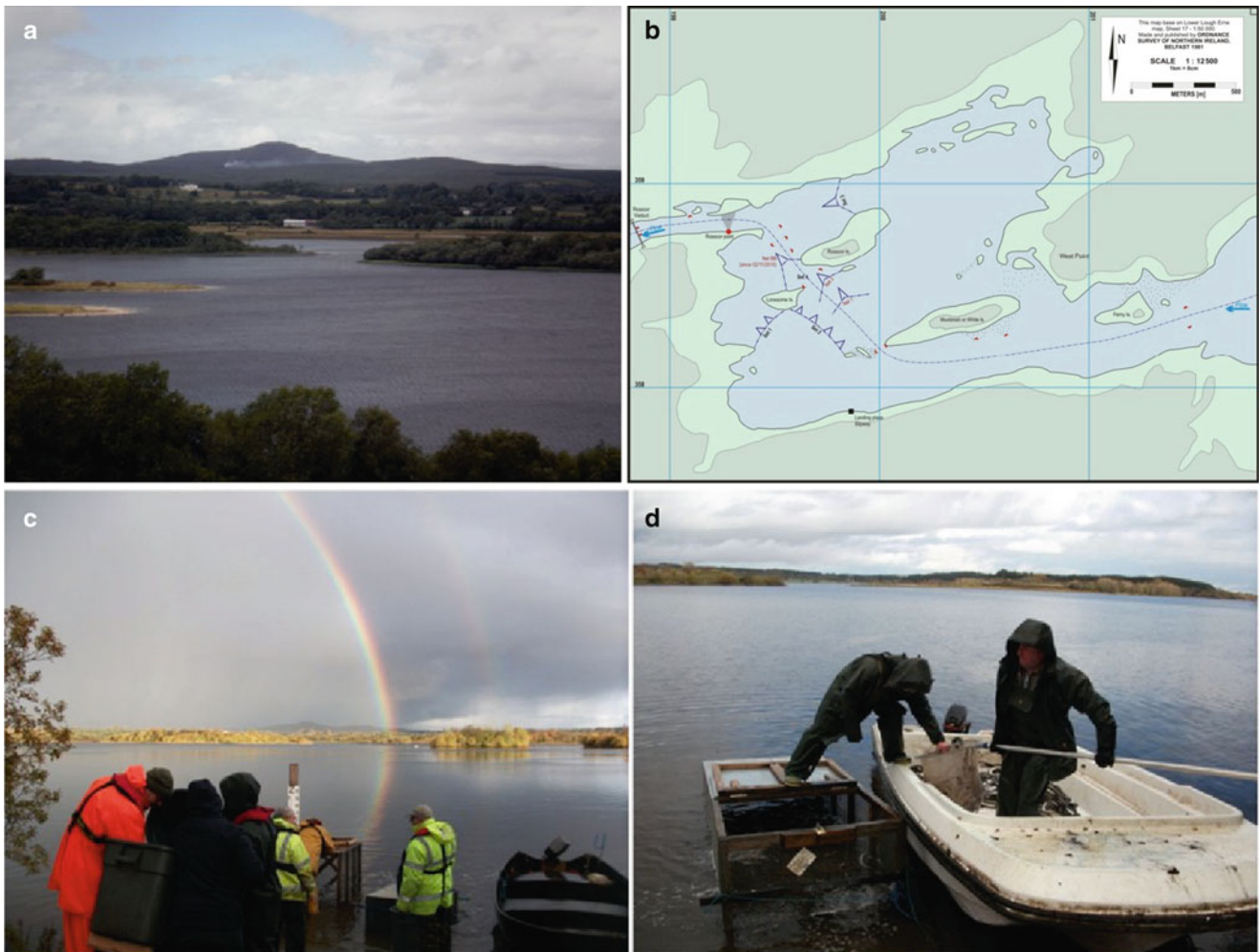


Fig. 2.11 (a) Lower Lough Erne with outlet to River Erne in the distance. (b) Map of the lower Lough Erne outlet silver eel fishery. (c) Researchers examining catches of silver eels for tagging with Passive Integrated Transponder (PIT) tags. (d) Fishing crew transferring silver eels to storage box

eel conservation trapping programme. It involves extensive netting held vertically by steel poles in which there are net traps with funnels to prevent eels escaping, and these are operated in conjunction with a series of winged river nets set in series along a deeper navigation channel. That site and an experimental one at Roscor Bridge ~0.5 km downstream are key research sites for monitoring populations of silver eels migrating downstream towards the river section used for generating hydroelectricity (Fig. 2.11c, d). Other sites upstream are fished with winged river nets too, as part of the conservation strategy.

