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The 'Water of Eden'

An Analysis of the Ports and Mussel Industry of the Eden Estuary

A thesis submitted to the Scottish Institute of Maritime Studies

in fulfilment of the degree of M.Phil.

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September 1999



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Abstract

This thesis is a historical survey and analysis of the ports and St Andrews mussel industry on the Eden Estuary.

Down through the ages the Eden Estuary has been exploited for both sea trade and harvesting of naturally occurring mussel, *Mytilus* sp. These are an important part of the local history and economy yet have been only superficially discussed in perspective.

During the Middle Ages the estuary served as the port of the burghs of St Andrews and Cupar. In the 19th century, several individuals used the estuary as their private port or harbour. An attempt is made to reconstruct the history of trade on the Eden through the identification of landing sites, their proprietors, navigational aids, and those ports with which trade was conducted.

During the 19th and first part of the 20th century, natural mussel beds were exploited for line fishing bait. These beds supplied the bait needs of fishermen in St Andrews and, to a lesser extent, the East Coast of Scotland. An attempt is made to reconstruct the history of the St Andrews mussel industry and to explore the effect it had on the burgh of St Andrews.

Data has been gathered through a review of manuscripts for the burghs of Cupar and St Andrews, to include maps, plans, and aerial photographs. Parliamentary papers were consulted relating to piers, harbours, and mussel beds. Data relating to trade is

a mix of primary and secondary sources while the St Andrews mussel industry is derived almost wholly from primary sources. The following archives were consulted: the Bank of Scotland Archive; Dundee City Central Archive; Curtis Fine Paper Company, Guardbridge; National Archives of Scotland; University of Dundee; University of Edinburgh; University of Glasgow Business Records Archive; University of St Andrews Special Collections and various public libraries.

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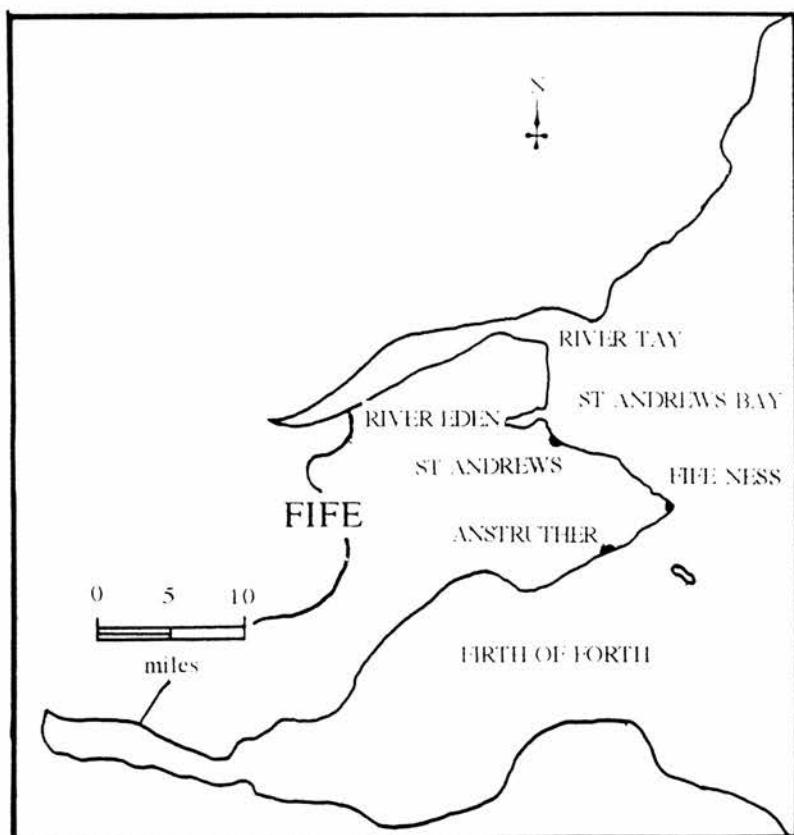
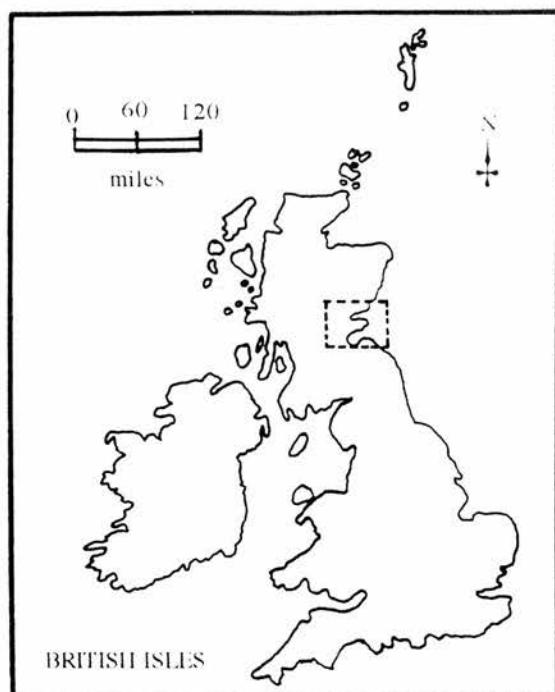
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The Eden River/Estuary in relation to the Tay and Forth rivers
(as in Dobson, 'An Analysis of shipping incidents').

The ‘Water of Eden’: A History and Analysis of the Ports and Mussel Industry of the Eden Estuary

‘Despite the importance of trade to the British economy, relatively little has been written about the development of ports through which it passes’ (Gordon Jackson, 1983).

Introduction

Since the dawn of water transport man has always exploited estuaries for transportation and subsistence. Today it is hard to imagine either of these took place to any great extent on the Eden Estuary yet this is a misconception. The history of the Estuary has never been investigated which has led to several misunderstandings of its role in the history not only of the St Andrews area but also in church history.

The Estuary was used by the burghs of St Andrews and Cupar as a port. The date St Andrews was granted its port is not clear. It is believed to be between 1104¹ and 1144² granted by David I. Many have indicated that the actual location was at the Motray Burn.³ This is highly unlikely as this would have put two ports on the same site. The distance and the need to cross the river to the south bank would not have been convenient.

During the Middle Ages, the St Andrews port played a vital role in logistical support of the pilgrimage and Scotland’s ecclesiastical capital. It was the natural environment of the Estuary that permitted a large number of vessels to visit the port simultaneously. They brought much needed foodstuffs and other cargoes required

to support the demands of the city. It is uncertain when the Eden ceased as the port. Records do indicate a fishing harbour was in existence as early as 1222 at the mouth of the Kinness Burn.⁴ However, this in no way would have been able to accommodate the large number of trading vessels required to support the city. The last record identified indicating the Eden in use comes from customs records dating to 1579.⁵ It is believed that the port fell into disuse between this time and the Union of 1707. Unfortunately, the period can not be narrowed down.

Like St Andrews there is little information relating to Cupar's port. The port was granted under charter in 1381 by Robert II⁶ and was located between the Motray Water and the Guard Bridge*. Of the two ports this is the only one that is known to have had any structure, which was a tron.⁷ The date of decline for the port falls between 1518 and 1707.

During the 19th century, many years after St Andrews and Cupar abandoned the Eden as a port it was taken over by private individuals. During this time trade consisted of whisky, bone, wood, agricultural products and general merchandise.⁸ These trades had a substantial impact on the economy of the St Andrews area, possibly extending as far as 15 miles. This private harbour reduced the cost of ground transportation to and from the coast for many, giving the inhabitants a choice of St Andrews, Tayport or the Eden for trade. This also, to some extent,

* Refers to the 15th century bridge over the Eden built by Bishop Wardlaw. For the purpose of this paper this will also mean the area around the bridge prior to the village

presented competition between local ports (St Andrews and Tayport) and merchants.

Since the Union of 1707, the status of the Eden fluctuated several times falling under various headports and classifications of ‘outport’ and ‘creek’. Its history gives an insight into how a small outport or creek was abandoned by a burgh, only later to be made into a productive trading centre by private individuals, and the effects of these changes on the local economy.

The Estuary has also played an important role in providing the St Andrews area with a source of subsistence and support. It was during the 19th century that the naturally occurring mussel scalps in the Estuary had its biggest impact on the economic and social affairs of the city, despite the value of mussels being seen as early as 1579.⁹ In 1842, the town council took the mussel beds under their direct management and control, one of only six scalps in Scotland to be cultivated.¹⁰ The council was able to provide a rather stable supply of bait to the local fishermen and on occasions to others while generating a profit.¹¹ Their management reflects a change in technology and domestic roles locally and along the Scottish coast.

This investigation and subsequent ones will provide information relating to the medieval port of St Andrews and Cupar and the exploitation of the estuary as small ports or outports used by private individuals for sea transport and their role in economic development of the surrounding region. It will also provide a better understanding of the mussel industry on a local and national level.

Geology and Hydrology of Northeast Fife

Geology

Eastern Fife is composed of two main geological systems (figure 1). An imaginary line drawn from Guardbridge* to the northern base of the Lomonds separates these two systems. North of this line, from a point near Montrose to the north bank of the Eden Estuary, is a Lower Devonian Age system. This system is derived from non-marine conditions and includes lavas, olivine basalts and andesites. Extending south from the Estuary to Cockburnspath are Carboniferous Age rocks consisting of sandstone with seams of coal, clay and clay-ironstone.¹²

The Ice Age

During the last Ice Age, the counties of Fife and Angus were inundated with glaciers hundreds of feet thick.¹³ This period saw several warming and cooling periods that caused glaciers to advance and retreat. Ice sheets moved eastward through eastern Fife over the Ochil Hills, and out into what is now the North Sea. This movement was responsible for the transportation of boulders and the deposition of boulder clay in the area. In the final phase, glaciers occupied the Forth and Tay valleys with a subsidiary lobe forming in Stratheden. This phase covered the boulder clay with fluvio-glacial sands and gravel. As the Stratheden lobe melted it too deposited moraines on both sides of the valley. Plants quickly took root on the barren land attracting grazing animals and man to the area.

The massive weight of the glaciers resulted in some areas being covered by water as high as fourteen metres above present sea level (figure 2). As the water level dropped, raised beaches were left some distance inland. Today evidence of these raised beaches is visible along the coastline and in the Howe of Fife.¹⁴ During the 19th and 20th centuries these raised beaches provided brick clay for several local brick and tile works in the area.

Glacial sediments were carried into St Andrews Bay where they settled on the seabed. Wave and wind action transported some of this sediment landward depositing it onto the shore creating sand dunes.¹⁵ This process is evident at Tentsmuir Point where dunes run parallel with the coast. This process of carrying glacial deposits from the seabed to the shore is naturally reclaiming the land. Between 1812 and 1990 Tentsmuir Point has undergone natural reclamation averaging 4.8 metres annually.¹⁶ In 178 years the area has extended 500 metres seaward. This process gives scientists a rare opportunity to study dune formation processes as they happen.

Hydrology

East Fife is drained by a number of small streams that discharge into the North Sea. The region is served by two main waterways; the Leven and the Eden. Of these, the Eden is the only one which may be termed a ‘river’.¹⁷ The Eden catchment drains

* Refers to the 19th century village approximately five mile West of St Andrews on the banks of the Eden Estuary.

some 400sq kms of northern Fife.¹⁸ It is the Eden, more specifically the Estuary, that is the focus of this paper.

The river covers thirty-one miles passing through eleven different parishes before entering into the Eden Estuary above Guardbridge. The bed of the river stands forty feet above sea level as the river nears Cupar.¹⁹ The elevation of the river drops an average of four feet per mile after it passes Cupar. The base of the channel is made of soft red sandstone and separates the two predominant geological systems of the region. At this point the river has reached a stable depth and no longer cuts into the bed of the channel. Sediments carried into the river by runoff are transported down the river into the Estuary before discharging into St Andrews Bay and the North Sea.

The Estuary is 10 km² and extends 3 km above the Guard Bridge* to Nydie Mill.²⁰ During high water the channel may reach depths of fourteen feet on the higher part of the Estuary (inland), while the lower portion can see depths to twenty-four feet.²¹ The mouth of the Estuary can reach depths of 20 feet or more during high tide.²² During ebb tides, the channel narrows to a few metres and 7.9 km² of inter-tidal mud flats are exposed.²³ The channel is fordable during low tide at some points and follows an easterly direction until it reaches the Links where it turns northward.²⁴ After flowing just over a mile it turns east emptying into the Bay of St Andrews and the North Sea.

* Refers to the 15th century bridge over the Eden built by Bishop Wardlaw. For the purpose of this paper this will also mean the area around the bridge prior to the village.

The Motray Water enters the Estuary from the northwest corner of the basin and is the only tributary. Over the years a large spit of sand has developed near the Out Head, altering the channel and driving the mouth northward before discharging. St Andrews Bay extends twenty-four miles from Red Head on the North to Fife Ness on the South and ten miles seawards.²⁵

The Burgh of St Andrews and its History

Two miles south of the Eden's mouth is the Royal Burgh of St Andrews which exploited the Estuary as a natural harbour in medieval times. Bishop Robert established the first priory in St Andrews in 1120, during the reign of Alexander I. In 1144 he declared the village a burgh. Shortly after David I granted the village burgh status.²⁶ Unfortunately, this charter no longer exists and the exact contents are unknown. The charter was later confirmed by his grandson Malcolm IV, granting 'the burgesses of the bishop of St Andrews of all the liberties and privileges which my burgesses have in common over the whole of my dominions, and at whatever parts they may land.'²⁷ In 1362 David II continued to support the burgh's economic development by granting a charter stating:

'the foresaid Bishop and his successors may freely have and possess the great custom of all Goods owing such custom to their Burgh of St Andrews coming before the Port thereof or being born to their Port of Edyn,...'²⁸
(January 5, 1362)

Church scholars were educated at English and French Universities until the start of the 15th century. At that time, England followed a Pope who did not support Scotland or their allies in the War of Independence. Scottish scholars were forced out of the English education system. Bishop Wardlaw and the Diocese of St Andrews were quick to acknowledge the need to continue the higher education of its clergy and he sought and gained the approval of King James I to create a *Studium Generale Universitatis*, Scotland's first university to educate clergymen. This new educational institution, opened in 1410, furthered the growth and importance of St Andrews.²⁹ During the 15th and 16th centuries, St Andrews continued to grow as a

central point of ecclesiastical and educational power and wealth. Coastal trade increased at the Eden Port and St Andrews harbour as overseas trade with Holland, Flanders and France expanded.

Medieval Pilgrimage

According to legend, a monk brought the Apostle Andrew's bones to the area which the city was later named after. It is these relics which drew pilgrims over vast distances to the city seeking to bask in the presence of the bones of 'Sancti Apostoli Andreae'. This was one of two locations in Western Christendom which permitted pilgrims to 'bask' amid the relics of a martyred apostle.³⁰

With the pilgrims came increased patronage to the church. Numerous lucrative businesses sprang up to provide accommodations and sustenance. As early as 1144 the need for adequate shelter was evident. Therefore, David I granted the lands of Kenlachyn for a hospital.³¹ Pilgrims stayed at one of the many hostels or inns in the burgh or at the hospital. The end of the 15th century saw a decline in the number of pilgrims. The hospital was closed and the building taken over by the University of St Andrews.

In 1620 King James, in an attempt to boost the town's economy, granted the city the right to hold 'market fairs' to correspond with a Saint day on the church calendar.³² There were five annual fairs in all. The 'Senzie' market was by far the largest and most wide spread of the markets. It was held every April lasting fifteen days. During the market in the time of 'the great opulence of this City in times of Popery'

the Eden Port and the harbour were filled with 200-300 vessels.³³ Each traded goods of exotic linen, spices and oil in exchange for local agricultural products, livestock, wool and skins.

St Andrews had become a great civil and ecclesiastical city until it fell during the Reformation, never to regain its former status. The economic impact is evident based on the taxes collected. In 1695, £701 were collected compared with £4,000 150 years earlier. Trade in St Andrews had relied heavily on the pilgrims and the Church. Once the See fell, trade in St Andrews started its decline. Exports in the region were restricted to agricultural products with imports consisting of general cargoes and manufactories.³⁴ Tayside ports saw a decline between 1612 and 1705. The civil wars had a heavy impact on many of the Tayside ports, St Andrews was hit the hardest. Like the other ports, St Andrews had a decline in taxation. Between 1545 and 1695 St Andrews experienced a decrease of trade³⁵ never to regain its ecclesiastical or economic status. It would take nearly three centuries before the city started an economic recovery.

The Estuary provided a large and natural harbour for vessels that permitted a greater number of vessels to visit the city simultaneously. If the Estuary had not existed vessels would have been required to beach on the open coast exposing them to the harsh elements of the North Sea.

The Eden Port

The Eden has seen no less than three landing sites since the 12th century (figure 3). This does not include the random beaching of vessels or fishing boats. The following parties had quays or some sort of landing area along the Estuary: (1) Burgh of St Andrews, c.1144; (2) Burgh of Cupar, 1381; (3) Lairds of Leuchars and Earlshall, pre 1792; (4) George Fleming, 1802 - pre 1826; (5) William Haig and the Seggie Distillery, 1808-1861; (6) Andrew and David Spence, c.1826-c.1897. In addition to these, both cargo and fishing boats are known to have beached near Martin's Point, known today as Coble Point.³⁶

The first mention of a structure on the Estuary is not until the late 18th century when the crofters of Leuchars and Earlshall constructed a quay on the north bank of the Motray Water similar to those at Faversham.³⁷ A quay was also constructed near the Guard Bridge in the beginning of the 19th century. Only one pier was ever erected on the Estuary and that was at the beginning of the 19th century at the Seggie Distillery. Other sites took advantage of the natural environment, utilising the beach as did other early harbours such as Liverpool and Leith.³⁸

Presuming that the Estuary has not undergone any major environmental changes in the last seven centuries, it is possible to identify likely landing sites on the Eden.

The Port of St Andrews (c.1144) and the St Andrews Harbour

In 1144 David I declared the Eden as the Burgh of St Andrews' official seaport, also known as the 'Water of Eden'.³⁹ It has been stated in the past that the ancient seaport was near present day Guardbridge.⁴⁰ However, this is unlikely because the distance from St Andrews to Guard Bridge is over four miles. The time and labour of transferring goods to the city would have caused a great increase in expense. The earliest document indicating that St Andrews had a port on the Eden dates to 1579 from a list of petty customs and anchorage's in 'the port of the said City called the Lady Burn or Water of Eden'.⁴¹ Three charters granted shortly after the turn of the century do not refer to the Eden as a port.⁴² The Ratification of 1612 speaks of the Shore and Haven, while Gladstane's charter indicates a port, haven, shore and harbour. Even James I's Bounding Charter of 1416, which granted Cupar a port on the Motray Water, does not speak of St Andrews having a 'harbour' or port on the Eden.⁴³ It does state 'saving the liberties and rights of Regality of the church and city of Saint Andrews and monastery of Dunfermline'.

The Black Book speaks of the 'Lady Burn' as the port of St Andrews. Ainslie's map of 1785 indicates a burn discharging into the Eden, east of Martin's Point (figure 4). A second map by Dower of 1826 depicts three water runoffs, all between Martin's Point and Pilmour Links (figure 5). One of the 'burns' is in the same area as Ainslie depicted. It is believed that this burn, just east of Martin's Point, is the 'Lady Burn', thus placing the Port of St Andrews in the area of Balg ove Bay (between Martin's Point and the Links). This area would have provided the needed shelter for a large number of vessels and the distance to the city

is halved. It is unlikely that any structures existed at this location. Boats simply beached to off-load. Upon off-loading their cargo, the vessels would anchor in the Estuary awaiting departure. There are no indication of structures from Blaeu's Atlas of 1554, Roy's Military map c.1750 and Ainslie's map of Fife from 1775. The Eden port fell into disuse prior to the start of the 18th century because by that time what little trade was carried out was done through the fishing harbour.

In addition to the port, St Andrews had a fishing harbour as early as 1222.⁴⁴ The harbour is at the tidal mouth of the Kinness Burn and separated from the sea by a narrow sand dune that provides a natural refuge for fishermen and merchant vessels.

The standing of the port, harbour and burgh during the 17th century is reflected in the fact that the Archbishop held the position of Lord Admiral, with jurisdiction over most of the coastline from the Forth to the Tay. St Andrews had its own Admiralty office with the power to issue cockets to ships. The issuing of cockets was 'A singular privilege and by report and into peculiar to the See of St Andrews, nor is it believed that any other person in Europe, beneath the dignity of a Sovereign enjoys it to the same extent'.⁴⁵

Saier De Quincy, Earl of Winchester (c.1209)

Saier De Quincy, Earl of Winchester, was the laird of Leuchars Castle, just north of the village of Leuchars, during the first part of the 13th century. The castle came into the De Quincy family when English Baron Robert De Quincy married Arabella,

daughter of Ness, a Celtic Chieftain.⁴⁶ The castle was passed down through the family until it fell into the hands of De Quincy. During the 13th century, the castle was De Quincy's principal residence. He was loyal to King John and often led military forces into battle in the name of the Crown. There is some evidence, however weak, suggesting De Quincy used the Eden as refuge for his ship(s), for in 1209, under the orders of King John of England, Saier sent a ship 'from Lucres in Scotland to Lynn'.⁴⁷

The exact location of De Quincy's 'port' is questionable. Millar suggests that it was at the mouth of the Motray Water near the Eden.⁴⁸ It is unlikely that any vessels sailed beyond the location of the Inner Bridge. Navigation of the Motray channel would have played a role in the choice of landing and it is possible his vessels beached on the north bank of the Estuary. It is safe to say that the cove between the Motray and Coble House Point was suitable to serve as an anchorage area. Another area further east, between Coble House Point and Shelly Point, also offered adequate protection for an anchorage, yet at a greater distance to the castle. However, this is all speculative.

Burgh of Cupar and ‘The Port’ (c. 1381)

Cupar is a land-locked burgh on the River Eden located, nine miles distant from the sea and five miles west of the Guard Bridge. While St Andrews became known for the relics of the Apostle Andrew, Cupar became the market and county town. As early as 1231, Cupar was the seat of legal services for the Kingdom. In 1328 the community became a Royal Burgh with all the rights and privileges thereof.

A charter for a free port (known as The Port) was granted by Robert II in 1381. The charter granted to the Burgh and Burgesses of Cupar states:

‘that they posses a free port in the Water of Motray, with freeish and entry, as any other port have with in the Kingdom so that however, from the merchandise and effects whatsoever entering and departing the same they may pay to us the customs and other usual burthens due’.⁴⁹

James I granted the burgh a bounding charter in February 1416. It authorised the continued use of a tron within the Eden and Motray ‘as the sea ebbs and flows’ and ‘loading and lading their ships with their merchandise without any impediment or obstacles whatsoever.⁵⁰ They were granted land on the West Side of the Eden and on both sides of the Motray Water.⁵¹ For these privileges, the Burgh of Cupar was required to make an annual payment of twenty-six merks as set forth in the charter.⁵² This charter also granted the burgh the rights of a market ‘with liberty of common guild with cross and market place and a weekly market day with the liberty of buying and selling within the ancient bounds....’. With time this county town prospered.

The port was situated between the Motray Water and the Guard Bridge, separated from the Lands of Seggie by the Kings Highway. They actually claimed two and one-half miles of sea beach, of which only a small portion, between Motray and Guard Bridge, were used. Vessels came in and beached, tying on to rings that were inserted into large rocks on the beach.⁵³

Evidence indicating the area was used comes from a charter granted in 1396 by John De Gulyn, Laird of Seggie in which he agreed to allow the inhabitants of Cupar to create a road from the Cupar-St Andrews road to the King's Highway and the port across his property.

'give permit and grant ... a road to continue for ever common near the manor of Seggie from the Port to the south of the same of a reasonable breadth by which carts or wagons may pass and any other roads which the said burgesses and community may formerly have had permission from the part to the north of the manor of Seggie'.⁵⁴

This new road gave the people of Cupar two, if not more ways of reaching the port, including the Kings Highway. It is possible that this is the same road which is depicted on the First Ordinance Survey map (six inch edition) leading away from the area of the Seggie Farm Cottages in a Northeast direction towards the Seggie distillery and the pier. It is highly probable that this road is the same mentioned in De Gulyn's charter (figure 6).

In 1498 Cupar brought a process against Alexander Meldrum, Laird of Seggie, for impeding their transportation of goods by way of the road granted to them under charter by De Gulyn in 1396.⁵⁵ Meldrum had forced the inhabitants of Cupar to use

the Kings Highway in order to reach their port at Motray. On 2 May 1498, The Lords of Council ruled in favour of Cupar, ordering Alexander Meldrum to ‘desist and cease’. The people of Cupar were entitled to use both the Kings Highway and the road granted under charter in 1396.

The ‘Port’ was active as late as the first part of the 16th century when a dispute arose between the burgh of Cupar and the burgh of St Andrews over Cupar’s ‘privilege of loading ships within the water Edyn & Multhre’.⁵⁶ On 20 July 1518, the Archbishop of St Andrews appeared before the Lords of Council to answer as to why the inhabitants of Cupar were hindered in their use of their port.⁵⁷ It appears that the Archbishop was trying to gain exclusive control over the Estuary so the church could reap all the profits from trade on the Eden. A second reason is that vessels in the St Andrews port were so numerous in the area of Balg ove Bay that they blocked the free movement of vessels up the Estuary. If there was a question about chartered rights, the Archbishop of St Andrews would have (or should have) raised the issue. The charter granted to Cupar by James I states that ‘saving the liberties and rights of regality of the church and City of St Andrews and monastery of Dunfermline, everywhere within the said limits and bounds, made and granted by our predecessors in times past’.⁵⁸ But the issue does not appear to have been raised.

During the Middle Ages Cupar engaged in trade with the low countries, exporting goods of wool, fleece and hide from their seaport on the Motray Water.⁵⁹ Like that of St Andrews, distance to the port was a drawback. Merchants had to cart goods over five miles each way, which drove prices up. This distance and the increase in

prices most likely played a role in the declining of the Port resulting in sea trade giving way to local commerce between the 16th and 18th centuries.

Leuchars Quay: Laird of Leuchars and Earlshall (c.1792)

During the late 18th century, there was a quay on the north bank of the Motray. Sometime before 1792, the Lairds of Leuchars and Earlshall permitted the crofters and tenants to construct a small quay on the north bank of the Motray Water near the Inner bridge.⁶⁰ This consisted of a wall parallel to the water, which had been back-filled with rocks and soil and allowed carts easy access for loading and unloading boats in the Motray. This simple yet efficient method enabled the crofters and tenants to import goods and export excess agricultural and husbandry products.

John Smith and George Fleming (1802-c.1826?)

In the early 1790s, William Morrison of Naughton was proprietor of the Lands of Seggie, which were bound on the north by the Motray water and on the east and south by the River Eden. A portion of his land was separated by the Kings Highway (Guardbridge – Leuchars road). As early as 1793 the proprietors permitted open grazing of salt grass between the Motray and the Guard Bridge, east of the Kings Highway. Records do not indicate if the Morrisons ever used the Estuary for shipping. However, it can safely be assumed, based on the loss of the *John & William* in 1794⁶¹ and later activities on the Eden, that he used the sea beach between the Motray and the Guardbridge to import and export goods.

Around 1802 James Morrison of the Lands of Seggie and heir to William Morrison, sold two scotch acres north of the bridge (Guard Bridge) and east of the Kings Highway, to John Smith.⁶² The northern boundary was separated from the rest of the lands of Seggie by a line of march stones. Additionally, Smith acquired ‘thirty-four falls of grass’ (salt grass), separating the above from the Water of Eden. It is unclear as to what Mr. Smith’s intentions were with the property. There was traffic on the Eden as early as 1794 and it is possible that he purchased the land with the intention of importing and exporting goods from the sea beach.

Smith sold the property in February of 1810 to George Fleming.⁶³ Fleming was conducting sea trade at the site, possibly in coal.⁶⁴ Later he sold the property to David Spence in 1830.

William Haig and the Seggie distillery (1808-1861)

At the end of the 18th and first part of the 19th centuries trade on the Eden was light. One man who played a role in boosting the traffic and economy of the area was William Haig and his Seggie Distillery.

By the first part of the 19th century, the whisky industry had witnessed ten years of severe weather that destroyed crops and caused intermittent prohibition on grain whisky production in Scotland. This however did not stop William Haig in seeking to expand his whisky operations at Kincaple, three miles NW of St Andrews. At the end of 1807 James Morrison, then proprietor of the Lands of Seggie, put the property up for sale. There was a large amount of fertile ground for growing crops

and space for animal husbandry to produce manure for the fields. The most attractive part was the small strip of sea beach East of the Kings Highway, between the Motray Water and the land of Mr. Fleming, coal merchant. This small portion of land provided easy access for sea trade and the Motray supplied water for the distilling process. Haig saw how it could be exploited for sea trade.

Haig purchased the Lands of Seggie in January of 1808.⁶⁵ He began constructing his new ‘Seggie’ distillery situated above Mr. Fleming’s property, between the sea beach and the Kings Highway, near the Motray Water. According to Cupar Burgh records the area near the pier ‘used to be covered with the sea at spring tides which is now shut out with walls’.⁶⁶ Haig erected a pier near the entrance of the Motray Water and based on the first Ordnance Survey of Guard Bridge, the pier extended between 370 and 400 feet into the Eden and was approximately thirty feet wide.⁶⁷ The end of the pier hooked to the south creating a working area approximately one hundred feet by eighty feet.

A few years after opening in 1810, the Scottish whisky industry was hit by another ban on production but in 1814 agricultural conditions had improved and prohibition was lifted. By this time England had established new laws governing whisky imports.⁶⁸ The English market had been restricted to only the largest distilleries. Those wishing to register to trade on the English market had to work from stills with a minimum capacity of 3,000 gallons and each distillery was required to have a strong financial backer. Seggie was one of five Scottish distilleries to qualify.

The whisky trade was a very volatile market and distillers did everything they could to protect their market. At one time the Haig and Stein families joined in a desperate attempt to maintain control. They paid other distillers not to enter the English market.⁶⁹ They even purchased distilleries in financial trouble, only to shut them down. This practice was far-reaching as they extended into England, where Liverpool's oldest distillery was bought and closed. This practice continued until the introduction of the Excise Act of 1823.⁷⁰

This new act was an attempt to eliminate illegal distilleries and harmonize duties by making the market readily available to the smaller distiller. The Act reduced duty on spirits, allowed the use of stills less than 40 gallons, imposed a license fee of £10 and established a duty free warehouse. Additionally, distilleries over a mile from a market town were required to provide housing for a resident Excise Officer.⁷¹ This new act broke the Stein-Haig hold on the London market and opened the market to a wider range of distilleries. Trade then expanded into the Irish and international markets with whisky exports rising in the following two years.

The Seggie Distillery concentrated mainly on shipping out distillate* to their London agent, John Robertson (followed by Robert Haig).⁷² The distillate was sent by sea to London where it was sold to be rectified into 'London Gin'. Bills for the London market averaged £10,000 per shipment creating a lag time in payments.

* During the distillation the 'wash still' separated the alcohol from wastewater to produce distillate, also called 'low wines (Moss & Hume, 'The Making of scotch whisky', pp. 13-23).

However, London was not their only market, they also had an agent in Leith, F&S Black (or L&L Black), whom they supplied.⁷³ This market drew bills of £1000.⁷⁴

Peter Robertson is the only shipowner who can be directly linked to the Seggie distillery and the London trade.⁷⁵ In 1822, Peter Robertson Sr. was a golf ball maker and ship owner in St Andrews.⁷⁶ After his death in 1836 his son, Peter Robertson Jr. inherited his property and ships worth nearly £3000.⁷⁷ Within two years, Peter Jr had increased his worth in houses and ships to nearly £4000. The financial opinion of Robertson swayed between 1833 and 1845. At times, the Bank of Scotland saw him as a safe customer while at other times they considered him un-respectable and irregular at returning bills. The Bank determined in October 1846, it was in their best interest to close his account, given his unstable history. Part of Robertson's unreliability may have stemmed from the London market since Robertson was supplying one if not more vessels to Haig for the whisky trade.⁷⁸ It was not uncommon to encounter a 'lag time' of payment for up to a year. This lag time included the time the grain was purchased until the whisky distillate was actually sold by the London agent. This, along with the unstable market, would have had a ripple effect on Robertson and in turn may have put him on bad terms with the Bank.

The *Packet*, a small sloop, is the first identifiable vessel that sailed up the Eden to Seggie in December 1817, with a load of coal. After off-loading she headed for St Andrews' harbour where she struck the Burnstool as she came into the harbour. Apparently the crew was drunk and they abandoned her where she stopped. The

incoming tide lifted her from her resting-place and carried her out to sea ^a
short distance before she sank.⁷⁹

Little else has been uncovered about the number of vessels used to transport the whisky to the markets. However, in his book *Wrecks and Reminiscences of St Andrews Bay*, George Bruce makes several references to one vessel, the *Fame* or '*Whisky Janet*' as she was referred to by the pilots. She was a topsail yard sloop which was said to belong to William Haig. Unfortunately, the Bank of Scotland account books make no mention of the *Fame* or Haig ever owning any vessels. It appears that the *Fame* may have belonged to Peter Robertson, Jr, of St Andrews who supplied ship(s) to the distillery. She made several trips to London each year, delivering whisky distillate to their agent John Robertson (who was replaced by Robert Haig in 1834). On return voyages, she would take on grain at East Anglia and/or coal from Tyneside.⁸⁰

The number of boats heading to the Seggie pier would have varied depending on demand. In the early stages of the distillery, the farms of Monksholm and Seggie produced an ample supply of grain to support production. However, by the 1840s production was so heavy that the distillery had to import large quantities of grain to augment that which they were getting from the two farms.⁸¹ The increase in demand would increase the amount of traffic on the Eden heading for the distillery. In 1850 alone, over 3,000 tons of coal were imported from Newcastle.⁸² Additional goods might have come from local ports such as Dundee or Leith.

During the middle of the 19th century, the Eden saw a large number of vessels sailing up guided by pilots from St Andrews, Tayport and Dundee. Many references of traffic to the Eden are general, stating they were bound for Guard Bridge. These could have referred to Seggie or to the quay at Guard Bridge which will be discussed later.

In the first part of the 1800s there was little industry in the St Andrews area until the distillery opened in 1810. By the early 1830s, the Haig's 'industry' had nearly 100 employees working year round.⁸³ They were engaged in every aspect, from animal husbandry, to agriculture, to the distilling process. Some time in the early years, the Haigs established a Brick and Tile works south of the Cupar-St Andrews road near the Guard Bridge.⁸⁴ This sideline business was an effort by Haig to have continuous revenue during the slumps in the whisky trade, however, this was never very successful.

During the first part of the 1830s many distilleries played the rising market. In the end many were sequestrated, including William Haig.⁸⁵ The family worked out a deal with the Bank to retail the distillery and eventually the farms were sold off, decreasing the number of employees in the Haig's service. The distillery continued to provide employment until it closed in 1861.⁸⁶

William Haig was also involved in St Andrews politics. He first entered politics in 1818 when he was elected councilor.⁸⁷ The following four years saw Haig elected to various posts within the town council and in 1822, he was elected Provost. He

served as Provost and Magistrate until 1833. While in Office he was able to raise ‘the financial affairs from a state of great depression, and left them in a flourishing condition to his successor’.⁸⁸

Andrew and David Spence (1830- c.1893?)

During the 1800s, the Seggie Distillery was one of the largest if not the largest employer in the area. Despite this, only a small portion of the traffic on the Eden can be attributed to the distillery. It can be said that Andrew and David Spence were ‘Kings of the Eden’ for the greatest portion of sea traffic on the Estuary was heading for their quay near the Guard Bridge. Andrew purchased two acres of land from George Fleming in 1830.⁸⁹ This is the same property, which belonged to George Fleming and had been sold to him by Mr. Smith in 1802. The quay, which Spence owned, is visible on the six-inch Ordnance Survey map of 1854.⁹⁰ Based on this map it appears to have been approximately fifty to seventy feet in length and twenty feet wide.

By the middle of the 1840s, the Spences had built a very lucrative general merchant business at Guardbridge.⁹¹ They conducted trade with British ports as well as ports in the Baltic and elsewhere, exporting potatoes and importing coal, grain, slate, bones and general merchandise. David and his brother Andrew also operated an extensive hand sawmill and wood yard at Guard Bridge. Between 1850 and 1857 David operated a second wood yard and saw-mill in Ferry Port-on-Craig (Tayport). He was not just a merchant in Tayport he also held the position of tide waiter for Tayport starting in 1851.⁹²

The Spence brothers owned and operated a fleet of ships. The first was appropriately named the *Woodyard*, a large topsail yard sloop.⁹³ In October 1842, the *Woodyard*, carrying a cargo of coals, paints and iron mongery, was bound for Guard Bridge from Newcastle. A Northwest gale caught her, driving her on to the Luckies near Boarhills.⁹⁴ The crew escaped while the vessel and cargo were a complete loss.

In addition to the *Woodyard*, the brothers owned six other ships, five schooners and a sloop: the *Brothers* (later becoming a Dundee lighter), the *Twin Brothers*, the *Eden*, the *Catherine Spence*, the *Marjory*, and the *Camel*.⁹⁵ Each carried about 120 tons, drawing ten feet of water. Besides their own fleet there were numerous other vessels serving Guardbridge.

Andrew Spence died before 1863 and it is unclear just how long David continued to trade on the *Eden*. According to the St Andrews harbour records, the last vessel that travelled the *Eden* was the *John Strahan* of Kirkcaldy in 1893.⁹⁶ Five years later the pier, which once served the Seggie Distillery, was engulfed by a land reclamation project instigated by the Guardbridge Paper Company, which took over the property in 1873. This project reclaimed land all the way down to, and including, the property owned by Spence (figure 7). It was during this time that the Guard Bridge quay and Seggie pier were covered and sea trade on the *Eden* ended.⁹⁷

David Yool and the Bone trade (1842-54)

The important aspect of any manure is the amount of phosphate acid present.⁹⁸

During the late 18th and early part of the 19th centuries farmers learned that crushed bones produced a high quality yet inexpensive fertilizer. The crushed bone was used alone and mixed with other manures.⁹⁹

The method of mixing farmyard manure and bone played a very important role in agriculture. Bone dust was typically employed in areas with a dry light soil. It was used on turnip fields to yield a high quality sheep food. Bone has several advantages besides being high in phosphoric acid. Its light weight makes this form of manure superior for spreading on steep slopes. On average 20-25 bushels per acre could result in a high quality crop.¹⁰⁰ Interest in the trade caught on quickly with imports moving away from bone dust to complete bones which were later crushed at local bone mills. As the trade grew, so did foreign imports. During the early part of the 1830s ports such as Kirkcaldy received regular imports of cattle bones from Holland, Germany and the Mediterranean.

During the 1820s there was little interest in the bone trade. Only six vessels, most from Hull and Newcastle entered the Port of Dundee with cargoes of bone dust during that time.¹⁰¹ James Anderson of Dundee saw the profit of the bone trade. He opened a bone mill in Peep-o-day in 1829.¹⁰² Two years later Robert Sandeman, also of Dundee, opened a second bone mill in the area.

By 1839, David Yool operated three mills in the parishes of Kemback and Ceres. The first, Yoolfield Mill, opened in 1832 and was situated on the Kemback (Ceres) Burn.¹⁰³ It was powered by a water wheel ten feet wide and thirty-nine feet high. During time of drought the water wheel was assisted by a steam engine. A short distance from Yoolfield Mill was Blebo Mill and it too was water powered with an auxiliary ten horsepower steam engine. Besides a spinning mill, the site included a meal mill, barley mill and a flax mill. Yool's third mill, Kemback Mill, was located on the Kemback or Ceres Burn, just north of the other two. The mill was driven by a 16 horsepower water wheel which operated a meal mill, saw mill and bone mill.

Mr. Yool's bone mill was a very lucrative business. Each year between 500-600 tons of bone were ground at his Kemback mill. Most of this was imported through Guard Bridge.¹⁰⁴ During peak times from 1842-1852, twenty to thirty ships were lined up at Guard Bridge and Seggie.¹⁰⁵ A great number of these were perhaps laden with bones bound for Mr. Yool's bone mill. At times the congestion was so great, Yool had the vessels beach at Martin's Point. The bones were then carted across the Links to the turnpike where they continued their journey to the mill. Between 1842 and 1852 Yool had at least twenty of his cargoes delivered in such a manner.¹⁰⁶ By doing so, he was able to avoid the congestion further up the Estuary, saving time and avoiding any landing fees imposed at Guardbridge by Mr. Spence.