All Irish eel fisheries, except for Lough Neagh/River Bann, were closed in 2009 as part of the Irish and Northern Irish eel management plans, and a system of trapping and transportation (Fig. 2.12a) of silver eels was a required action in respect of the three main rivers (Rivers Erne, Shannon and Lee) used for hydroelectric generation. A series of sites is now fished on all three rivers and their catches, closely moni-

tored, are transported to release points located close to the estuaries. Since 2000, 87.65 t of silver eels trapped at Killaloe on the River Shannon have been transported safely downstream, including most of the 77.18 t transported down the catchment in the past 3 years. The eel management plan specified that 30 % of the annual silver eel run in the River Shannon should be transported and this was achieved in all the past 3 years (35.2 %, 37.9 % and 39.2 %). The silver eel trap and transport programme on the Erne has thus far not managed to capture the quantities specified in the management plan, but this seems to be explained by population studies that suggest that the River Erne eel population is smaller than assumed when the relevant management plan was being compiled. In the initial three silver eel migratory seasons (2009/2010–2011/2012), a cumulative total of 53.95 t of eels was transported downstream and released below the two hydropower dams on the lower section of the River Erne. In the case of the River Lee, with its large man-made reservoirs,

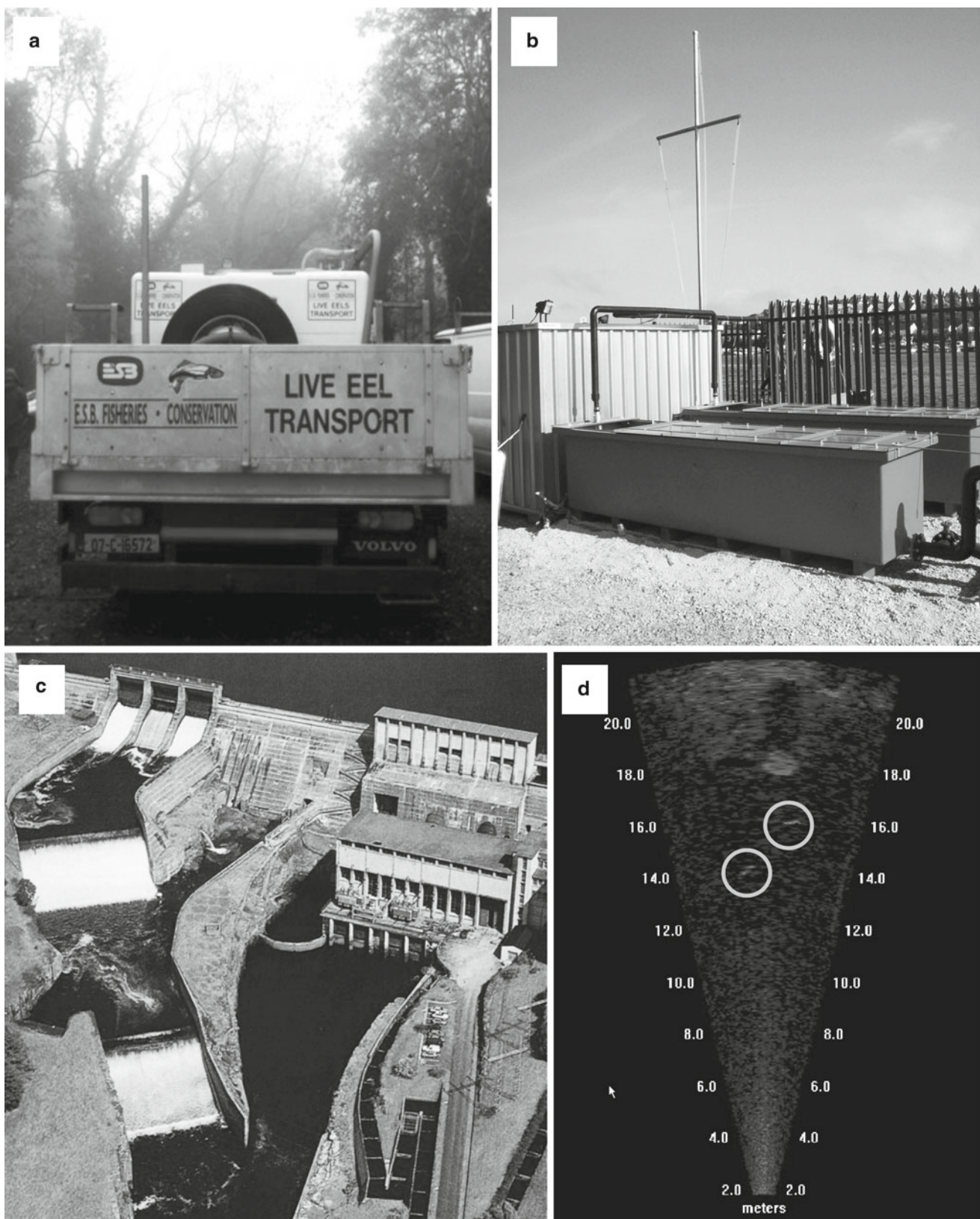


Fig. 2.12 Eel conservation and research in Ireland. (a) Vehicle used for transporting silver eels downstream of hydropower stations; (b) Migromat technology® being tested at Killaloe; (c) spillage at

Cathaleen's Fall hydropower station on the River Erne; (d) DIDSON® ultrasound camera images of silver eels migrating downstream at Roscor Point, River Erne

it has been necessary to trap pre-silver eels using fykenets and release them to river habitat below the lowermost dam. In that case, where a specified management plan target was 0.5 t annually, the total quantity trapped and transported varied from 0.08 t in 2009 to 0.73 t in 2011.

Exports and Local Use of Eels