Special consideration had to be taken when shipping bones in bulk. Bones that were not properly seasoned posed a serious fire hazard during shipment.¹⁰⁷ During the drying process bones have a tendency to heat up which may cause nearby

flammables to ignite. Raw bones with a high fat content posed the greatest risk. Improperly seasoned bones gave off a very pungent order. This not only made the voyage unpleasant for the crew but also posed a health risk, while any other cargo on board faced the risk of being damaged.

The bone trade on the Eden lasted nearly ten years. Mr. Yool died in 1854 taking most of the Eden bone trade with him.¹⁰⁸ The decrease in bone shipments eased the congestion on the Estuary and, after that time, Mr. Spence and Mr. Haig were the only two exploiting the Estuary for their personal gain.

General Trading on the Eden (1810-1893)

Between the opening of the distillery in 1810 and 1893 numerous boats are known to have travelled the Eden channel, some bound for Seggie while the majority headed for the quay at Guard Bridge (Appendix A). The first identifiable vessel to travel up the channel is the *John & William* of Crail in 1794.¹⁰⁹ The circumstances of its loss are unknown but it is quite possible that she was carrying cargo bound for Mr. Smith at Guard Bridge.

Before the late 1830's trade to Guard Bridge was light, exporting grains and potatoes and importing coals and stone.¹¹⁰ By April 1839, traffic on the Eden had greatly increased. In one week, Guard Bridge saw five vessels, three from foreign ports.¹¹¹ There was the galliot *Ikinawilmina* from Holland and the *Fortuna* from Germany, both laden with bones. The galliot *Enigheden* of Norway was inbound with timber and outbound with potatoes. The other two were British; the schooner

Margery delivering coal from Newcastle in exchange for potatoes, and the sloop *Eagle* with a cargo of coal. She departed laden with grains. The number of vessels visiting Guard Bridge was significant enough for the Fifeshire Journal to report on the increase in traffic in April of 1839. They further stated that ‘should this state of matters continue, we may feel it requisite to furnish our friends with a weekly shipping list’.¹¹² The traffic on the Eden continued to increase yet, the Fifeshire Journal elected not to report shipping movement at Guard Bridge and Seggie until 1847.

Eight years later the Fifeshire Journal again reported on the increase of trade on the Eden when the ports of Guardbridge and Seggie were called upon by no less than sixteen vessels.¹¹³ The majority of these called at Guard Bridge. This represented over a 200% increase in traffic and trade on the Eden. The increase supplied a much-needed boost to the local economy providing employment opportunities for labourers from the surrounding area.

One of the benefits to the Scottish Economy was Article IV and the Navigation Acts after the Union of 1707, which permitted free trade with England and their colonies.¹¹⁴ Many Scottish ports, especially on the West Coast imported goods only to be re-exported. Such was done with tobacco. In 1771 47,250,000 lbs. were imported with 45,500,000 of that being re-exported.¹¹⁵ Trade between Scotland and England was no longer considered ‘exports’ that resulted in equal duties.

The Union encouraged renovation and industry through companies that provided credit for the linen industry. The British Linen Company (later known as the British Linen Bank) opened in 1746 and was one such company. The company provided credit for a number of industries. William Haig and the Seggie distillery was one such industry which relied on credit.¹¹⁶ If it had not been for the articles under the Union, the Eden would never have been developed into a private trading centre, stimulating the economy of the St Andrews area.

Pilotage in St Andrews and the Eden Estuary

Traditionally fishermen who did not stray far from their port acted as pilots. St Andrews and the Eden were no exception.¹¹⁷ Much of the history of the St Andrews pilots is obscure. The loss of the *John & William* on the Eden in 1794 indicates trade was carried out on the Eden during this time, most likely with John Smith at Guardbridge or with the crofters and tenants at Leuchars Port. During the first part of the 1760s, the St Andrews harbour was home to five fishing yawls. This changed one November day in 1765 when a storm caught the yawls out at sea. The fishermen made a desperate attempt for the safety of the harbour. When it was over, all five yawls were destroyed and twelve men lost their lives, destroying the fishing fleet in St Andrews.¹¹⁸ It would take nearly forty years for the town's fishing industry to start a recovery. The death of these men could have ended any pilotage on the Eden. Vessels like the *John and William* were left to find their own way.

During the 18th century, trade was quiet in the harbour and Eden. One aspect of the decline may have been the result of the 1765 disaster. The town had few, if any, fishermen to act as pilots until the last one hundred and fifty years. Many ports and harbours depended on the fishermen, as there were no full-time pilots. Montrose was one such port where the fishermen acted as pilots to supplement their income as requested.¹¹⁹ The fishing industry in St Andrews slowly began to rebuild in the first part of 1802. The rebuilding of the industry brought men who were willing to act as pilots and shortly thereafter, trade at St Andrews and the Eden started to increase.

In many harbours, pilots had two licensing options. They could be licensed either through a local authority, such as a town council, or Trinity House of Leith. It appears that those granted by a local authority were restricted to working within the bounds of the issuing authority. Those licenses granted by Trinity House of Leith had a wider working area, specified in each license.¹²⁰ The St Andrews Town Council did not exercise ~~over~~ licensing ~~authority~~ until the late 19th century. Previously those who wished to become licensed did so through Trinity House at Leith. Andrew Brown (pilot) indicates in a petition of 1876, that St Andrews was a creek that fell under the Port of Dundee.¹²¹ If this was the case, then they should have been licensed through the Port of Dundee as the Dundee pilots were. Brown pointed out that in ten years he had paid Trinity House a total of £15 for licenses and was unwilling to continue paying an outside body each year when the money should go to the town. But there was no reason at that time for St Andrews to be different from other ports.

Pilots working out of St Andrews harbour can be divided into two categories, those who held a license and those who did not. Based on the number working the area without licenses, it appears that neither Trinity House nor St Andrews Town Council enforced any form of licensing requirement. Between 1836 and 1897 Trinity House (Leith) licensed five St Andrews' fishermen as Burgh (branch) pilots.¹²² After that time, the St Andrews Town Council started issuing licenses. Between 1898 and 1906 a minimum of four individuals received licenses.¹²³

Branch Pilots (Licensed)

Between 1836 and 1906 there were ten licensed pilots working out of St Andrews harbour. George ‘Geordie’ Wallace (1836), John Wilson (1836), Andrew Brown (1846), William Chisholm (1847), Alexander Henderson (1852), David Gardner (1858-1868), Andrew Harley (1863) and John Miles (1868) were all licensed through Trinity House (Leith), and each paid £1 pound 1 shilling per year¹²⁴ (Appendix B). The remaining three, Alexander Chisholm, James Gourlay, and William Chisholm Jr. were licensed under the authority of the St Andrews Town Council.¹²⁵

George ‘Geordie’ Wallace was one of the early pilots in St Andrews¹²⁶ and was the first fisherman who became a licensed pilot in April 1836.¹²⁷ Andrew Duncan and William Stobie acted as his crew. His (their) license covered ‘Leith roads Eastwards to St Abbs head on the South side and the Red head on the North side of the Firth of Forth thus to St Andrews, the creek Eden Firth & River Tay to Dundee Roads. He died near the age of 80 (c.1868).

John Wilson (also known as Jack) received his branch license two weeks after Wallace (1836) with David Crighton and P. Mitchel as crew.¹²⁸ He first came to the Eden after officials at Trinity House indicated to him that the channel was navigable. Wilson had his license suspended c.1867 but the nature of this suspension is uncertain. Based on a memorial signed by thirteen individuals the suspension was due to false statements made against him with little supporting evidence.¹²⁹

The date of Wilson's re-instatement is unknown. He had been suspended at least until 1870, if not later.¹³⁰

By the 1870s, Wilson took on additional responsibilities of maintaining the turret and pier lighting. For his trouble, the town paid him an allowance of £3.10.¹³¹ During a deposition for Bruce, he recounted an incident relating to the mussel scalps and how they had filled the channel.¹³² On one occasion in December 1880, Wilson piloted the *Jessie*, a potato-laden smack drawing nine feet of water, down the Eden. Twice that day the *Jessie* found herself grounded on the north bank due to the build up of mud and mussels in the channel.

Andrew Brown soon joined Wilson working the St Andrews Bay. He had visited the Eden since 1832,¹³³ and received his burgh pilots licenses in 1846 from Trinity House (Leith).¹³⁴ His crew consisted of Thomas Goodfellow and Thomas Brown, both fishermen. A. Brown, like most, worked as a fisherman and acted as a pilot to supplement his income. During his first 'tour' as pilot in St Andrews, 1842-1852, traffic on the Eden was quite heavy with as many as twenty-two vessels at one time visiting Guard Bridge and Seggie.¹³⁵ At times traffic on the Eden was so heavy that boats carrying bones for Yool's bone mill, were said to have beached at Martin's Point.¹³⁶ This appears to have been some what of a regular practice as Brown states that he had seen 'at least twenty vessels discharging bones' at the location at different times.

In 1850 Andrew and his brother Jamie were chosen, or as Andrew saw it, pressured, by the town council to take up residence at Boarhills.¹³⁷ The move was intended to support a forth-coming lifeboat. As an incentive Mr. Adamson gave each of the two brothers a house free of charge. In addition Mr. Russell gave them a small plot of land for a garden. Unfortunately this move extended the distance that Andrew had to walk after piloting a vessel up the Eden or to Dundee. Two years later in 1853 Andrew and Jamie migrated to Australia.

Andrew Brown returned to St Andrews (pre 1876) to take up piloting this time, at the request of Trinity House (Leith). He worked as an assistant pilot with Alexander Harley for some time before quitting after a number of incidents. In 1876 Brown filed a petition with the Town Council indicating that the pilots of St Andrews were ‘inadequate’ to meet the shipping interest of St Andrews. He called for the Town Council to take up their legal right of licensing pilots. Brown felt so strongly that from that time onward, he refused to be licensed through Trinity House and would only accept a license from the Burgh of St Andrews. After this date there is no further record of Brown ever being licensed or acting as pilot.

The fourth pilot licensed in St Andrews was William ‘Willie’ Chisholm who was one of St Andrews most active and daring pilots.¹³⁸ In 1841 Chisholm was a fisherman acting as a pilot who later received his Burgh pilots license in 1847.¹³⁹ His crew consisted of Tomas Miles (master of *True Blue*) and Alexander Sine (master of the *Janet*). According to Bruce, ‘Rough Willie’ had never gone to school and could not read nor write but learned from. Evidence does support this as the

Pilot's Bond book was signed 'William X Chisholm'. He took the exam twice before passing. Unlike many others, Chisholm was restricted to St Andrews to Carolina roads to include St Andrews' harbour and the Eden River. He died in 1871, at the age of 60 from a chest infection, which he may have obtained while piloting a steam tug and the schooner *On-ward* of Goole up the Eden to load at Guard Bridge.¹⁴⁰

The fifth was Alexander (Sandy) Henderson and his crew, David Pringle (merchant) and William Boyd (Coast Officer) 1852.¹⁴¹ Henderson's life drew little attention in Bruce's work. In April 1863 Henderson and several of his colleagues were entering the harbour during rough seas. He was struck by a loom (handle) of a oar, knocking him overboard, and drowned at the age of 52.¹⁴²

David 'Davie' Gardner, the sixth licensed pilot, first appears as a pilot c.1838,¹⁴³ however he did not receive his license until 1858.¹⁴⁴ David Pringle (merchant) and John Mackie (shipmaster) worked as his crew. In 1863 Pringle was replaced by James Paterson. Gardner gave up his license in June 1868 due to failing eyesight.¹⁴⁵

Seventh was Andrew Harley who received his branch license in November 1863.¹⁴⁶ There is little information regarding him. James Gourlay was a member of his crew between 1893-1896. No evidence was uncovered indicating what the misconduct was which A. Brown referred to in his petition of 1876.¹⁴⁷ Harley died in 1897.

John Miles was the last pilot in St Andrews to be licensed by Trinity House of Leith in 1868¹⁴⁸. His crew consisted of Henry Gibson (timber merchant) and David Anderson.

Council Licensed Pilots

Local licensing in St Andrews occurred in 1897 with a provisional order relating to the Pier and Harbour Act of 1861.¹⁴⁹ This provisional order granted the St Andrews Town Council powers over pilotage and local authority within the harbour. The limits of the harbour did not include authority of the Eden Estuary, therefore this license did not give the pilots the authority to take vessels into other ports or harbours. Between 1898 and 1909 there were two families actively piloting in St Andrews, the Chisholms and the Gourlays.

One of these was James Gourlay who formally applied for a burgh pilots license in July 1896 with James Deas and George Bruce.¹⁵⁰ Gourlay had acted as assistant or crew to Andrew Harley (burgh pilot) for two years. He had five individuals attest to his qualifications but his application was rejected due to his lack of sea service. J. Gourlay subsequently received a localized license from the St Andrews Town Council in 1898/9.¹⁵¹

The last license to be issued by the St Andrews harbour master was to Andrew Chisholm in 1906.

Non-licensed Pilots

Bruce speaks of a number of fishermen acting as pilots for St Andrews. After 1838 these men acted in violation of the by-laws of the Corporation of Trinity House which set the regulations of pilotage.¹⁵² Those men which violated the by-laws faced a fine as did the masters of the vessels. In all probability men indicated as pilots were actually crew members of a licensed pilot.

Prior to Trinity House of Leith being granted authority to examine and license pilots any fishermen could act as pilots. The two earliest (non-licensed) fishermen acting as pilots in St Andrews were George ‘Geordie’ Wallace (licensed in 1836) and Walter ‘Wattie’ Fenton. They started piloting in St Andrews around 1814. Of all the early pilots, these two were the first ones to be listed in the census of St Andrews as pilots. The rest of the pilots are stated as fishermen.¹⁵³

By 1821, Fenton and Wallace were the only fishermen acting as pilots for St Andrews harbour and the Eden. At times they were preoccupied with fishing or drinking grog and refused to act as pilots. One such incident occurred in December 1820, when Peter Robertson, requested Wallace and Fenton to pilot the *Southwick* into the harbour. They both refused.¹⁵⁴ As a result her crew had no choice but to bring her in themselves. They experienced difficulties nearing the pier and were driven onto the East Sands. The following week Wallace and Fenton again refused to pilot a vessel. This time it was the ‘*Jane and Mary*’, owned by Charles Wemyss. The crew decided not to enter the harbour. Instead they headed for Anstruther harbour. She encountered bad weather on the way and lost ‘her cable and anchor,

her boat and bulwarks and everything that was on the deck' before reaching the harbour at Anstruther.¹⁵⁵

Wemyss and Robertson, both shipowners of St Andrews, filed a petition with the Provost and Magistrates of St Andrews. The petitioners claimed that the two pilots did not act within the 'practice and regulation of the harbour of St Andrews', placing life and property at risk as well as an inconvenience to all.¹⁵⁶ They sought compensation in the amount of £20 each to cover the damage sustained by both vessels as a result of their actions.

Alexander Wilson was the next fisherman to become a pilot. He had been piloting ships up the Eden since 1823. In that year, he was on the Eden piloting the *Charles & Agnes* when a winter storm struck. Supposedly, the snow was so deep that 'he could not get up to St Andrews nor the rest of the crew of the '*Charles & Agnes*' out to him for two days.'¹⁵⁷ John Wilson, Alexander's brother soon joined him as a pilot (licensed 1836).

On occasion there were individuals who violated the Regulation of Pilotage Act of 1837-38.¹⁵⁸ One such was Robert Chisholm, William Chisholm's (burgh pilot) son. In July 1861 R. Chisholm struck and damaged Alexander Henderson's and John Wilson's pilot boats as he brought the *Euphema* into St Andrews harbour.¹⁵⁹ The only experience he had was that of a fishing boat, not a trading vessel.

Due to a lack of information on a number of fishermen acting as pilots or crews, they are not discussed. A list has been compiled citing those men whom were indicated in various sources (Appendix C).

Charges for Pilotage

Only one example of fees was discovered which dates to the late 1850s. At this time, the pilots charged 10 pence per registered ton for a foreign vessel and 6 pence for home coasters needing to pilot a vessel into St Andrews harbour or the Eden. The rate had a heavy impact on the amount of trade conducted. The effect was such that in 1859, a local wood merchant filed a petition with the Town Council, claiming he was having trouble getting his wood delivered to St Andrews as a result of the high pilotage fees.¹⁶⁰ The Council did not settle the complaint and it was presented to Trinity House, Leith. They agreed with the merchant and cut pilotage fees in half: 5 pence per registered ton for foreign vessels and 3 pence for home coasters.

Pilot Rivalry

There was much rivalry between the pilots, especially between ‘Willie’ Chisholm and the Wilson brothers (Alexander and John). Jokes were frequent, some not as humorous as others. One such story goes that Alexander and John were piloting the *Happy* in to the harbour, when ‘Willie’ decided to throw a stone through her bottom.¹⁶¹ The Wilson brothers just made it ashore before she sank and John threatened to ‘split’ Willie’s skull open. The story does not end there. Chisholm lived above the Wilsons and soon bored a hole in the floor above Alexander’s bed;

he then proceeded to dump scalding hot water down the hole, on top of Alexander. This is just one of many incidents which went on amongst some of the pilots. Neither party stayed angry long as they were back in the pub soon after, drinking side by side.¹⁶²

19th Century Navigation on the Eden Estuary

The depth of the channel was a concern for those navigating the Estuary. When the *John & William* of Crail was lost in 1794 traffic on the Eden was light.¹⁶³ The records do not indicate if she grounded or was caught in a gale. It does state that the vessel and cargo were a total loss. Three buoys were on the south side bank, two on the north and the one ‘sea buoy’ on the Eden bar. Their exact location is unknown. It is probable that they were introduced after 1814 by William Haig and George Fleming. The buoys might have been made of wine or beer casks, marked in a way to indicate the safest passage. It is possible that they had been patterned similarly to those on the Tay in 1859 with the port hand indicated by a black buoy and the starboard hand by a red buoy.¹⁶⁴ The sand bar at the mouth represented the first and most dangerous hazard when entering the Estuary because it was continually shifting and growing. Only during high tides could vessels pass over while at any other time they would have ran aground.

Little else is known about the buoyage system of the Eden or who might have established and maintained them. No records were discovered to indicate that the town of St Andrews had any interest in improving the Eden, as this would have drawn traffic away from the harbour. In 1893 there was an unsuccessful attempt

made to uncover when (if any) shore dues had last been collected at Guardbridge.¹⁶⁵

Based on the Town's apparent lack of interest in the Eden, it is probable that they had no power to collect shore dues, at least from the area of Martin's Point westward.¹⁶⁶

Neither the First Ordnance Survey nor a plan showing the mussel scalps in the River Eden (dated 1867) indicate any buoys.¹⁶⁷ They do however, indicate the presence of two beacons. The term 'beacon' has its root in the Low German word 'bake' which means 'signal pole on or below the water line'.¹⁶⁸ The plural is 'baken' altered slightly to become 'beacon' today. They were situated near the mouth of the Eden, approximately 2700 feet north of the 'Dandy' mussel scalp. It is impossible at this point to determine what form these beacons took.

The exact dates for the buoys are not known. It is suggested that they might have coincided with the opening of the English market in 1814. Even with the channel buoyed, vessels still grounded and were lost. One such possible incident was that of the *Elizabeth Durham* in 1838. According to an index for the Fifeshire Journal the paper ran a story on 4 January 1838 indicating that the *Elizabeth Durham* had wrecked at Seggie. Unfortunately the page which contains this article is missing and therefore it can not be confirmed. Other sources indicate that she ran ashore at Danes Wark, behind St Andrews Pier on approximately the same date.¹⁶⁹ Bruce also talks of the incident, indicating that she struck the 'Lady Craig', loosing her cargo of coal.¹⁷⁰ She was later repaired at Pittenweem only to be lost in the Firth of Forth. Twenty years later in 1856, the *True Blue* of St Andrews ran aground in the

Eden.¹⁷¹ She was heading for Queensferry, with a cargo of small potatoes when she grounded in the sand. She filled with the tides and became a total wreck.

The reclamation project carried out by the paper mill (1898) and the mussel farming on both sides would have contributed to the buildup of silt and mud in the channel. This build-up lead to the grounding of several vessels during the last part of the century. In December 1880 Andrew Brown piloted the *Jessie*, carrying a cargo of potatoes down the Eden. She grounded twice on the north bank, drawing only nine feet of water.¹⁷² According to Brown the channel had ‘filled up with mud and mussel scalps by two landed proprietors, who have no chartered right to the mussels, or to interfere with the channel of the ‘navigable river’’.¹⁷³

Brown indicated seeing as many as twenty-two vessels at Seggie and Guardbridge and numerous vessels discharging bones at Martin’s Point.¹⁷⁴ He goes on to state that ‘before so many vessels could get up now the channel would have to be dug out again!’ This is the only reference uncovered to the possibility of the channel being dredged of mud and silt. It does give some weight to the idea that during the last part of the 19th century the channel may have been dredged to clear away the silt and mud, which the artificial mussel bed had caused to build up. If grounding were a regular occurrence then conflict between the mussel men (on both sides) and pilots were surely to have occurred. If the merchants were the ones to initially have buoyed the channel then they may have dredged areas to protect their investments. However, there is no other evidence to support either of these scenarios.

During the 1840s the mussel men on the town's scalps reported that the depth of the channel at high tide ranged from fourteen feet (near Martin's Point) to twenty-four feet near the Out Head.¹⁷⁵ Assuming that the *Jessie* was drawing nine feet of water, the most probable place for her to run aground would have been just east of Martin's Point. During the 1840s this area offered roughly five feet clearance during high tide. By the 1880s the build up of mussels in the channel would have reduced the depth and, in all probability, caused vessels to ground. In June 1889 the SS *Curfew* of Glasgow, carrying a cargo of china clay for the Guardbridge paper mill (discussed in part II) ran aground on the south side of the channel after refusing to take on a pilot.¹⁷⁶

Salvage & Rescue

In most Scottish fishing villages fishermen not only acted as pilots but also carried out salvage and rescue operations. St Andrews was no exception. The fishermen, pilots and town folk took every opportunity to salvage when they could. The fishermen and pilots of St Andrews also volunteered to man the lifeboat. Andrew Brown and Willie Chisholm were just two of the pilot-fishermen who actively salvaged and volunteered on the lifeboat.

The motivating factor behind many of the pilot's and fishermen's actions, whether it was piloting a vessel, bringing in a vessel in distress, salvage or volunteering for the lifeboat, was some form of gain. Any opportunity that arose was taken in search of payment. A prime example of pilots and fishermen seeking salvage comes from the stranding of the *Po* of Yarmouth in the winter of 1845.¹⁷⁷ She was caught in a

south-easterly gale and was forced to anchor near the Eden bar. The St Andrews lifeboat was called out with John Wilson (pilot) acting as coxswain. The lifeboat removed the crew from the ship and they retired to Mrs. Bell's public house. It was the intention of the crew to return to the vessel and continue their voyage to Dundee once the storm sub-sided. Unfortunately, they made one mistake, they left their distress flag flying high with no one on board.

Andrew Brown (pilot) was quick to see their error and took full advantage of the situation. He assembled his brother pilot Willie Chisholm, and his brother Jack, Thomas Melville, Thomas Martin, Robert 'Bob' Hutchison (son of the deceased pilot Bob Hutchison), and Willie Harvey. Brown and his crew were able to hoist the anchor and set the sails in time to catch a south-west wind before her crew could stop them. They set out for the Tay and the port of Dundee. Brown and the crew held the *Po* for salvage. In the end her captain, on the advice of the insurance company, paid Brown £200 pounds for salvaging his vessel. He gave each man £20 and kept the rest for himself. In addition Brown was paid £3 pounds for damages done to his boat during the salvage process. In many eyes the seven acted as 'pirates' and should have been dealt with as such. In reality they were justified in their actions, despite their unethical way of doing so.

The general feeling about the 'pirates' who made off with the *Po* was a mixture of anger and admiration, especially by Provost Playfair who believed that if they could face the savage sea and save the *Po* then they could handle a leading part in the lifeboat crew. A short time later Brown was appointed to the position of coxswain

of the lifeboat'.¹⁷⁸ Willie Chisholm took his place seven years later when Brown departed in 1852, for Australia.

Even when the lifeboat was not called out, pilots responded to ships that were just short of being in distress. Putting their life in danger they reaped economic gains.¹⁷⁹ The pilots would board a vessel and offer to take her into the safety of the harbour, for a price. During adverse weather conditions the rate was higher, as many captains would not want to risk the loss of the vessel and would agree. One example is that of Willie Chisholm and a Dutch Galliot in 1847.¹⁸⁰ She was bound for the Eden loaded with bones when she found herself riding heavy off the pier head. Chisholm quickly went to her aid and after striking a deal with her master he brought her safely into the harbour. On some occasions, the masters were unwilling to pay the agreed rate once safely in the harbour. In these instances the pilots could appeal to either the town council or Trinity House.¹⁸¹

Introduction to the Mussel Industry

‘Once, long ago, a subtle serpent spoke
In Eden’s garden, ere a vow was broke –
Before our frail, unfranchised Mother, Eve,
Gave trusting Father Adam cause to grieve.’
(George Bruce, 1884, ‘A mussel’s complaint’)

The economic development of many coastal villages can be attributed to the exploitation of mussel scalps; ‘one of the oldest and most remarkable industries in Scotland’.¹⁸² Areas such as the Clyde, Firth of Forth, Tay Montrose and St Andrews all had extensive mussel scalps. During the 18th and 19th centuries these scalps were exploited for use as bait in the line fishing industry.¹⁸³ Fishermen knew the value of the mussel as bait but few, however, saw their true economic value until the 19th century. The Scottish line fishing industry saw a major increase during the 19th century with nearly 50,000 fishermen using mussels as bait.¹⁸⁴ It was this increase that brought out the true economic value of a mussel scalp.

By the 19 century the demand for mussels was so great that suppliers had a difficult time maintaining the supply. When mussels were not available, limpets, lug worms, cockles, sand eels, and buckies were all used as alternates varying with the region.¹⁸⁵ Fife for instance used lugworms, limpets and sand eels and St Andrews fishermen used the white oval ‘Mya Arenaria’ (*Lutraria elliptic*) shells.¹⁸⁶

For many, obtaining mussels was a very laborious task. In most villages the women and children were responsible for much of the bait gathering. In some cases, they walked several miles with their baskets to the mussel scalps.¹⁸⁷ During low tide,

many of the scalps were revealed. These were the ones that they sought. They would place what they had collected by hand into their baskets. If they missed the tide or they sought more, they would wade out into the water. Upon collecting their supply, they would make the return trip back to their homes with the mussels on their back. The problem with this simple method of collection was that the women and children walked all over the scalps in search of the best, destroying more than they collected.¹⁸⁸ They were very selective in collection. The preferred size was 2 to 2 ½ inches or larger and came from deep water as they stuck to the hook better.¹⁸⁹

Many fishermen did not have the luxury of a scalp nearby and had to buy their supply in bulk from other villages some distance away. Boats from Banff or Whit ehills took three days to travel to Tain. Fishermen from Fraserburgh & Broadsea traveled to Newhaven or around the West Coast to Glencoe^e for bait. Given proper conditions the men could make the trip in ten days return.¹⁹⁰ In 1889 it took two boats from Peterhead twenty-six days to travel to Ballachulish and back.¹⁹¹ Aside from traveling a great distance fishermen may have encountered long queues during times of great demands. This happened several times in the Firth of Forth, with upwards of 30 boats queuing for three weeks to load.¹⁹²

The fishermen could not afford great delays in receiving bait, nor could they travel great distances on a regular basis so several boats were sent to secure an adequate supply of mussels to last the entire year. In doing so they had to have a storage facility, natural or artificial, to maintain the mussels. One such group was the 18th century fishermen of Nigg.¹⁹³ A boat(s) was sent to a mussel scalp such as

Montrose to purchase a large supply of mussels. Upon returning the mussels were divided amongst the fishermen. The rocks along the shoreline would be covered with the mussels during low tide. Within two tides (24-36 hours) the mussels would become affixed to the rocks creating an artificial scalp.¹⁹⁴ The mussels continued to grow until they were needed. The fishermen of Banff had a similar method.¹⁹⁵ Each fisherman had his own area of beach, usually ten to fifteen feet square. They would lay out the mussels during ebb tide creating an artificial scalp on the beach. Similar methods of storage were used at Helmsdale, Lovat Estate, Burghead, Buckie and Cullen.¹⁹⁶

By the end of the 19th century natural mussel scalps had been over fished and were in a poor state. Many were not being maintained or controlled and the quantity and quality quickly dropped.¹⁹⁷ In a ten-year time 30,000 tons of mussels were removed from the scalps at Glasgow resulting in complete exhaustion.¹⁹⁸ The scalps were abandoned. It was the herring season that prolonged the life of many scalps since this eight to twelve week period each year permitted the scalps to rest. There were a few exceptions such as Montrose, and to a lesser extent St Andrews that had been managed. The decline in quantity and quality was due to the poor management (if any) and the random fishing of scalps.

History of the St Andrews Mussel Scalps

The economic value of cockles and mussels gathered at the Eden Estuary can be traced back to 1579. During this time period, a load of cockles or mussels leaving by way of the port, ‘called the Lady Burn or Water of Eden’ had to pay one penny per load.¹⁹⁹ The customs paid on a load of mussels or cockles was equal to one cow or four dead sheep.

Charters and History to 1765

The value of the mussels was recognised in 1579, which led to the first grant of the mussel scalp(s) in December 1611 when George, Archbishop of St Andrews granted the mussel scalp to the burgh of St Andrews. In this contract the Archbishop granted the ‘the Landis of pilmure | That pece land callit the salt gers | The linkis of Sanctandrois as the samyn lyis in lenth and breid | *with the Mussill Skalp as far as the sea flows and reflows*’. They paid ‘sex pundis money’ yearly as a tribute for the ‘landis of pilmure | the Linksis | the Mussilscap and pece land callit the salt gers’.²⁰⁰

This grant later became known as the ‘Ratificatioun of the contract betuix the Archiebisshop of Sanctandrois and the Citiie of Sanctandrois: with a reservatioun in favouris of the Lord Lyndesay’ (later referred to as the Ratification of 1612)²⁰¹ was confirmed by Parliament in October 1612.²⁰² It played an important part in the development of St Andrews. It granted the burgh the right to the mussel scalp(s) and declared the city a free royal burgh and a city of Regality (commonly called a Royal Burgh) with all the rights and privileges thereof. In return, the burgh was obliged to pay a tribute of ten merks each year.²⁰²

In 1614 Archbishop Gladstane granted a charter that makes two references to the mussel scalps both in different wording.²⁰³ The first reads ‘the lands of Pilmuir; the lands called the Salt-grass; of the lands called the Links of St Andrews to the Water of the Eden, *with the Mussill Skalp as far as the sea flows and reflows;*’ A few lines down from this is a second reference stating:

‘all and each, the lands of Pilmuir, and the piece of land called the Salt Grass; all and whole the lands called the Links of St Andrews, as far as they lie in length and breadth to the Water of Eden, as far as the sea flows and reflows, and the Mussill Skalp adjoining the same with its pertinents’.

The second charter to ratify the contract of Archbishop George was by King James in 1620.²⁰⁴ This charter states ‘all and each the lands of Pilmuir, and that piece of land called the Salt-Grass; all and whole the lands called the Links of St Andrews, as far as they lie in length and breadth to the Water of the Eden, as the sea flows and reflows, *with the mussel-scalp adjoining the same with its pertinents.*’

During the 19th century, these three charters raised a number of questions as to the legal rights of the inhabitants and the town council to the scalps. In considering the wording of the Ratification of 1612, ‘with the mussill scap to the watter of edin as the samyn ebbis and flowis’ the usage of the word ‘to’ should be considered. Based on the idea that the ‘water of edin’ is the channel at ebb tide, it might indicate that the burgh only had rights to the south side, or ‘to the watter of edin’. Gladstane’s charter of 1614 gives two different descriptions which make things a bit more confusing. First, he added in ‘with the Mussil Skalp as far as the sea flows and reflows’. This could imply that the burgh had the right to the scalp anywhere within

the tidal reach giving rights as far as Nydie.²⁰⁵ The second clause in Gladstane's charter implies they only have the right to the scalp 'adjoining' the Links of St Andrews or on the south side of the channel within the tidal reach. King James' charter is identical to the second phrase in Gladstane's charter. In each charter, the word mussel 'scalp' is in the singular form. A 17th century map of the region by Blaeu depicts one 'Musels Scaps' near the mouth of the river Eden (figure 8). This might be the scalp that the charters refer to.

The mussel scalps must have played an important role in the 16th and 17th centuries as indicated by the customs paid and the charters. In addition, why would Blaeu take the time to add in the detail of the 'Musels Scaps' while he left off large amounts of other details? The economic importance of the mussel scalps seems to have died off between the 17th and 19th centuries; at least there were no disputes over the mussels in the Eden until the end of the 18th century.

St Andrews Scalps 1765-1804

The first incident over the mussels in the Eden was in 1765, when tenants and crofters on the North side collected mussels from the Eden and sold the mussels to fishermen of Johnshaven and Auchmithie.²⁰⁶ The town council informed Mr. Lyon, factor for the Estate of Leuchars, and Mr. Wemyss of Earlshall (proprietors on the North side) of the town's legal rights to the scalps. Both men agreed to inform their tenants to stop taking mussels from the Eden.

Four days after the Magistrates informed the Council that the north side had been poaching from the village's mussel scalps, the St Andrews fishing fleet was destroyed.²⁰⁷

For the next thirty-five years, the burgh depended on 'the coast' for fish.²⁰⁸ Its use of mussels as a food source increased during this time as indicated by a receipt dated 10 August, 1802. It authorized an individual to gather a cartload of mussels and sell them within the city.²⁰⁹ For this privilege a duty of 3 shillings 6 pence was paid. It was not until 1803 when Cathcart Dempster, Dean of Guild, convinced the town council to bring two fishing boats with crews down from Bressay Sound that the fishing industry returned to St Andrews. The amount of bait used by the fishermen was small and the council permitted the fishermen to collect bait free of charge.

The Agreement of 1805 and the Letting of the Town's Scalps

In 1804 a dispute arose over the legal rights to the mussel scalps in the Eden Estuary between the Burgh of St Andrews, Robert Lindsay of Leuchars and Robert Henderson of Earlshall. An agreement was made in January 1805 between the town and the two proprietors.²¹⁰ The town gave up all their claims to the mussel scalps north of the fresh water track and the proprietors gave up their rights, if any, to the mussels south of the fresh water track.²¹¹

Three months later the town advertised the mussel scalps on the south side of the Eden for let by public roup.²¹² Ironically they were let to John Hedderwick, a tenant of Reres Farm, Earlshall for four years.²¹³ The rights of the inhabitants of St Andrews were protected by a clause in the agreement of roup permitting the gathering of bait free of charge.

The town had not yet realized the potential of the scalps as a source of income and let the scalps for a fraction of their true value. In 1819, the rent of the scalps was only £21.²¹⁴ The Leuchars proprietors were well aware of their value as early as 1809 and demanded £100 per let.²¹⁵ Despite the low rent, the town was persistent on collecting. Alexander ‘Snuffy’ Watson was a tenant of the town’s scalp during 1829. He failed to pay his rent and the town had him arrested.²¹⁶ Watson was unable to pay the rent and appealed to the council. Watson gave up his claim to the scalps along with his boat in leu of payment for his release. This is the first instance of imprisonment concerning the town scalps.

The cultivation of mussels in the Estuary officially started during Messrs. J. and A. Berry’s lease of the north side scalps (1809-1824).²¹⁷ They discovered by moving half-tide mussels from the shallow water to deeper waters they matured faster with a two-year growth rate. They transplanted most if not all of the half-tide mussels into deep water. No doubt, this created several new artificial scalps on the north side.

The demands for a larger supply required additional labour, which drove up the price per basket. The Berry's employed up to ten men at a time depending on the demand.²¹⁸ They supplied bait to fishermen from Pittenweem, St Monance, Anstruther, Cellardyke, and Buckhaven with boats coming from as far north as Peterhead and Aberdeen.²¹⁹ At times up to twenty fishing boats were lined up on the north side waiting for bait.

During the middle of the 1830s, ~~the brothers J + A.~~ Berry gained control of both sides of the Eden. A. Berry held the lease of the Leuchars scalps from 1833-1856, while ~~his brother~~ John held the lease of the St Andrews scalps from 1832-1844.²²⁰ It was during this time that the scalps on the south side were first cultivated. John had transplanted many of the half-tide mussels from the south side onto the north side. This practice was in theory good, as they were taking the seed from the larger more productive scalps on the one side and transplanting them to the opposite side. However logical, they left out one important factor: they ignored or forgot that the two sides of the Eden were owned by separate proprietors. The St Andrews fishermen quickly put an end to this practice in November 1833, when they filed a petition with the town Magistrates.²²¹ John Berry was found to have violated the conditions of let, which stated:

‘to gather mussels with their hands alone, and prohibited from using spade, shovel, or any instrument whatever in collecting or gathering of the Muscles or which may have the least tendency to injure or destroy the same, or to lay boats on the scalps, or drive Carts or Horses thereon, with regard to which, as well as to using any Instrument or Machine whatever in collecting the said Mussels, so as to hurt the said Mussels, or any part of them, under a penalty of Ten pounds Sterling for each offence, Besides being obliged to indemnify the said Provost &c and

their successors in office the proprietors, of any loss, or damage which they may thereby sustain'.²²²

The Berrys had learned through experience that the best way of gathering mussels was with a specially designed rake from a boat.²²³ They found that this method was much less injurious to the mussel scalps than gathering by hand. The town saw this method, no matter how beneficial as a violation. The use of boats on the scalps appears to have been adopted sometime after. Prior to this time it appears that the use of boats was allowed as seen when Alexander Watson gave up his boat as part of the settlement of his debt in 1829.²²⁴ However, this was not the point. The real issue was the removal of seed mussels from the south side to the north side. John Berry had (potentially) caused great harm in both the supply of bait mussels and the supply of meat mussels, to which the whole parish had a right.²²⁵ The council allowed J. Berry to continue working the scalps until the end of his lease in 1843.

Near the end of J. Berry's lease, the brothers determined that if they could not transplant the seed to the north side then they would change the course of the channel by diverting it southward. They believed that this would extend the boundary to include some of the scalps on the south side. The Berrys had not taken into account the 'Agreement of 1805' and the clause concerning future alterations to the channel.²²⁶

With the election of Hugh Lyon Playfair came the end of the leasing of the St Andrews scalps. It was his guidance and the concerns of the fishermen that the council was driven to consider retaining control of the scalps at the end of John

Berry's lease. The council decided in December 1843, to retain the scalps in town control. The initial estimated outlay was £59 for the first year²²⁷ (Appendix D).

Description of Scalps in 1843

This section takes a brief look at the six St Andrews scalps of 1843.²²⁸ The names of the scalps vary from time to time and source to source. An attempt has been made to indicated the name of each bed as stated in council minutes with its possible corresponding map name on figure 9 indicated in brackets to the right. Each scalp is listed East to West: (1) The *Little Stell* (unmarked scalp possibly East of the *St Andrews Sleek bed*). It was believed that the scalp was natural.²²⁹ However, John Berry (previous tenant) was in the practice of transplanting or seeding and this scalp may have been started as the result of his work.

(2) The *Main Shore* scalp was natural with an unknown formation date. The scalp lay on the bank of the channel a short distance above the low water mark. The scalp was submerged approximately twenty-four feet during high water.²³⁰

(3) The *Green Dod* scalp was natural and was the largest of the town's scalps at that time. The north end of the scalp ran to the middle of the channel and reached depths up to 24 feet during high tides while the opposite end lay well above the low water mark reaching depths of 14 feet at high tide. This difference in depth resulted in an uneven growth rate, varying between two and four years on the landward end.

(4) The *St Andrews Sleek* scalp is believed to be the original mussel scalp in the Eden. It is possibly the one depicted on Blaeu's map of 1612 (figure 8). This may have also been the 'scap' referred to in the grants and charters of 1612, 1614, and

1620. The Sleek scalp is the furthest inland scalp except for the *Little Stell* scalp (unmarked). Its location provided ample time for the inhabitants of the burgh to collect bait and meat mussels by hand. These mussels took an average of seven years to mature as they were left dry for the longest amount of time. As a result, the scalp was used primarily as a seedbed.

(5) The *Sandland Bank* scalp was a naturally occurring scalp located just East of Martin's Point (Coble Shore) along the channel. The steep banks left the scalp dry at times, which arrested the maturity rate to three or four years.

(6) The *Great Stell* scalp (*Pond Brae scalp*) was a natural scalp opposite Martins Point. It was the smallest and furthest scalp from the sea and continually covered with water.

Access to the scalp was gained by way of the mussel road (cart road), which originated near the Swilken Burn and the St Andrews' ladies golf club course (1886).²³¹ The road bisected the ladies course and followed a WNW direction terminating SW of the out head near the New Scalp (Wyllie hole) of 1844.