Eels are no longer sold other than as imported smoked product in the thriving Cork market where once both conger eels and freshwater eels were sold (O'Drisceoil and O'Drisceoil 2011). A much wider variety of fish is eaten by Irish people nowadays than in the past, when for many centuries fish was regarded as typical of a penitential diet on days specified for special religious observance and fasting. The association of many eel fisheries with religious abbeys, especially in medieval and post-medieval times, may reflect external influences and cultivated tastes. Eels are easily stored alive and could have been an important food for that reason and because of the restrictions on eating meat on days on which religious fasting was prescribed. Eels captured in Ireland in the nineteenth and twentieth centuries were mostly exported alive by train and boat to the Billingsgate Market in London. Recently, however, they were mostly exported alive to The Netherlands. Eels were cooked in various ways in Ireland and also smoked for local consumption and export. In the past, eels were eaten in large quantities in areas with extensive silver eel fishing weirs; for example, in the lower River Shannon, eels were once derisively called "Killaloe Bacon" (i.e. everyday food in that town). Eel skin was valued in Ireland in former times, being used as a flexible joint in flails used for threshing corn as well as for making small leather goods. The closure of Irish eel fisheries, with the exception of the River Bann and Lough Neagh, has led to a decline in interest in eels as a natural resource, however, and emphasis is now placed on conservation.

Research on Eels in Ireland

The ecology of eels in Ireland has been studied in Ireland for more than 50 years, with studies on growth rate, feeding habits, predators, parasites and migration patterns providing a general framework for eel management (e.g. Parsons et al. 1977; Moriarty 1978, 2003; Poole and Reynolds 1996; Doherty and McCarthy 1997; McCarthy et al. 1999, 2009; Matthews et al. 2001; Cullen and McCarthy 2000, 2003, 2007; Rosell et al. 2005). However, the need to provide scientific advice in respect of the eel management plans produced in response to the EU Regulation on restoration of eel stocks has increased the need for research. Eels are widespread in Ireland, in coastal, estuarine, lagoon, riverine

and lacustrine habitats. Accordingly, research tasks and methodologies have been varied.