Town Management

After the decision was made to retain the scalps, notices were posted for the position of mussel superintendent. The council received applications from seven individuals: William Brown, fisherman of St Andrews; Alexander Black, blacksmith and sailor of St Andrews; Thomas Black, fisherman of St Andrews; Alexander Duff, fisherman of St Andrews; James Grace, labourer of St Andrews; Andrew Keddie of Ferry-Port-on-Craig and Arthur Keddie of Leuchars.²³² The council interviewed Thomas Black and William Brown both fishermen of St Andrews. The council asked twenty-five questions to each to ascertain their knowledge of mussel cultivation. These questions centred on four basic areas, spawning and seeding, transplanting, harvesting and the maintenance of books and equipment²³³ (Appendix E). The council determined that Mr. Brown was the best qualified for the position. They appointed him as the Superintendent of the mussel scalps on 10 January 1843.²³⁴ Brown faced the task of turning the mussel scalps into a productive asset, not only for the fishermen but also the town and parish.

Revenue, Regulations and the Supply of Bait

Nine months after taking control of the scalps the topic of generating revenue was discussed by the town council. Based on John Berry's sales (previous tenant) the council anticipated an annual profit of £300 or more with yearly expenses between £150 and £200 pounds.²³⁵ The first season (1843-44) resulted in a £10 loss.²³⁶ The council may have miscalculated Berry's expenses. Since he was the tenant, his

salary was the profit. He might have increased his profits through the customer providing labourers for collection.²³⁷

Since 1805, around the first instance of let, the town included a clause in the Articles of Roup to protect the fisher's rights to collect bait. This agreement allowed the fishermen to continue gathering mussels as they had in the past free of charge.²³⁸ The only consideration was that they had to expose their catch for two hours at the town market place before selling to the other villages. At the time of the agreement (1805) there were only three boats serving St Andrews and they provided an adequate supply of fish. By 1843, the fishing fleet had jumped to nine fishing boats, more than enough to supply the local demand. Many of the fishermen took advantage of the free bait and sold their catch to other villages. They were in the habit of using £100 worth of bait annually while the rent only drew £40. This resulted in a £60 loss to the city in 1842. Given the amount of loss during let, the council sought an opinion from legal council on the rights of the city and the fishermen. The opinion was for the town, indicating that they had the right to restrict the sale of fish as a condition of supplying bait and were entitled to consideration.

The actions by the fishermen violated the agreement of 1805 since they sold to other villages. The council ended the agreement and a new set of regulations was implemented (Regulations of 1843).²³⁹ This new set of rules followed the opinion of council and initialized a 6 shillings per cartload (eighteen herring baskets) consideration to cover the town's expenses. The fishermen were no longer allowed

to gather by hand. The town continued to exercise their control over the fishermen by requiring them to register with the town clerk.²⁴⁰ Only those fishermen whom had registered were able to place orders with the city factor. The mussels were restricted to bait only, selling or disposing of excess was prohibited. If found in violation of this agreement they were stricken from the register and were required to pay the full rate of 8 pence per basket.²⁴¹

The fisher folk were set in their ways and many continued gathering of the scalps by hand. Despite the town's best efforts, they were unable to keep poachers off the mussel scalps. Consequently, in December 1846 the Regulations of 1843 ended. The council understood only a small group of fishers were causing problems. The council still wished to supply the fishermen with bait and set up new regulations. Under the Regulation of 1846, the fishermen had to place an order of no less than nine baskets (half a cart) at a rate of 4 pence per basket.²⁴² In addition, they were required to hire a cart, at their expense, to collect the order from the Eden. As with the other regulations, if any St Andrews fisher wasted or disposed of the mussels other than for personal bait they would lose their privilege and pay a higher rate.

Shortly thereafter Parliament passed an act which declared that 'destruction of mussels from mussel scalps by parties who have no right to them is declared to be theft and punishable accordingly'.²⁴³ Less than two months later two men were arrested under the 'Protection of Mussel Fisheries' Act 10 & 11 vict, cap. 92, 1847 for theft.²⁴⁴ These men were the first arrests for poaching on the south side. When the case went before the court a question arose as to the rights of the fishermen to

the scalps. The council had to prove their exclusive legal rights to the scalps before trying the two men under the Act. The charges were dropped due to expenses that would have been incurred.

In the late 1840s and early 50s, the scalps were healthy and sales were strong (Appendix F). After the first six years under town management the scalps generated £156.10 net revenue for the 1849-1850 season.²⁴⁵ The management of the scalps kept well below the maximum carrying capacity of the scalps. Revenues jumped nearly 200% by the 1854-1855 season to £404.7.²⁴⁶ The town saw the profit potential with a small investment. When the Leuchars scalps were advertised for let in 1857, the St Andrews town council submitted a bid.²⁴⁷ They were out bid by George Colville at £415 for a ten-year lease.²⁴⁸ Ironically Colville had been the order taker for the town's scalps and had left the position just before or shortly after obtaining the lease.²⁴⁹

Between 1843 and 1861 there were few disputes between the town and the fishermen. This changed in January 1861, when Provost Playfair died. Playfair made a great impact on the town. He was responsible for enacting the Police By-laws and Regulations.²⁵⁰ Two of these regulations were directed at the fishing community. One required the storage of mussel shells in buckets or bins, to be emptied daily into a scavenger's wheelbarrow. The second regulation stated that 'no fisherman or other person shall bait, or dress lines, or nets, or place or cause to be placed any mussels, or other bait, fish, fish creels, baskets, lines, nets, or other fishing articles upon any street, road, lane, or other public thoroughfare'.²⁵¹ Based

on this alone it would appear as if Playfair was against the fishing community, on the other hand, he turned a profit and increased the supply of mussels at the town scalps.²⁵² While in office the fishermen paid no more than 4 pence per basket and there were few incidents.²⁵³ The real problems arose shortly after his death when Bailie Milton became Provost.

Between 1846 and 1861 the number of baskets required by the city fishermen had doubled. During this time, the rate for strangers rose from 8 pence to 1 shilling 3 pence while the rate for the city fishers remained constant at 4 pence. The demand from the local fishermen had deprived the city from selling to strangers, which greatly reduced the revenue. In April 1862, the superintendent of the scalps made a comparison between the number of baskets sold and the rate.²⁵⁴ The revenue generated at the local rate of 4 pence for 402 carts (7236 baskets) was £120.12. The same number of baskets was then figured at 1 shilling 3 pence, the rate for strangers for the 1860-61 season. The town would have generated £452.5. It was then figured at 1 shilling 6 pence, the rate charged to strangers for the 1861-62 season which would have yielded £542.14. This comparison was a turning point in the history of the scalps.

Upon seeing this comparison, their concerns went from supplying the fishermen to generating a profit. The council raised the rate to 6 pence per basket for local fishermen.²⁵⁵ From that point on there were frequent rate increases and disputes between the town council and the fisher community. Provost Milton and the town council's quest for revenue resulted in the exhaustion of the town scalps by 1867.

This was a result of irregular seeding and heavy harvesting in the past. The scalps had operated at a loss with the City fishers receiving 7000 baskets at 6 pence for the 1865-1866 year. When compared with the going rate for strangers the town lost £350 (based on a 1 shilling 6 pence rate). The scalps had reached such a state that the council considered two options: to allow the scalps to become exhausted and destroyed or increase the rate to the fishermen as the scalps were close to operating at a loss.²⁵⁶ By 1867 the town had extended the scalps to eleven: the *Dandy*, *Little Stell*, *Wyllie Hole* (New Scalp), *Main Shore*, *Green Dod*, *Major*, *St Andrews Sleek*, *Snuffy Sandlands*, *Pond Brae*, *Montfrost*, and the *Edenside Sleek scalp* (figure 9).

It was determined to maintain the scalps and take legal action against poachers. To make up for lost revenue the council wanted to raise the rate however, this would not have any bearing on improving the state of the scalps. The council was unsure of their power and duty in maintaining the scalps and sought an opinion from the Lord Advocate.

In the past, the town had received two separate opinions from council, both which sided with the town. The first was in 1842, which indicated that the town had the right of property with the authority to manage it. The 1846 opinion indicated the town had the authority to exclude the fishermen from the scalps despite previous regulations or agreements, which they had entered into. The last opinion in 1867 further supported the first two by adding that the town had the authority to manage and dispose of the mussels as they deemed appropriate.

The town council intended to vindicate their rights of exclusive control and management over the scalps making the ‘property available to the general body of the community’.²⁵⁷ They did this through an Action of Declarator and Interdict against Alexander Wilson and others.²⁵⁸ It appears that this document names the entire fishing community.

In September 1869, the scalps continued to be in a poor state. The council wished to avoid confrontations with the fishermen and at the same time, they sought revenue resulting in a rate increase to 1 shilling.²⁵⁹ This rate increase may have been one way of recovering the legal fees. They anticipated the number of trespassers would increase. The fishermen were unwilling to pay the high rate and requested through their agent, Mr. Fleming that the rate be lowered to 8 pence, the council refused.²⁶⁰ Several fishermen violated the Interdict and trespassed upon the mussel scalps.

In March 1870, the fishermen filed a petition with the town council indicating that they were unwilling to pay the rate of 1 shilling plus 2 pence for cartage. They requested a reduction in the rate to 8 pence per basket.²⁶¹ The town council refused and kept the rate at 1 shilling. Because of their unwillingness to lower the price, many fishermen turned to poaching on the scalps, as they could not afford to pay the going rate.

In December 1870, the fishermen took a bold stance against the town. They refused to buy bait from the town’s scalps; instead, they purchased inferior bait

from North Ferry at the same rate (1 shilling).²⁶² They further refused to sell any fish to any of the inhabitants of the town, including the St Andrews Fish Company. Instead, they exported their catch loosing up to 14 shillings in one day. Other fishing villages soon met the town's daily supply. The protest ended a week later after one fisher sold his catch to the St Andrews Fish Company. Sales at the town scalps resumed after James Gourlay bought his supply of bait, the rest followed.

The fishermen could not afford the high rate. Between April and May 1871 William Chisholm, Thomas Cunningham, William Hopkins and David Cunningham, along with Catherine Gourlay (Chisholm) and Ann Kingman (Andrews), all gathered bait by hand at the Eden. Each was arrested for violating Act 10 & 11 vict, cap. 92. 'An Act for the Protection of Mussel Fisheries of Scotland' and accused of trespassing, stealing 30 baskets of mussels between 13 April and 2 May 1871.²⁶³ The court found the four men guilty and sentenced them to ten days in jail while the prosecutor dropped the charges against the women.²⁶⁴

The fisher folk of St Andrews did not take the verdict lightly. After the news reached St Andrews three women attacked George Smith, superintendent of the town scalps. One hundred special constables were sworn in and fourteen constables came from Cupar to quell any disturbances.²⁶⁵ Outside of the attack on George Smith, there were few other disturbances. The Cupar constables left after three days.

The first rate reduction came in 1874 when the council granted a 2 pence rebate bringing the rate to 1 shilling 1 pence. This reduction was on the conditions that the fishermen gave their shells and refuse to the Police commissioners.²⁶⁶ The shells were sold with street dung for use as a fertilizer. Those fishermen who wished to receive this 2 pence reduction were required to sign a document agreeing to give up all their shells and refuse.²⁶⁷ It gave the fishermen an incentive to comply with the police by-laws. In the past, the fishermen disposed of their shells and refuse personally, as they did not want the town to make a profit from them.²⁶⁸ The council anticipated a decline in the number of trespassers. It would be safe to say that in the end the council came out on top.

The local demand was so great in 1877 that revenues from strangers fell, resulting in a rate increase of 6 pence to local fishermen.²⁶⁹ This brought the rate to 1 shilling 8 pence plus 3 pence for cartage. The fishermen still received 2 pence reduction for shells. The first actual reduction in price came in December 1878 after one hundred and four fishermen presented a memorial to the council. They requested a reduction in the rate because of the bad weather and low market price of the fish. The council agreed to lower the rate 2 pence (1 shilling 6 pence) from the 16th of December until 15th of March 1879. Four months later the rate jumped back to the old price of 1 shilling 8 pence, not including 3 pence for cartage. In December, eighty-four fishermen filed a petition with the council requesting a rate reduction.²⁷⁰ The council took a dramatic step and reduced the price per basket by 6 pence to 1 shilling 2 pence. On top of this, the fishermen still enjoyed the 2 pence rebate for shells, bringing the rate to 1 shilling plus cartage.

The scalps were abundant and healthy in September 1880. The council had allowed the rate of 1 shilling 2 pence to last nine months before returning the rate to 1 shilling 8 pence but this only lasted a short time before the council returned to the lower rate.²⁷¹ Revenue continued to rise despite the fluctuation in local rates.

The scalps had become very profitable adding a great deal of revenue to the town. The town made a profit of £336.1.7 for the 1880-81 season. This amount jumped £114.0.3 (to £497.1.10) in 81-82. The following years sales increased slightly with a gross revenue of £233.1.8.²⁷² This, along with the tenants on the north side of the channel whom were trespassing onto the south side, raised the question of chartered rights. In 1884, the town wished to address several questions: were all the mussels in the Eden (north and south) granted to the town under charter? If so, did the town give up those rights under the Agreement of 1805 and was it possible to nullify the agreement?²⁷³ There was also some question as to the right to the foreshores of the Links, lands of Pilmour, the Salt grass and the Port of Eden, and did the Port of Eden cover the entire tidal range?²⁷⁴ Given that no action was taken against Leuchars, it is assumed that the answer was not in favor of St Andrews.

During the last part of the 1880s, the supply was large and the council sought to generate as much revenue as they could. This led to the over fishing and exhaustion of the scalps. Consequently, the scalps never fully recovered. The quality of the bait dropped to such a state that half of the mussels were unsuitable for use as bait.²⁷⁵ This resulted in a suspension of sales even to the local fishermen. Furthermore, the town released two of their mussel men from employment.

The town attempted to arrange for a temporary supply of bait through the north side tenant and through Mr. John Jolly in Tayport. Neither could provide a temporary supply.²⁷⁶ Unable to obtain a supply of bait, the council approved the sale of a limited number of baskets from the ‘Old Scalp’, presumably the *Sleek* scalp, to the local fishers. Mussels from these scalps would have been approximately half the preferred size of two to two and a half inches. In doing so, the town destroyed their future seed base.

In May 1888, the council obtained advice from the Fisheries Board who suggested that a ‘stake and wattle system’ might be advantageous for the scalps.²⁷⁷ The town experimented with this system and four months later supplies increased meeting the demands of the local fishermen. It is questionable what effect, if any, this system had in this roll.

In November 1888 the Scottish Fisheries Board approached the town council requesting to conduct an experiment with the French Bouchot system of cultivation and how it could be applied in Scotland.²⁷⁸ The council approved of the experiment under the condition that it did not interfere with the free flow of the channel and that the Board was responsible for it.

The St Andrews scalps had two shifts near the turn of the century, a decline in the demand and a change in customer base. In a ten-year period, between 1892-1901, there was a decline in demand which resulted in a reduction in rates to 8 pence per basket.²⁷⁹ The turn of the century also brought a different form of customer; it

shifted from the individuals to mussel agents and fish salesmen.²⁸⁰ The desire to meet the demands of the commercial customers took its toll near the end of 1911 and the mussels supplied were of inferior quality to previous years. Mr. Buchan, agent in Buckhaven, complained that the quality of bait was unfit for codling bait.²⁸¹ It took ten of the inferior mussels to bait one hook.

In order to protect their investment the council temporally suspended sales to the northern customers (those north of the Tay).²⁸² Sales were heavy during the 1913-1914 season and in 1915 the scalps were capable of supplying a maximum of two hundred baskets per week (eight hundred a month). Of which the St Andrews fishermen used ninety.²⁸³ This amount was only sufficient to supply the Fife coast (including St Andrews) customers. In addition, sales to customers in the north were again suspended.²⁸⁴

The supply of bait was still limited in 1918 and, at one point, all sales were suspended.²⁸⁵ Shortly after the suspension the council authorized the sale of eighty baskets per week to the local fishermen at 1 shilling 9 pence a basket in order to take advantage of a large number of haddock in the bay at the time. Between 1900 and 1939, supply and sales fluctuated greatly with restrictions on the number of baskets sold per month. During this time, the majority of the customers were mussel agents. Many had contracts with the town for a specified amount at a slightly higher rate.²⁸⁶ For a time the council followed the Burgh Surveyor's advice and limited the number of sales per month.²⁸⁷ On occasion, they approved additional sales which had a negative impact on the scalps. In the 1934-35 season the council had entered a

contract with Robert MacKay, fish salesman, Pittenweem. The contract called for 8000 baskets at 1 shilling 7 pence per basket for the season.²⁸⁸ The heavy sales over the years had depleted the number of seed mussels, which reduced the supply. It all caught up with the town in January of 1936. Over fishing of the scalps resulted in a suspension of sales for several months.²⁸⁹ The supply continued to the St Andrews fishermen, as they only required a few baskets per year. Based on expenses the town would have had to sell 5718 baskets at 1 shilling 5 pence in the 1936-37 season to generate £405. This amount would have generated the council just over £1 in revenue. It was decided that the scalps had lost too much money and were no longer a viable source of revenue. The equipment was inventoried and the scalps advertised for let²⁹⁰ (Appendix G).

Let of the town's mussel scalps

The town accepted the offer made by Mr. James Chisholm of the Mussel House, Leuchars, to lease the scalps for five years at £20 pound per year effective 15 February 1939.²⁹¹ Chisholm also came into an agreement whereby he had use of the town's boats and equipment for £30 pounds until his lease expired. Upon securing the St Andrews scalps, Chisholm controlled all the mussel scalps in the Eden. Unlike the town, Chisholm was able to turn a profit on the scalps and in 1944 he renewed his lease for an additional five years. Chisholm held the lease until April 1959, at which time a Mr. W. Dodd took over the lease at £30 a year.²⁹² Dodd worked the scalps for five years until his health declined, giving up his lease to the Gourdon Fishermen's Association, Ltd. in 1965. They signed for five years with an option of extending for an additional five years.²⁹³ They did not renew

their lease and in February 1970, the scalps fell in to the hands of Mr. D. Brand. The town council granted him a trial period of one year at £5.²⁹⁴ Brand had little success working the scalps and the following year the town wrote off his rent and he gave up the scalps. In February 1972, the scalps were let to Mr. Legg of Anstruther and the length of time he held the lease is uncertain.²⁹⁵ This was the last entry in the council minutes relating to the mussel scalps.

Tools and Techniques

Mussel cultivation, like bait collection, was labour intensive with no immediate returns. There are three steps to cultivation. First, the transplanting of half-tide or seed mussels from inter-tidal to sub-tidal zones. Second, is the growing out phase which required little maintenance. The third step is harvesting the mature mussels by hand, special rake or dredging.

Cultivation can be broken down into two systems: on-bottom (or substrate) and off-bottom cultivation (or suspended) (figure 10a & 10b).²⁹⁶ On-bottom cultivation relates to mussels that lay on the hard substrate.²⁹⁷ The first step in this system is the transplanting of immature (seed) mussels from scalps in the tidal-zone to scalps in sub-tidal zones. Scalps in the sub-tidal zone produce mussels with a thin shell and high meat content in eighteen to twenty-four months. Whereas mussels that come from a scalp in the inter-tidal zone produce mussels with a thick shell and strong adductor mussels. Their growth is arrested when left dry, resulting in a slower maturity rate. Once the mussel are mature they are harvested either by hand, special rakes or dredges. The same principle has been used all over the world.

Off-bottom (suspended) cultivation adds the element of depth by ‘suspending’ the mussels above the seabed.²⁹⁸ Pole cultivation is the earliest dateable form of suspended cultivation known. It dates to 1235, when Patrick Walton, an Irish Seaman, was shipwrecked on the West Coast of France.²⁹⁹ He sank poles into the inter-tidal mud flats of the Baie de ‘Aiguillon to which nets were attached for the

purpose of catching birds for food. He discovered that the posts attracted mussels, which grew quickly. Walton gave up the bird nets for mussels. This form evolved into the ‘bouchot’ system of cultivation.³⁰⁰ The traditional method consisted of rows of stakes sunk into the seabed protruding 2-3 metres above the bed.³⁰¹ The stakes, numbering up to 125, ran at a right angle to the shore and were up to 50m long. The posts were divided up into ‘collector’ and ‘rearing’ bouchots. The collectors were 20-50 cm apart and were placed the furthest from shore. Their main task was to catch spat.³⁰² By the end of the first summer the largest of the ‘seed’ mussels were transplanted to the ‘rearing bouchots’.

Rearing bouchots were higher up on the tidal zone and were set further apart than the collectors. Tree branches were woven between the posts to form a fence no less than 30 cm above the seabed. When the seed mussels were transferred, they were wrapped with netting and secured to the branches. The netting eventually rotted away after the mussels had attached to the branch by its byssus. As the mussels matured they were spread out to other rearing posts until maturity, providing room for growth and less competition for food.

By the 19th century the bouchot had taken on a dual role in France, that of mussel cultivation and a fish trap.³⁰³ It was in the form of a ‘V’ at a 45° angle. At the widest end a net was stretched across the two end post and during ebb tides fish would become trapped. This style changed during the 1850s as a result of the foreshore becoming property of the State (French government).³⁰⁴ Bouchots in the form of a ‘V’ were banned, partly due to silting. The Minister of Equipment set out

strict guidelines for the use of the bouchot. These guidelines varied between regions and environmental conditions.

The traditional form of bouchot required a large amount of labor in transferring the mussels from the catching post to the rearing posts. The fencing also caused problems with silting. The form was later modified by the deletion of the fence, using only posts for collection and rearing.³⁰⁵ The Scottish Fisheries Board experimented with a version of the bouchot at several sites in Scotland including St Andrews. This experiment is discussed under 'Tools and Techniques'.

Pole cultivation was carried one step further with the addition of horizontal connecting rods. This form took shape as the rack and rod, rope-web and the hanging park.³⁰⁶ This method of fixed-suspended cultivation evolved into a floating suspended system.³⁰⁷ The same principle applies as the fixed-suspended system except that a floating- suspended system is moveable which enables the cultivation of mussels in deep waters. This system has two main elements, first a flotation device is require and second a line or rope for the mussels to attach themselves to. The advantage of off-bottom cultivation is it reduces the threat of destruction from seabed dwelling predators such as crabs and starfish.³⁰⁸

There are three techniques used in harvesting mussels; by hand, a special rake and a dredge. Prior to 1844, mussel cultivation on the town's scalps was restricted to gathering by hand. This was caused by town regulations, despite its destructive nature.³⁰⁹

Some owners or managers of mussel scalps discouraged gathering of mussels by hand. In 1844 the St Andrews scalps adopted the same policy for two reasons. First, it was a form of controlling access to the scalps. Anyone seen on the scalps besides employees were trespassing and were dealt with. Second and foremost, gathering by hand destroyed the scalps. Typically women and children would gather mussels by hand placing them into ‘monquays’ or creels as they went in search of the largest mussels they could find.³¹⁰ The preferred bait mussel being over two to two-and-a-half inches.³¹¹ They would indiscriminately walk all over the scalps looking for the best bait. In the end, more mussels were destroyed than were gathered.³¹² The only way to prevent destruction of the scalps was through the use of rakes or dredges.

The rake is a specialized tool which enables the mussel men to gather the mussels from deep waters while using a boat as a platform (figures 11a & 11b). The rakes used at the scalps near Port Glasgow were nearly twenty-four feet long.³¹³ The head was twenty-four inches wide with teeth of fifteen inches. Attached to the head of the rake was a basket that would catch the mussels as the rake was worked. In Lancashire, these rakes were known as ‘craames’ and were up to fifty feet long.³¹⁴

‘Their use requires considerable strength and skill. The rake is thrown upstream against the current, and the head of the rake sinks to the bottom. The handle of the rake comes to rest on the right shoulder, and is worked so as to drag the teeth along the bottom on the mussel bed,

the mussels are hauled into the boat, where, after a sufficient number has accumulated, the small ones are riddled out, and returned to the scalps’.³¹⁵

The rakes used at the town scalps were between fifteen and eighteen feet long³¹⁶ (figure 12 & 13) It is evident that the first mussel superintendent learned the cultivation technique from the Berry brothers. It is also assumed that he was the one who initiated the use of rakes on the town scalps, following the Berrys (who were using rakes between 1809-1824).³¹⁷ The rake provided relief from destructive feet and greatly reduced the amount of labor required.

The third method is dredging. During the 1850s three boats worked the mussel scalps of the Tay, each averaging 66 baskets a week. By the middle of the 1880s there were as many as 40 boats dredging the area.³¹⁸ Various documents indicate that 'dredging' was carried out on the Eden. The first is a statement by George Smith during an inquiry into the condition of Scottish mussel scalps in 1888/9.³¹⁹ He indicated that six men were employed to dredge and seed the town scalps. Council minutes on at least two occasions indicate that the men were 'engaged in dredging'.³²⁰ By the 1860s, the *Major*, *Green Dod*, *Main Shore* and *Wyllie Hole* scalps were all connected. Dredging of the scalps would have proven difficult to accomplish as the scalps had varying maturity rates.³²¹ A statement made by the superintendent regarding the destruction of scalps by starfish indicates that traps 'were not a success compared with dredging by the rake'.³²² Based on this statement and the lack of nets or dredges in a inventory of mussel equipment at the scalps in 1938,³²³ 'dredging', the act of dragging or towing nets behind a boat, was not employed on the St Andrews scalps. The word usage was improper or misinterpreted and it actually refers to the collection of mussels by rake.

The Stake and Wattle System

In 1870 the council obtained the services of Dolin Coffey to inspect and give a report on the mussel scalps.³²⁴ In his report he suggested that the scalps might benefit through the use of a stake and wattle system to protect the scalps from the tides. He specifically mentioned putting one at the West End of the *Major's* scalp. The council authorized that his suggestion be carried out but it is unclear what effect the system had at that time. The system was tried two additional times. In 1884 Professor Futools of the St Andrews University conducted experiments with the system at the town's scalps.³²⁵ Four years later the Scottish Fisheries Board recommended the system was 'the best means of preparing the mussels'.³²⁶ In 1888 stakes and wattles were on the Eden. They were approximately ten yards long.³²⁷ Scattered randomly across the south banks, some were in the inter-tidal zone while others were in the sub-tidal zone. The 1888 wattles had been constructed poorly and there was no gap between the bottom wattle and the Estuary bed, this therefore hindered the free flow of water resulting in a buildup of sediments.

The French Bouchot System of Cultivation

This system was developed in France during the 13th century and is based on the observations of a shipwrecked sailor. It is believed that this is the earliest method of mussel farming.³²⁸ 'Wooden poles are set into the seabed in rows, or bouchot. The poles, usually 20-30 centimetres in diameter oak tree trunks, protrude 2-3 metres above the seabed and are spaced 20-50 centimetres apart'.³²⁹ Bouchot are typically set at right angles to the shoreline, at 15-25 metres intervals and may contain nearly 125 poles. This type of system performs two types of functions, it

can act as a deep-water seed catching device or use for the growing of mussels. If the later were the purpose, the seeds would be collected from the 'catching poles' and transferred to some type of mesh tube. The mussel seeds in the tube are then wrapped around the entire length of the pole. This same method can also be used when strips of rope have been used to catch the seeds; the rope is wrapped around the pole and attached. In either case, this method is labor intensive and is done completely by hand.

During the 19th century, the Scottish fishing industry was having a hard time maintaining a steady supply of mussel bait. On-bottom or bed cultivation was the only form of cultivation carried out and only on a small number of scalps (Appendix H). The Board conducted experiments with the bouchot system at five locations, Meikle Ferry, Tain, Inverness, and on the north (Leuchars) and south (St Andrews) side of the Eden.³³⁰ The system was in a 'V' shape palisading or bouchot. The structures stood nearly six feet tall and stretched between 50 and 250 yards. Posts (poles) which were 8-10 inches in diameters and 4 feet apart supported the structure. The weaving of branches (wattles) between the posts created a fence like structure. The wattles extended to a point no less than one foot above the bed allowing for the free flow of water. The structures were at intervals starting at the low water mark spring tides. Old netting secured the young mussels to the bouchot. Young mussels start below the low water mark, as they mature they move up the line gradually towards the high water end of the bouchot. Harvest took place once they had matured.

The experiment was abandoned at St Andrews and Inverness as it posed a navigation hazard. A flood swept away the Leuchars bouchot resulting in its abandonment. The overall experiment with the bouchot failed, due to a lack of knowledge and understanding of the system.³³¹

Seeding and Cleaning of scalps

European mussels have a yearly spawning cycle that peaks in spring.³³² Mussels in an inter-tidal zone may have a less intensive yet longer spawning season lasting into early summer. After fertilisation at sea, the currents carry the spat until it reaches a suitable substratum environment in which to anchor. The St Andrews scalps were also dependent entirely on natural seeds.

During the 19th century, rearing seed mussel was unheard of. Even in the 20th century the rearing of seed mussels is the most expensive part of cultivation hence, most farmers collect naturally occurring seeds. The first step in cultivation is to seed the mussel scalp by moving the seed mussels from inter-tidal zones where they have accumulated in large numbers to sub-tidal scalps. This process brings forward the maturity rate of the mussels by allowing them to feed for a longer period.

The superintendent informed the council in 1843 that several of the natural scalps would mature at the same rate in some years with no mature supply the following year. To overcome this shortage they allowed the natural scalps (*Little Stell, Main Shore, Green Dod, Sandland Bank, and Great Stell*) to seed spontaneously. The *Sleek* bed had irregular and slow growth rates making it useless for cultivating

mussel. Artificial scalps were formed from the town's seedbed.³³³ The first two artificial scalps to be laid down from the *Sleek* bed were the Major's scalp in February 1843 followed by the New scalp in July 1843. The *Sleek* bed was used to seed the entire town's scalp.

After several years of heavy sales, the supply of seed in the *Eden* became insufficient. In some instances, it was necessary to employ women to gather young mussels from the shore near the *Burnstools*. The scalps had been seeded at irregular intervals, which contributed to the difficulties in maintaining supplies.

The cleaning or scouring of a scalp should have occurred between harvesting and seeding of a scalp.³³⁴ This involved the removal of excess mud, sand and mussel debris, which covered the seabed. If left it will become hard, increasing the elevation of the scalp, which will extend exposure during low tide.

Scouring of a scalp first occurred in August 1888, around the same time as a governmental inquiry into the condition of mussel scalps in Scotland.³³⁵ The neglect or lack of knowledge in mussel management resulted in some of the channel scalps being elevated fifteen feet above their natural level.³³⁶ This increase in elevation not only lowered the mussel quality but also effected the navigation of the channel. The grounding of the *Jessie* in December 1880 was attributed to the elevation of the mussel scalps.³³⁷

Destruction of the mussel scalps

A mussel scalp is susceptible to injury and destruction by environmental process and predators. Environmental factors include weather-related incidents and pollution. Predation takes the form of fish, crabs, starfish and most of all man.³³⁸ Strong winds and gales can uproot mussels and re-deposited them in new locations or cause them to be inundated with sand and mud.³³⁹ It was perceived that the St Andrews scalps faced a greater yet rarer danger of ice flowing down the river.³⁴⁰ Ice is a centrally located threat, only as large as its mass. The ice travelling through the Estuary would only effected those scalps near the main channel.

The Eden was seen as a rather calm area and the likelihood of weather-related influences injuring the scalps was believed to be low.³⁴¹ The scalps in the intertidal zone ran a greater risk of damage from frost and extreme heat. However, rare weather-related incidents did occur at the St Andrews scalps. One such incident occurred in 1865 when a gale inundated two scalps with sand, destroying them.³⁴²

Pollution, the Paper Mill, and the Air Ministry

In 1870 the threat of industrial pollution was introduced with the erection of the Chalmers and Company wood pulp mill. W.H. Haig, H.V. Haig and James Chalmers set up the mill in part of the buildings once used by the Seggie distillery, which was leased from John Haig of Cameron Bridge.³⁴³ The council was concerned over discharge from the wood pulp mill and its effects on the mussel

scalps.³⁴⁴ The only discharge into the Estuary was by-product from boiling wood which contained soda ash, termed lye. The rest of the by-products had been burned during the production process and no solid or liquid discharge, other than lye had entered the Estuary.³⁴⁵ Chalmers & Company was short lived and it is unclear if production ever occurred. However, the idea of a paper mill on the site continued.

Chalmers & Company was purchased by a group and renamed the White Pine Paper Company.³⁴⁶ W.H. Haig became the first chairman, his brother the secretary and Chalmers took a lesser role as a board member. Each received 300 shares in the company, equivalent to £4,500 pounds, for their interest in the company.³⁴⁷ The name of the company later changed to the Guardbridge Paper Company, Ltd. (referred to as GBPC).³⁴⁸

In October 1874, John Haig of Cameron Bridge sold a little over three acres of land and structures east of the Dundee-St Andrews Road to the GBPC at £12 pounds an acre.³⁴⁹ J. Haig also granted the use of a railway siding and turntable,³⁵⁰ the pier and the right to extract water from the Motray Water for £6 pounds 6 shillings per year.³⁵¹

The operations of the paper mill expanded quickly with the purchase of the Haig, Laing & Company, a small brewery on the site which opened in 1861.³⁵² By 1896 the paper mill had purchased the Seggie estate and the land between the mill and the Guard Bridge.³⁵³ The expansion also brought about four phases of land reclamation. The first phase started in 1897 (figure 7). Two retaining walls were

constructed during this phase, one on the south bank of the Motray Water extending to the end of the pier and the second extended from the pier to the railway quay near the Guard Bridge.³⁵⁴ The area behind the wall was back filled with engine ash and lime sludge. This phase included the covering of the pier, which was not used by the paper mill. This part of the reclamation covered a large area of salt grass and pools of stagnant water, which increased the health of the inhabitants of the area.

St Andrews was concerned with both the alterations of the channel and pollution from discharge into the Estuary, which might have injured the mussel scalps. The Council took several steps to protect their interest. One such action was an attempt to show the burgh's right to that area of the Estuary based on shore dues records, but this failed.³⁵⁵ In an effort to combat pollution the GBPC erected the largest treatment plant in Scotland at a cost of £5000 to prevent pollution or further complaints.³⁵⁶ For the period of 1893 to 1915 there is no evidence of any injury or damage to the mussel scalps nor to the cockles that had been gathered and sold for domestic use in markets such as Glasgow, Manchester and London.³⁵⁷

By the end of the fourth phase in 1960 the mill had reclaimed land extending nearly 500 feet into the Estuary. There is no evidence indicating that pollution or silting of the scalps occurred during the exploitation of the scalps as a result of the mill or its operations.

The paper mill was not the only industry to move into the area in which the town objected to pollutant discharges into the Estuary. Around the first part of the 20th

century, the Army and the Royal Engineers erected Leuchars Station on the north bank of the Eden as an experimental range for testing balloons.³⁵⁸ Shortly thereafter the Royal Navy established a Fleet Training school on the site. The issue of sewage discharge was handled differently from the paper mill. The chief drainage engineer for the station, along with the burgh engineer, discussed the best possible location for the discharge of treated wastewater to enter the Estuary. All parties had agreed that the least injurious site was opposite the west boundary of the airfield, just above Coble House Point.³⁵⁹ This site was agreed upon with the understanding that the Air Ministry was held responsible for any injurious effects caused to the scalps by the discharge.

In 1925, the Amphibian Flying Service utilized the Eden for its motor boat. In March of that year the commanding officer at Leuchars Station contacted the St Andrews Police, Cupar Police, Fife Council, St Andrews Coast Guard, Northern Lighthouse Board, Edinburgh, Dundee harbour master and HM Dockyard at Rosyth.³⁶⁰ He was attempting to determine who held the rights to the Estuary as a waterway. None of the parties contacted was able to provide any information therefore the Air Force went ahead with their plans for mooring a motor boat belonging to the Amphibian Flying Service. They placed four buoys in the channel in the area of Sand Ford Shore.³⁶¹ Neither the buoys nor the motor boat(s) were seen as a threat to the scalps and in June the town council granted formal permission for the buoys to be in the Eden.³⁶²

Predation

Sea predators, which feed on mussels, may be divided into two separate categories; those living on the seabed and all others. The crab and starfish pose the largest threat to mussels that are cultivated on the seabed. Crabs pray on the soft-shells of immature mussels while the starfish has the ability to penetrate the hard shell of mature mussels. In large numbers they can destroy a complete scalp.³⁶³

Between 1880 and 1901 the St Andrews scalps suffered four attacks by starfish which destroyed several scalps. The first instance occurred between 1881 and 1883 when starfish destroyed the *Dandy* and *Wyllie* scalps.³⁶⁴ The rest of the scalps were unaffected. Starfish struck again in the first part of the 1890s partly because there were no preventive measures against starfish infestation. The only recourse was the use of traps, of which there is no evidence except for a letter written by Dr. Fullerton of the Scottish Fisheries Board, Marine Laboratory in Dunbar, suggesting their use³⁶⁵ (figure 14). Each was made of an iron ring three to four feet in diameter by one-half inch to five-eighths inches thick. Cordage was used to create a mesh netting around the ring. Four cords were attached to the ring at equal distance apart with the loose ends tied together to form an apex. A single cord is attached to the apex with a flotation device at the other end while fish heads are secured to the netting, acting as bait. The baited traps were set around the infested areas. Each trap was checked daily with any starfish found removed and buried on land. Despite their possible use of such traps, the starfish continued to plague the St Andrews scalps well into the 1900s.³⁶⁶

It was extremely difficult to control predation by crabs and starfish. The use of a suspended cultivation system is one way to slow destruction. However, this opens up potential destruction by various species of fish and fowl.³⁶⁷ These predators only caused minor damage as compared to man, the worst predator of all.³⁶⁸ The extensive damage by man from both hand gathering and unregulated fishing has been previously discussed under tools and techniques.

The Potential of the St Andrews mussel scalps

According to many, the St Andrews scalps produced the best quality mussels in Scotland.³⁶⁹ This superior quality was related to the scalps' environment and had nothing to do with the management thereof. The Leuchars scalps were cultivated at least 10 years before those on the St Andrews side. The St Andrews scalps were by no means a failure, in the first 18 years the town grossed £2789 in revenue (Appendix I). During the last 29 years the town grossed over £18,754 from the sale of mussels (Appendix J). The St Andrews scalps hit a slump in 1922 from which they did not recover and from that point on the profits started to decline until 1936, when the scalps operated at a substantial loss. The decline of sales was inevitable as the industry moved away from line fishing. The full potential of the scalps was never reached. Under the proper management, the St Andrews scalps had the potential of increased revenue.

The decline in yields of the St Andrews scalps was due to their ineffective management, influenced by a desire for profit. As early as 1843 the yield of the St Andrews scalps was recognized as being unable to maintain a continuous supply. Due to positioning of the scalps, several reached saleable size in the same year, yielding an abundant crop.³⁷⁰ This resulted in a lower yield the following year. The two artificial scalps, were an attempt to prevent such a decline in supply.³⁷¹ Within a few short years, the maturity rate was comparable to that of the other two natural scalps.

The musselmen practiced erratic seeding. The beds were sown shortly after a harvest.³⁷² Seeding took place when the men were not engaged in harvesting mussels for sale. This seeding practice resulted in the scalps maturing at uneven intervals resulting in variable harvests.

Harvesting is the second factor which led to the yield decline at the St Andrews scalps. The St Andrews scalps met their yielding capacity in 1862 when the local fishermen required 7236 baskets annually (603 per month).³⁷³ By the first part of the 20th century, maximum limits had been set on the total number of baskets per years, which averaged 7500-8000 per year.³⁷⁴ In the name of profit, the council repeatedly authorized sales over the maximum limit to the detriment of the scalps.³⁷⁵ If the limits had been adhered to the scalps may have continued to produce adequate yields.

As previously stated, seeding took place randomly and resulted in varying maturity rates. At various times the sale of smaller and immature mussels was made to meet the demand of the local market (St Andrews).³⁷⁶ A decrease in the size of the mussels sold resulted in an increase in the number required to fill a quarter cran basket (18x21 inches) thereby reducing future yields (and profit). The scalps were then sown with seeds that were smaller than the normal size used for seeding (1-1 ½ inches or a year old). This practice started a cycle of harvesting immature crops until the scalps were depleted.³⁷⁷

St Andrews Bay is part of a macro-tidal system.³⁷⁸ As the tide goes out the water moves in a counter clockwise motion, while flood tides run clockwise (figure 15). During spawning season the larvae from the Eden was transported towards Montrose during ebb tides. On their return, a large portion entered the Firth of Tay. Much of the spat which settled into the Eden originated north of the Tay, possibly from the area of Montrose or even as far north as Aberdeen, depending on tidal patterns in that area. If this were the case, then heavy sales north of the Tay prior to spring spawning season would have had a direct impact on the amount of spat settling in the Eden. Thus, all the mussel scalps in the St Andrews Bay, and possibly the east coast, were linked by the tidal system.