To date, research on coastal eel populations has been of a limited or site-specific nature (Harrod et al. 2005; Arai et al. 2006; Morrissey and McCarthy 2007), but major surveys are currently being undertaken by Inland Fisheries Ireland in the Waterford and Wexford estuaries. Information on eel biology in Ireland is now considered to be of high priority. The determination of population parameters for open estuarine habitats, where in some instances apparently good numbers of eels still exist, is proving to be difficult, however. Consequently, and because of potential movements of eels between riverine and estuarine areas, estimating the contribution such stocks make to spawner biomass escapement is not possible.

The determination of natural production and spawner escapement biomass from selected Irish rivers is also a major part of current eel population research in Ireland. This is information needed for evaluating eel management plan actions such as fishery closure and mitigation measures for hydropower. Estimation of spawner escapement biomass has been possible (R. Poole, unpublished) on the small Burrishoole River by efficient trapping, but has been more difficult on larger rivers such as the Rivers Bann (Rosell et al. 2005), Erne and Shannon. However, there has been considerable success in the case of the latter two rivers in the past 2 years by the use (Fig. 2.12d) of modern technologies (DIDSON[®] ultrasound camera counts, hydroacoustic surveys, acoustic telemetry) combined with investigations at experimental fishing weirs (population structure analyses, mark-recapture estimates of population size, etc.). Likewise, studies on parasite burdens of seaward-migrating silver eels, on their fat levels and maturation status, is providing better knowledge of the quality of potential spawners leaving Irish waters. This is a matter of increasing concern given the spread of the swimbladder parasite *A. crassus*.

Research is also in progress to facilitate the development of better measures for mitigating the effects of hydropower generation on migrating eels (Fig. 2.12c). The aim is to determine whether the trap and transport measures currently in place can be replaced or supplemented by new-generation protocols, and the technologies being evaluated include (Fig. 2.12b) the Migromat early warning system[®] and deflection screens. Also, route selection is being monitored on the Rivers Erne and Shannon by telemetry.

A major objective of current Irish eel research is the development of effective modelling tools for managing Irish eel populations in support of the international efforts being made to recover the European eel stock. Irish scientists participate in European research programmes such as the Eeliad project, and eels from Irish rivers have been used in satellite-tracking and other telemetry studies of silver eels during their spawning migration (Aarestrup et al. 2009).

Overview

A wide ranging review such as attempted here, even when focused on a topic with defined parameters—two species (European eels and humans), a clear geographic area (Ireland), time-frame (since Pleistocene glaciation, >10,000 years) and scholarly disciplines (archaeology, history, art/literature, folklore, natural resource management, ecology)—has proven more challenging and complex than anticipated. Looking forward in time, the thin threads of knowledge that allow for understanding the ecological, social and cultural links between humans and eels provide limited perspectives. However, despite the biocomplexity and methodological limitations, a sense of the uniqueness of the eel/human association can be appreciated by reference to the diversity of avenues explored. Moreover, the need for a more systematic, comprehensive review and further research is apparent. Urgency seems appropriate in this regard given the decline in the global stock of European eels, the closure of Irish and many other eel fisheries, the continuing threats posed by environmental change, including invasive pathogens, and societal changes that result in the loss of place- and folklore in modern Ireland. Exchange of information on eels and humans may serve to highlight the global problem facing anguillid eels, and also highlight the need for deeper understanding of the interactions between humans and these fascinating fish. Humans, once simply a predator on eels, now influence them adversely in a variety of ways.

Eel conservation objectives will be better served in Ireland by a deeper understanding of the historical and cultural importance of the species, especially if this serves to draw public attention to the environmental issues involved. Ireland's poets, writers, artists and film-makers can contribute by enlightening Irish people lacking direct connection to eels or their aquatic habitats. However, in this age of digital media, one in which educational courses are increasingly narrow or vocationally defined, there is also a need to remind educationalists how fundamentally important it is to have a multidisciplinary approach to many of life's problems. The old term "natural history", now largely redundant, encompassed a diversity of what is now regarded as specialist disciplines. Perhaps, the future of eels depends on us returning to our intellectual roots and not being afraid to cast our net widely in the search for a deeper knowledge of this topic. Analysing the history of the eels and humans story in an Irish context has revealed many unresolved issues, so, in attempts to look forward, it is clear that the future of the eels and of human interactions with them is characterized by great uncertainty.

The nocturnal activity of eels may have contributed greatly to the mystery associated with them in Ireland. Their association with lake monsters in mythology and folklore, as

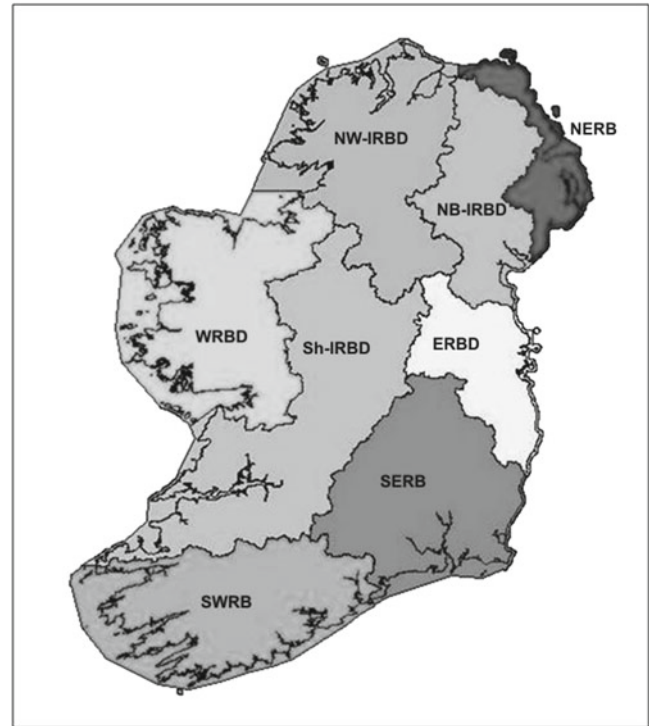


Fig. 2.13 Map of Ireland showing the River Basin districts used for the EU Eel Management Plan and implementation of the EU Water Framework Directive

well as their snake-like appearance, seems to have created a negative popular image. Landscape artists, writers and the general public rarely see eel fishers at work because they work largely during the hours of darkness. However, because of the dramatic collapse in eel populations and because of the publicity associated with the implementation of the national eel management plan, which was required by EU legislation, a new awareness of the uniqueness and importance of eels is being created. The future of eels in Ireland will depend in part on the measures being implemented to enhance stocks, to reduce anthropogenic mortality and to increase spawner escapement to sea. This is being done in a cooperative international context and, like the implementation of the EU Water Framework Directive, on a river basin district basis (Fig. 2.13). However, because of the panmictic nature of the eel, the ultimate success or failure of the EU plan for the recovery of stocks of the European eel will depend on international cooperation across the full geographic range of the species.

The specialized discipline of modern archaeology contrasts greatly with the activities of nineteenth century antiquarians who regularly sought to interpret ancient structures by reference to mythology or early manuscript texts on history. Waddell (2005) described the development of Irish archaeology and illustrated how archaeological interpretations

were influenced strongly in this way into the early twentieth century. Therefore, while the myths, early historical documents and folklore can give some fascinating insights into the perceptions and activities of early inhabitants of Ireland with respect to eels, it is also important to recognize the limitations that apply. Recent advances in the archaeology of Ireland's inland waters, wetlands and estuaries are improving understanding of the interactions of humans with eel populations. New technologies and increased awareness of the need to research and conserve Ireland's archaeological heritage have encouraged researchers to focus on questions that relate in many ways to issues of concern to ecologists. There are many ways in which research methodologies are paralleled by eel researchers and archaeologists, such as in the use of acoustic equipment for underwater surveys, the generation of GIS-based databases, and the recognition of the importance of dealing with these topics in terms of river corridors and river basin districts (McNeary 2011). Likewise, just as nodal points (e.g. fords or lake outlets) have been productive research areas for archaeologists, they have been of particular importance in eel population studies. Hence, many of the river or lakeshore Irish Mesolithic sites that have provided the greatest insights into the early inhabitants of the island are well known to Irish eel researchers and to Irish eel fishers. The continuity of practice, highlighted by O'Sullivan (2007), in which wetland and aquatic areas have been exploited may well have extended way longer than is generally appreciated, and the near terminal decline in the eel fishing community may well result in the loss of a very important part of Irish folk memory.

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