The considerable heavy sales during the winter could effect the accumulation of spat in any given area. The St Andrews scalps had experienced several shortages in seed due to a shortage or shift in spat settlement, possibly related to the heavy sales on the East Coast.³⁷⁹ This influenced the following years yield and may have been the starting point of the irregular supply of seed.

The final consideration in the decline in the yield at St Andrews is maintenance. The Estuary contained a high amount of silt and was subject to build up.³⁸⁰ As previously discussed, on at least three occasions a stake and wattle system underwent testing at St Andrews.³⁸¹ It appears that the systems did not produce the desired outcome. During the third attempt there was no space left between the last wattle and the mud.³⁸² This lack of space resulted in a build up of mud and sediment.

Failure to carry out routine scouring had a major detrimental effect on the scalps. Before 1888 the scalps at St Andrews were ‘cleaned the best they could’ during bait collection.³⁸³ The purpose of scouring was to remove mud, sand, shells and any other debris that was on the scalp. This prevented any excess build up of the natural elevation. The failure to clean scalps on a regular basis resulted in several of the scalps being elevated as much as 15 feet above the natural level. As the elevation increased, so did the amount of drytime, extending the maturing rate and lowering the quality and value of the mussels.

It was not until after a governmental investigation in 1888 into the status of bait scalps that St Andrews started to clean its scalps. Even after this, it only appears to have been random and irregular.³⁸⁴ By that time, the amount of build up was so great that the scalps could never have been reduced to their original state without a great expenditure on the town’s part.

It can be said that in the early years St Andrews lacked the proper knowledge for cultivation, as did the rest of Scotland. However, the scalps were inspected by a Mr. Coffee in July 1870. To improve the scalps, it was suggested to remove loose sand from under them to the hard bottom.³⁸⁵ In substitution, his advise was to use broken bricks or tiles to catch spat and promote settlement. This is the only instance recorded of an inspection by a skilled person in mussel cultivation. Even after the government inquiry of 1888 which suggested that the work of J. Johnston and Sons at Montrose was a ‘model for all desirous of cultivating mussels in Scotland on the bed system’,³⁸⁶

The town of St Andrews' desire to generate a profit with the least expense was the largest contributor to the town never attaining a stable yearly yield. As early as 1869 the council was unwilling to spend the additional funds to improve the condition of the scalps, instead they spent a large sum on legal council and actions against the fishermen.³⁸⁷ George Smith, superintendent of the town scalps, testified to the inquiry in 1888 that the shortages had been caused by increased elevation of the scalps.³⁸⁸ Smith admitted that if the town had increased expenditures the scalps could have made £1500 per year verses £300. Had the scalps been managed differently the entire East Coast of Scotland would have felt the impact.

Line fishing and the mussel industry saw a dramatic change in the first part of the 1880s with the introduction of steam trawlers.³⁸⁹ After the turn of the century, many line fishermen ceased their practice as they were unable to compete with the trawlers, which had a direct impact on the mussel industry of Scotland, to include the St Andrews scalp.

The management of the St Andrews scalps served its two intended purposes; it provided bait for the inhabitants of St Andrews and generated a £10,977 profit. This profit is estimated for the years which the town of St Andrews managed the scalps.³⁹⁰

Cockles & Oysters

Mussels were not the only shellfish collected in the Eden. Cockles were abundant along the shores of St Andrews Bay and the Eden Estuary. To some, they were another form of subsistence and income.³⁹¹ Neither the St Andrews nor the Leuchars proprietors ever gave them any economic consideration on any scale as they occurred naturally in small numbers. This being the case, the inhabitants of the district were permitted to gather cockles without fear of being harassed by mussel men as long as they did not tread upon the scalps or collect thereon.³⁹²

Cockles live along sandy coasts approximately $\frac{1}{2}$ inch below the surface.³⁹³ The siphons protruding above the surface indicate evidence of their presence in the soft sand. These siphons allow the cockles to breath and feed. Tools used in the gathering of cockles include hooks, rakes and hoes. They are placed in bags after being washed in seawater and shipped to markets such as London, Glasgow, and Manchester.³⁹⁴ Two such collectors of cockles were Mary Fowlis Farnie and Jannet Black.³⁹⁵

Shortly after St Andrews took control of the mussel scalp in 1843, the possibility of oyster farming in the Eden was investigated by the town council.³⁹⁶ In July 1843, six barrels of seed oysters was purchased from Thomas Penngle for £5 pounds 8 shillings.³⁹⁷ It appears that the seeds did not take well, as there is no further mentioning of the oysters until 1870.

In June of 1870, the topic of oyster farming again arose. This time it was during an inspection by Mr. Coffey who was checking the mussel scalps. It was his opinion that if oyster seeds were laid down in the channel they would not pose a threat to the mussel scalps and they should succeed.³⁹⁸ The council agreed and laid down a few hundred seeds in an area south of the *Green Dod* scalp. The scalp was prepared similarly to that of the mussels by laying down bits of broken tile and bricks. A low wall was then built around the area to help protect the seeds.

Oysters do not come up in the records again until January 1916 when the town council requested Mr. Calderwood, Inspector of Salmon Fisheries, to supply them with a report regarding oysters.³⁹⁹ It is unclear if they wanted him to advise on the potential of oyster farming in the Eden or if they sought a report on the progress of previous seeds laid down. Around that same time, the committee was concerned with protecting the scalps from trespassers. The charters granted to the town only mentioned mussels and not oysters, therefore they were required to apply for an order under the Sea Fisheries Act to allow them to take legal action against trespassers upon the scalps. Like previous times there are no indications that these steps were ever taken. From the lack of evidence, it would appear as if the oysters did not fare well in the water of Eden and were abandoned.

Leuchars' Mussel Scalps to 1868

Little is known about the workings of the Leuchars scalps. The following is based on testimonies given in an 1868 court case against the fishermen of St Andrews brought on by Sir Coutts Lindsay, then proprietor of Earlshall.⁴⁰⁰

Before the Agreement of 1805, the proprietors of Leuchars and Earlshall believed that the mussels in the Eden were a part of their heritable property. Disputes over the mussels in the Eden arose as early as 1770.⁴⁰¹ At that time, the Lairds of Leuchars and Earlshall allowed the crofters to gather and sell mussels from the Eden which were sold to fishing stations such as Wemyss and Buckhaven. At one point in time, the salmon fishing was let, and the tenants assumed that this also included a right to the mussels. The tacksman began the work of gathering the mussels by boat. The crofters did not stand for the invasion on their scalps and complained to the laird of Earlshall who ordered ^{the salmon fishers} to cease as they could not get a mussel in the mouth of a salmon. The boats used were abandoned near coble point until they fell apart.

Before 1802, the crofters were in the habit of collecting mussels from both sides of the Eden. The crofters had the right to sell the mussels granted by the Laird, while others were permitted to gather mussels for consumption only. This practice ended around 1802 with the crofters quarreling amongst themselves. The Laird put an end to the quarreling by prohibiting any one from collecting at the scalps. The scalps were then let for the first time to the fishermen of Auchmithie, near Arbroath.⁴⁰²

Shortly after two men from Leuchars were caught stealing from the scalps and were both fined a half-crown each. After that incident, the inhabitants of Leuchars never gathered from the scalps again.

By 1809, Mr. John Hedderwick of Reres Farm, became tacksman of the Leuchars scalps.⁴⁰³ He was in control of both sides of the Eden and was selling the mussels at 4 shillings per cartload with the purchaser being obliged to collect them. The practice of gathering the mussels provided employment for some of the local inhabitants. By the Berry's time, the crofters were gone and sales were only being made to fishermen, many coming from Pittenweem, St Monance, Anstruther, Cellardyke and Buckhaven. Between 1833 and 1856, Mr. A. Berry saw as many as 50 fishing boats entering the Eden in one day.⁴⁰⁴ Word of the quality of the Eden mussels had spread drawing fishing boats from Aberdeen and Peterhead. It was said that 'even north of Aberdeen mussels from the Eden would bring up double the quantity of fish than that a similar quantity of mussels from any river in the north except one near Aberdeen'.⁴⁰⁵

Cultivation of mussels did not start in the Eden until Messrs. J and A Berry became tenants on the north side from 1809-1824.⁴⁰⁶ The Berry brothers were ignorant in the art of mussel farming so they sought out the assistance of John Dow who had been in charge of the scalps for Mr. Hedderwick. The Berry's observed that those mussels, also known as 'half-tide mussels', which lay dry at low tide, were slow at growth. It was not realized until later that moving the half-tide mussels would bring forward the maturity rate. Thereafter the Berrys began the practice of transplanting

the half-tide mussels to deeper water, starting the practice of mussel cultivation at the Eden Estuary. During their fifteen years at the scalps, they employed ten or more labourers, depending on the demand.

Between 1802 and 1867 the mussel scalps on the north side of the Eden changed hands six times. It appears that by 1833 there were nine mussel scalps on the north side (listed west to east): the *Red Mill Eye*, *Ness*, *Coblehouse*, *Carronsaw Strip* (believe later called *Maggie Orphoot*), *Shelly Point*, *Mainwater Head*, *Neuk End*, *Luckie Daddie* and the *Dandy* scalps.⁴⁰⁷ Like that of the St Andrews scalps, the Leuchars scalps faced high demands. Unlike the town, they did not have to supply any special agreements with local fishermen everything they sold was profit. Based on a map prepared in 1867 of the mussel scalps, it appears the Leuchars scalps covered more ground than the St Andrews scalps.

Sales figures are not available for Leuchars so an indication of the value of the scalps can only be considered by investigation of the annual rent. The first recorded rent comes from the Berrys in 1809 when they were paying £100.⁴⁰⁸ By the time George Colville became a tenant in 1857 let of the scalps had reached £415 pounds, just over £40 pounds per year.⁴⁰⁹

Trespassing

Trespassing upon the scalps was a continual problem and effected both sides of the Eden. According to testimony given by David Keddie and others, trespassing by St Andrews inhabitants did not start until the mid to late 1820's when Mr. Bogie was the tenant of the north side scalps.⁴¹⁰ At that time, only a small number of people were crossing the channel and many were poor children gathering for their parents. They crossed the channel at 'Coble Ford' (Sand Ford Head) which was the shallowest point of the river. According To Keddie, the amount collected was 'trifle', loosing around £1 each season. Bogie felt sorry for the children and when *he*, on occasion, caught some of them, he could do no more than make them empty their 'monquay' or basket and promise not to come back.

In March 1867, George Smith supervisor of the St Andrews scalps warned the manager of the Leuchars scalps, Thomas Melville, to be on the alert for trespassers as the town scalps were exhausted.⁴¹¹ Between March and May that year trespassing by St Andrews residents was a common occurrence. One day alone 57 people crossed the channel. The trespassing upon the Leuchars side was a direct result of the continual overselling and depletion of the St Andrews side.

Some of the trespassers were not in search of bait, they were in search of meat mussels or puckles as they were called. On several occasions residents of Kincaple went to the Eden to collect mussels. Maggie Orphot was one such resident.⁴¹² She was in the practice of collecting mussels in the middle of the channel. On one night,

she had 30 people following her across to the channel, and John Berry, son of Mr. A. Berry the tenant, caught her. The story goes that Maggie gave John a ‘heap of jaw’ and knocked him into the water. From that time on the scalp between the *Coble House* scalp and the *Shelly Point* scalp was known as the *Maggie Orphot* scalp.

Orphot, like most of the residents of Kincaple, was not fisher folk and, during hard times, they would venture down to the Eden to collect ‘puckles’. In doing so, they were not trespassing, they were exercising their rights as was the right of all the inhabitants of the Parish of St Andrews. However, the north boundary was the center of the Estuary channel, and in crossing the channel, they were trespassing.

It appears that the real issue was not over the small amount lost, but the numbers destroyed. In his testimony, Robert Berry estimates that for every one mussel gathered, twenty were ‘stomped and destroyed sinking some two to three feet deep in mud’.⁴¹³ Some of these people, like William Chisholm, pilot in St Andrews, started collecting when they were children as he had followed in his ‘folks’ footsteps.

The collection of puckles was not limited to the locals. Sailors calling at Guard Bridge and Seggie sometimes spent weeks lying in the Eden. One such sailor was William Cross who, on occasion, went and collected enough mussels for the crew of his boat. Numerous time, Robert Berry, who worked for his brothers between 1833-1856, gave puckles to a pilot named James Brown as he navigated the Estuary.⁴¹⁴

R. Berry testified that he was even in the practice of giving puckles to the residents of St Andrews. This may have actually encouraged people like Orphot to seek mussels on both sides of the Eden and the trespassing of those who were in search of puckles.

Trespassing for pluckles or bait was also encouraged by the gestures of George Smith, mussel man at the St Andrews scalps.⁴¹⁵ On several occasions, he took James Brown, Agnes Price, John Spence, Jean Fenton and Janet Gardner across the Eden to the north side so they could collect mussels. When he had finished his duties, he would bring them back to the south side.

In July 1868 the fisher folk of St Andrews were taken to court by the Leuchars proprietors. The real issue in the case was not a clear-cut question of theft but that of ownership of the scalps on the north side.⁴¹⁶ Sir Coutts Lindsay of Balcarres was the heritable proprietor for the lands of Leuchars dating to 1772. Col. Long of Earlshall became proprietor of the lands and barony of Earlshall in December 1815. Besides their charters, the town council gave up their chartered rights to the mussels in the Eden ‘as far as the sea ebbs and flows’ in the Agreement of 1805. The verdict in the case was for the north side proprietors as they were the rightful and legal proprietors and the town gave up the inhabitant’s rights in 1805.

Few records were obtainable on mussel farming for Leuchars. It is very difficult to say what went on after 1867, most probably the inhabitants of St Andrews continued to cross over collecting puckles as they had done in the past.

Presumably mussel fishing continued on the north side until the end of the 19th century or first part of the 20th century when the lands of Earlshall were taken over by the Air Ministry.

The Eden Estuary Today

The Eden today contains vast areas of mud and sand flats, which provide a flourishing environment for a number of plants and animals, and is home to Fife's largest Salt marsh. These mud and sand flats provide a suitable environment for a wide range of plants and animals. The marine life is also numerous including 'Razor Shells, cockles, mussels, predatory Necklace shells and Mermaids'.⁴¹⁷ These plants and animals create an important winter habitat for a number of species which migrate to the area, which include the 'wigeon, mallard, teal, shelduck, eider, pinkfooted foose, oystercatcher, dunlin and redshank'.⁴¹⁸ A wide variety of mammals are also common around the Estuary to include roe deer, fox, brown hare and seals which all exploit the 'fruits' of the Eden.

The role of the Eden as a habitat for numerous plants and animals was recognised early and in 1967 the Eden Wildfowlers' Association was created. The purpose of the association was to ensure that the natural habitat was properly managed and protected. They encouraged both Fife Council and the Nature Conservancy to declare the Estuary a Local Nature Reserve (LNR).⁴¹⁹ Four years later the Nature Conservancy declared the Estuary as a Site of Special Scientific Importance (SSSI). Six years after being declared a SSSI the Estuary was also declared a Local Nature Reserve (LNR). The value of the Eden has changed from that of transport and profit to that of providing and protecting the natural habitat for a large number of plants and animals. The Estuary now only sees recreational activities of wildfowling, hiking and bird watching.

Archaeology of the Estuary

There are several points of archaeological interest in and around the Eden. In 1996 a coastal assessment survey from Fifeness to Newburgh identified several sites in the Estuary.⁴²⁰ Several of these sites with description are listed on figure 16. One site indicated that is directly connected with this investigation, is that of the mussel holding tank. Based on research this appears to have been one of the oyster beds from 1870.⁴²¹

Discussion

Looking at the Eden Estuary today one would never consider it to have been exploited for trade during the Middle Ages or by private traders during the 19th century. The impact of the trade on the estuary to the local region has been great, yet little has ever been written about it.

The Medieval port of St Andrews is now believed to have been located East of Martin's Point. During its operation numerous amounts of food stuffs and general merchandise would have been required to support the wants of the inhabitants, pilgrims and See.

The other landing sites used by Cupar, Leuchars, Haig, Fleming and the Spences occupied one of two locations all near the mouth of the Motray. Of these, all but Leuchars was situated at the same location. Cupar was the first extending from the Motray Water to an area near the present day Medieval Bridge.⁴²² Their port was established in 1381 and in use as late as the 16th century. Outside of mooring rings in large rocks on the beach the only known structure, was a tron dating to the first part of the 15th century.

William Haig established the Seggie Distillery on the south bank of the Motray water in the first part of the 19th century.⁴²³ This was the north end of the site of Cupar's port. He is the only one to have constructed a pier, which extended nearly 400 feet into the Estuary. A number of other structures were also constructed near

the site to support distilling operations. The distillery operated until 1861.

The Distillery had an impact on local agriculture. The two farms owned by the Haigs supplied a portion of the grain required. Farmers in the local area, East Anglia and Tyneside also supplemented the supply. The distilling process produced a by-product called draught that was used as cattle feed. These cattle then produced manure which was as fertiliser for the fields. The Haigs' operations would have employed a large labour force in agricultural, domestic, animal husbandry and distilling positions.

To the south of the distillery and at the southern end of Cupar's site was a quay used by George Fleming during the first part of the 19th century and later taken over by Andrew and David Spence.⁴²⁴ This is one of two quay sites on the Eden. There were structures on the site suitable for trading in coal and general merchandise. Based on the amount of trade which the Spences conducted it is possible that they had a crane on the site. The amount of trade conducted required a number of labourers to load and unload cargo, further providing employment opportunities for local residents.

The last site is that of the Leuchars and Earlshall crofters erected c. 1792.⁴²⁵ This was the second of two quay's on the Estuary and was located on the north side of the Motray Water near the Medieval Bridge (Inner Bridge). There were no structures at this site.

Only generalisations are made about trade with other ports as no records have been uncovered relating to specific ports. During the Middle Ages, trade was conducted with Holland, Flanders, France, and the Netherlands to include the Zeeland province, Belgium, and Germany.⁴²⁶ Trade in the 19th century was conducted not only coastwise but also with ports in Norway, Germany, Holland, and others.⁴²⁷ Much of which was made possible by the union between England and Scotland in 1707.⁴²⁸

During the 19th century, St Andrews had no interest in sea trade on the Estuary. It was the responsibility of the proprietors using the Estuary to take the necessary steps to ensure the safe navigation of vessels. It is believed that there were six buoys on the Estuary, one ‘sea buoy’ on the Eden bar at the mouth, three on the south bank and two on the north bank.⁴²⁹ Given that the Estuary was used privately no evidence has been uncovered to indicate the location of the buoys (outside of Bruce) or who was responsible for their erection and maintenance.

The largest influence of trade on the Eden was on agriculture. As seen the Seggie distillery required a large amount of grain. Further away and on a wider scale was Mr. Yool’s bone mill. He brought in an estimated 500-600 tons of bone each year.⁴³⁰ This was then crushed and sold as fertiliser. It might be said, assuming that trade on the Eden effected an area of 8-10 miles radius and Yool’s trade covered an additional 8-10 miles (from the mill) that the Eden effected up to a 20 mile radius. Little is known on the bone trade or its extent and further research into this area is called for.

The increase in traffic on the Eden enabled several fishermen to supplement their income as pilots. The number of licenses issued after 1836 by Trinity House of Leith gives some indication as to the increase of trade on the Eden and at the St Andrews harbour. The high point of traffic, based on the number of licensed pilots, was between the 1840s and 1850s. This gives an insight into the little known life of the St Andrews pilot. They all had experience working on coastal trading vessels and were willing to put their life in danger to bring a vessel in. It also indicates that the town council did not regulate the pilots until 1897.⁴³¹ After this time trade on the Eden had ceased and pilots were only required for the local harbour.

The effect of the mussel scalps upon the town of St Andrews was unique in that they were the only cultivated beds in Scotland managed by a burgh.⁴³² The various agreements between the fishermen and the town all called for employees of the town to provide bait for the local fishermen. This had a direct impact on the domestic role of the women and children. They were no longer required to gather bait and their time was spent on other tasks. This also applied to numerous scalps around Scotland that were worked by men for the purpose of profit. The harvesting (not cultivation) created a new form of employment or income for many. In some areas, the task of gathering bait shifted from fisher folk to musselmen.

The purpose of the town taking control over the mussel scalps was to generate revenue with as little expense as possible. Prior to Playfair's death the town generated nearly £2800 pounds in revenue.⁴³³ After his death, the true revenue potential was seen. From that point on rates fluctuated causing much friction with

the fishermen. In 1874, the town saw an additional way of generating revenue through the fishermen. They offered a 2 pence rate reduction to those fishermen who turned over their empty shells and refuse to the police commissioner. This had two effects, it quelled some of the friction between the fishermen and the town and it encouraged the fisher folk to abide by the police by-laws of 1847.⁴³⁴ The shells and refuse was then sold as fertiliser, generating further revenue for the burgh.

Before 1843, the fisher folk of St Andrews collected bait at the beds uninterrupted, as was the practice of those before them. The disputes between the fishermen and the town council became frequent after the death of Playfair in 1861. Nearly all of the disputes were over the rate at which they were charged for a basket. Many of the fisher folk were forced into violating the various agreements relating to the supply of bait because they could not or would not pay the high rate. This culminated in a number of legal opinions, acts of parliament, and court actions. Fishermen were arrested, in two instances, for trespassing upon the scalps. The incident in 1871 resulted in several men being sentenced to jail for 10 days.⁴³⁵ This created further civil unrest between the town and the fisher folk with three women assaulting George Smith, superintendent of the mussel scalp.⁴³⁶

The management and cultivation of the beds by St Andrews represents an attempt at conservation yet were over fished. The beds' management had a substantial impact on the town's revenue. Between 1843 and 1937 ^{the} town generated approximately £40,923 or just over £435 per annum in profit, not to include approximately £100 pounds per years in the sale of shells and refuse.

The following archival and archaeological actions are recommended: A review of early burgh records and surviving church records for St Andrews and Cupar which might yield additional information relating to port operations, the amount of trade conducted and specific ports traded with. This will give a further understanding of the role the Eden played as a port for a landlocked burgh and for the ecclesiastical capital of Scotland. With this information a comparison can then be made between other medieval ports of comparable size and importance.

There maybe no surviving records relating to the medieval ports of St Andrews and Cupar, therefore, it is suggested that a non-intrusive archaeological survey be conducted. The amount of sediments carried down stream might have helped to preserve any lost or abandoned objects on the foreshore. The amount of trade carried out by St Andrews would have produced a substantial amount of material remains. A survey of the St Andrews port should be a relatively easy task. The presence of material remains will provide archaeological evidence to support the belief that the medieval port of St Andrews is east of Martin's Point. Areas concentrated on should be in the immediate areas of the identified ports.

The area of archaeological consideration should be between the Motray Water and the Guard Bridge. Unfortunately, this area has undergone much alteration over the past one hundred years and much material may be lost.

Additionally, as with any water way, losses of vessels can and does occur. A few losses have been recorded in the 19th century with the earliest being 1794. Based on the amount of sea traffic on the Estuary since the 12th century there is a high probability that one or more remains have been covered by sediments. If this is true, then the materials contained in and around the site will be well preserved. A find such as this would give a direct link to one of the ports and possibly to its cargo's origin and further support the rather scant historical record.

The 19th century sites do not appear to have anything unique to them. One investigation that would be beneficial is the recording of Seggie pier, which is under one if not more of the buildings belonging to the paper mill.

Much of the historical interaction between the fishermen and town of St Andrews has revolved around disputes over the supply of bait. Knowing the true history of the mussel industry in St Andrews gives a new perspective on the relations between the town and fisherfolk.

This perspective raises some new questions relating to the mussel industry in Scotland that requires further study. The first is the use of dredges on mussel scalps. It has already been demonstrated that dredging did not occur at the St Andrews scalps. Since there was a misunderstanding of the word or usage does this *elsewhere* also apply to scalps in Scotland?

The second is the role of women and children in bait collecting. Of the 21 fishing districts in Scotland, only 14 of them contained mussel scalps, the other 8 were required to seek bait outside the district. The domestic role of the women in these districts was not the same as the others. By the mid 19th century several of the scalps were worked by men for the purpose of sales. The question is thus, what is the actual ratio of stations that purchased their bait verses the number of stations where women and children were responsible for supplying bait. The result might be surprising.

There was no set standard as to the sale of mussels. The size of the basket varied with locations. Some locations, to include Leuchars, sold bait based on the registered ton of the vessel. This did not last long due to false registrations being produced. The lack of standardization makes it difficult to compare sales and yields between the scalps around Scotland. A comparison can not be made of the other scalps until the individual measuring device is identified. This comparison also faces the problem of surviving records. Many of the records have survived relating to the scalps because they were under burgh control. It is unlikely if records survived for many of the scalps making comparison difficult.

The trade and mussel industry at the Eden Estuary truly had a greater impact than previously believed. It indicates that despite the small size of the Eden the activities carried out were far reaching. It is hoped that this knowledge will be carried forward to develop the history of the Estuary and its impact on the region.

This case study has given a glimpse into a small outport and its impact on the local area under burgh and private control along with the role and impact of the mussel industry on the burgh of St Andrews. These issues deserve further study to give a better understanding of the ports and trade on the Eden and the mussel industry of Scotland.

- ¹ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.190.
- ² Lawrie, *Early Scottish Charters Prior to 1153 AD*, p.132.
- ³ Bruce, *Wrecks and Reminiscences of St. Andrews Bay*, p.190; Smith, *The Third Statistical Account of Scotland*; Fife, p.751.
- ⁴ Graham, 'Archaeological notes' in *Proceedings of the Society of Antiquaries of Scotland*, vol. 101, p.267.
- ⁵ StAU B65/1/1, 'The Black Book' no. 275, np.; Fleming, *Charters and Other Documents*, p.40.
- ⁶ Home, *Charters and Other Muniments*, p. 6; StAU B13/14/8, 2 Apr 1813, p.137.
- ⁷ Home, *Charters and Other Muniments Belonging to the Royal Burgh of Cupar*, pp.6-7.
- ⁸ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.186-187.
- ⁹ StAU B65/1/1, *The Black Book* no. 275, np; Fleming, *Charters and Other Documents*, p.40.
- ¹⁰ *Summary of Reports 1887 and Committee to Inquire*, 1889.
- ¹¹ StAU B65/11/14, 20 Apr 1862, np.
- ¹² Sawyer, 'Coastal geology' in Barne, (*et al*) *Coast and Seas of the United Kingdom* p.20.
- ¹³ Geikie, *Memoirs of the Geological Survey of Scotland*, pp.288-321.
- ¹⁴ Geikie, *Memoirs of the Geological Survey of Scotland*, p.351.
- ¹⁵ McManus & Wal, 'Sediment accumulation' in Whittington, (ed.) *Fragile environments*, pp.1-6.
- ¹⁶ McManus & Wal, 'Sediment accumulation' in Whittington, *Fragile environments*, p.6.
- ¹⁷ Geikie *Memoirs of the Geological Survey of Scotland*, p.4.
- ¹⁸ Clelland, *ECN Freshwater Sites*.
- ¹⁹ Geikie, *Memoirs of the Geological Survey of Scotland*, pp.7-9.
- ²⁰ Clelland, 'The Eden Estuary in McLusky Coastal Zone Topics', No.3, p.189.
- ²¹ StAU B65.11.12, 26 Sep 1843, p.313.
- ²² Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.193.
- ²³ Clelland, 'The Eden Estuary' in McLusky *Coastal Zone Topics*, No.3, p.189.
- ²⁴ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.18.
- ²⁵ Groome, *Ordnance Gazetteer of Scotland; a Survey of Scottish Topography*, vol. 6, p.294.
- ²⁶ Lawrie, *Early Scottish Charters Prior to 1153 A.D.*, p.132; Cant, *The St Andrews Area in Pound*, N. (ed.) *The Archaeological Journal supplement*, 1991, p.9.
- ²⁷ Groome, *Ordnance Gazetteer of Scotland*, vol. 6, p.296.
- ²⁸ StAU B65/22 no.6
- ²⁹ Cant, 'The St Andrews area' in Pound, N. (ed.), *The Archaeological Journal supplement*, 1991, p.1.
- ³⁰ Yeoman, *Pilgrimage in Medieval Scotland*, p.53.
- ³¹ Lawrie, *Early Scottish Charters Prior to 1153 A.D.*, p.134.
- ³² Fleming, *Charters and Other Documents*, pp.26-39.
- ³³ Sinclair, *The Statistical Account of Scotland*, Fife, p.706.

- ³⁴ Lenman, *From Esk to Tweed*, pp.16-18.
- ³⁵ Crierson, *Delineations of St Andrews*, p.92.
- ³⁶ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ³⁷ Jackson, *The History and Archaeology of Ports*, pp.12-13.
- ³⁸ Jackson, *The History and Archaeology of Ports*, pp.12-13; Graham, *Archaeological notes*, pp.250-251.
- ³⁹ StAU B65/1/1, *The Black Book*, no. 275; Fleming, *Charters and Other Documents*, p.40.
- ⁴⁰ Smith, *The Third Statistical Account of Scotland, Fife*, p.751.
- ⁴¹ StAU B65/1/1, *The Black Book*, no.275; Fleming, *Charters and Other Documents*, p.40.
- ⁴² Fleming, *Charters and Other Documents*, pp.1-39.
- ⁴³ Home, *Charters and Other Muniments*, p.7.
- ⁴⁴ Graham, 'Archaeological notes on some harbours in Eastern Scotland' in *Proceedings of the Society of Antiquaries of Scotland*, vol.101, p.267.
- ⁴⁵ Grierson, *St Andrews as it was as it is*, p.56.
- ⁴⁶ Millar, *Fife Pictorial & Historical*, vol.1, p.344.
- ⁴⁷ Millar, *Fife Pictorial & Historical*, vol.1, p.343.
- ⁴⁸ Millar, *Fife Pictorial & Historical*, vol.1, p.343.
- ⁴⁹ Home, *Charters and Other Muniments*, p.6; StAU B13/14/8, 2 Apr 1813, p.137.
- ⁵⁰ Home, *Charters and Other Muniments Belonging to the Royal Burgh of Cupar*, pp.6-7.
- ⁵¹ StAU B13/14/8, 2 Apr 1813, p.138.
- ⁵² StAU B13/14/8, 2 Apr 1813, p.137.
- ⁵³ StAU B13/14/8, 2 Apr 1813, p.138.
- ⁵⁴ StAU B13/14/8, 2 Apr 1813, p.139.
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- ⁵⁷ StAU 13/22.15, 5 Jul 1518.
- ⁵⁸ Fleming, *Charters and Other Documents*, p.40.
- ⁵⁹ Simpson, *Historic Cupar; the Archaeological Implications of Development*, p.1.
- ⁶⁰ Sinclair, *The Statistical Account of Scotland*, p.613.
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- ⁶² StAU B13/14/8, 2 Apr 1813, p.140.
- ⁶³ *Register of Sasines, Fife*.
- ⁶⁴ StAU B13/14/8, 2 Apr 1813, p.141.
- ⁶⁵ *Register of Sasines, Fife*.
- ⁶⁶ StAU B13/14.8, 2 Apr 1813, p.141
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- ⁶⁸ Moss & Hume, *The Making of Scotch Whisky*, p.60.
- ⁶⁹ Moss & Hume, *The Making of Scotch Whisky*, p.67.
- ⁷⁰ Moss & Hume, *The Making of Scotch Whisky*, p.70.
- ⁷¹ Hains, *The Whisky Industry and the Regional Scottish Economy*, p.27.

- ⁷² Craig, *The Scotch Whisky Industry Record*, p.65; Bank of Scotland St Andrews Account Book, Nov. 1832; 23 May 1835.
- ⁷³ Craig, *The Scotch Whisky Industry Record*, p.65; Bank of Scotland St Andrews account book, 8 Feb 1833, p.11.
- ⁷⁴ Craig, *The Scotch Whisky Industry Record*, p.65.
- ⁷⁵ Craig, *The Scotch Whisky Industry Record*, p.65.
- ⁷⁶ StAU 1822/6/28 BoC.
- ⁷⁷ Bank of Scotland St Andrews Account Book, 23 May 1835, p.53.
- ⁷⁸ Cameron, *Bank of Scotland 1695-1995*, p.113.
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- ⁸¹ Cameron, *The Bank of Scotland 1695-1995*, pp.113-114
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- ⁸³ *The New Statistical Account of Scotland, Fife*, p.226.
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- ⁸⁷ StAU B65/11/10, 17 Jul 1818, pp.166-167.
- ⁸⁸ Connolly, *Biographical Dictionary of Eminent Men of Fife of Past and Present Times*, p.209.
- ⁸⁹ *Register of Sasines, Fife*.
- ⁹⁰ Ordnance Survey map, *Fife and Kinross sheets 6 and 7, 1854*; NAS RHP 5323, *Plan of Mussel Scalps*.
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- ⁹² DCA, CE70, 1/27, p.40.
- ⁹³ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.186.
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- ¹⁰² Jackson & Kinnear, *The Trade and Shipping of Dundee 17980-1850*, p.28.
- ¹⁰³ Millar, *Fife Pictorial & Historical*, vol.1, p.169.
- ¹⁰⁴ *The New Statistical Account of Scotland, Fife and Kinross*, p.724.
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- ¹⁰⁶ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹⁰⁷ *Lloyds Survey Handbook*, p.67.
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- ¹¹³ *Fifeshire Journal* 'Leuchars' 1 April 1947, p.3.
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- ¹¹⁵ Campbell, *Scotland Since 1707*, p.38.
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- ¹¹⁸ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.39.
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- ¹²¹ StAU B65/22 Box 63, 21 Mar 1876. Petition by Andrew Brown.
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- ¹²⁴ NAS GD 226/13/5, 7 Apr 1836; NAS GD 226/13/6, 6 Mar 1846; 4 June 1852; NAS GD 226/13/7, 30 Sep 1858.
- ¹²⁵ StAU B65/18/4.
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- ¹²⁷ NAS GD 226/13/5, 7 Apr 1836.
- ¹²⁸ NAS GD 226/13/5, 19 Apr 1836.
- ¹²⁹ NAS GD 226/14/5, 14 Aug 1867, Memorial for return of John Wilson's licence.
- ¹³⁰ NAS GD 266/14/5, 1870 Application by John Wilson St Andrews for return of licence.
- ¹³¹ StAU B65/11/15, 20 Jul 1871, p.514.
- ¹³² Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹³³ StAU B65/22 Box 63, 21 Mar 1876. Petition by Andrew Brown.
- ¹³⁴ NAS GD 226/13/6, 6 Mar 1846.
- ¹³⁵ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹³⁶ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹³⁷ StAU B65/22 Box 63, 21 mar 1876. Petition by Andrew Brown; Bruce, *Wrecks and Reminiscences*, p.230.
- ¹³⁸ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.219.
- ¹³⁹ NAS GD 226/13/6, 22 Oct 1847.
- ¹⁴⁰ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.356.
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- ¹⁵⁰ NAS GD/226/14/2, 1896, Pilotage application of James G. Gourlay, St Andrews.

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- ¹⁵² *Bill for Regulation of Pilotage Throughout the U.K.* 1837-38, p.31.
- ¹⁵³ Calvert, *1841 Census for St Andrews*; Calvert, *1851 Census for St Andrews*.
- ¹⁵⁴ StAU B65/18/3, 4 Jan 1821. Petition by Wemyss and Robertson.
- ¹⁵⁵ StAU B65/18/3, 4 Jan 1821. Petition by Wemyss and Robertson.
- ¹⁵⁶ StAU B65/18/3, 4 Jan 1821. Petition by Wemyss and Robertson.
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- ¹⁵⁸ *Bill for Regulation of Pilotage Throughout the U.K.*, 1837-38, V.31.
- ¹⁵⁹ NAS GD/226/12/3, 17 Jul 1861, Letter by James Howie.
- ¹⁶⁰ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.257-358.
- ¹⁶¹ Bruce, *Wrecks and Reminiscences of St Andrews Bay* pp, 357-358.
- ¹⁶² Bruce, *Wrecks and Reminiscences of St Andrews Bay* p.357.
- ¹⁶³ StAU 1794/4/11 LB.
- ¹⁶⁴ DCA GD/HU/SF/22/7.
- ¹⁶⁵ StAU B65/11/17, 12 Oct 1896, p.501.
- ¹⁶⁶ In 1883 the Town Council attempted to build a shelter for the musselmen on the point. Upon laying the foundation they were informed by Mr. Rigg of Tarvit, proprietor of the point that they had no legal right to do so. The town eventually removed the foundation. (StAU B65/11/16m 17 May 1883, p.611). Between to this time several vessels had beached at Martin's Point to offload bones for Mr. Yool.
- ¹⁶⁷ *Ordnance Survey Map of Fife and Kinross*, sheet 7, 1854; NRS RHP 5323
Plan Shewing the Mussel Scalps, 1868.
- ¹⁶⁸ Naish, *Sea Marks*, p.30.
- ¹⁶⁹ Dobson, *An Analysis of Shipping Incidents*, p.108.
- ¹⁷⁰ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.170.
- ¹⁷¹ Fifeshire Journal, 17 Apr 1856, *St Andrews & District*, p.6; Dobson, *An Analysis of Shipping Incidents*, p.112; Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.250-252.
- ¹⁷² Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹⁷³ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ¹⁷⁴ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
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- ¹⁷⁶ *Fifeshire Journal*, 23 Jun 1889, 'St Andrews Harbour', p.5.
- ¹⁷⁷ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.216-219.
- ¹⁷⁸ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.218-219
- ¹⁷⁹ McGowran, *Newhaven-on-Forth, Port of Grace*, p.42.
- ¹⁸⁰ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.219.
- ¹⁸¹ McGowran, *Newhaven-on-Forth, Port of Grace*, p.43.
- ¹⁸² Fenton, 'Shellfish as Bait' in Smout, (ed.), *Scotland and the Sea*, p.137.
- ¹⁸³ Lockhart, *The Scots and Their Fish*, p.36.
- ¹⁸⁴ *Committee to Inquire Into the Condition of Scottish Mussel & Bait Scalps*, p.435.
- ¹⁸⁵ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.139.
- ¹⁸⁶ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.140; StAU B65/11/28, 31 May 1920, p.122; *Fifeshire Journal*, 30 May 1867, p.6.

- ¹⁸⁷ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.141; Lockhart, *The Scots and Their Fish*, p.37.
- ¹⁸⁸ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.142.
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- ¹⁹¹ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.138.
- ¹⁹² Lockhart, *The Scots and the Sea*, p.143.
- ¹⁹³ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.148.
- ¹⁹⁴ Committee to Enquire into the Conditions of Scottish Mussel & Bait Scalps, p.438.
- ¹⁹⁵ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.148.
- ¹⁹⁶ Committee to Enquire into the Conditions of Scottish Mussel & Bait Scalps, pp.473-74, 489, 500, 502, 505, 509, 510-11.
- ¹⁹⁷ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.152.
- ¹⁹⁸ Committee to Enquire into the Conditions of Scottish Mussel & Bait Scalps, p.438.
- ¹⁹⁹ StAU B65/1/1, *The Black Book* no.275, np.; Fleming, *Charters and Other Documents*, p.40.
- ²⁰⁰ Fleming, *Charters and Other Documents*, p.4.
- ²⁰¹ Fleming, *Charters and Other Documents*, pp.2-7.
- ²⁰² A merk is equal to 13s 4p Scots.
- ²⁰³ Fleming, *Charters and Other Documents*, pp.8-25.
- ²⁰⁴ Fleming, *Charters and Other Documents*, pp.26-39.
- ²⁰⁵ Approximately three miles west of the Guard Bridge.
- ²⁰⁶ StAU B65/11/6, 31 Oct 1765, pp.114-115.
- ²⁰⁷ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, pp.39-44.
- ²⁰⁸ 'The coast' refers to coastal villages such as Kingsbarns, Crail and Anstruther.
- ²⁰⁹ StAU B65/22 Box 69, 10 Aug 1802, A receipt for £3 6p for a cartload of mussels.
- ²¹⁰ StAU B65/11/9, 15 January 1805, p.300.
- ²¹¹ StAU B65/11/9, 15 Jan 1805, p.300; Fleming, *Charters and Other Documents*, pp.44-52.
- ²¹² StAU B65/11/9, 23 Apr 1805, p.314.
- ²¹³ StAU B65/22 Box 69, 31 May 1805; StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.15.
- ²¹⁴ StAU B65/11/10, 14 Oct 1819, p.197.
- ²¹⁵ StAU B65/11 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.16.
- ²¹⁶ StAU b65/22 Box 69, 22 Apr 1829. Letter written by Alexander Watson to St Andrews Town Council.
- ²¹⁷ StAU B65/22 Box 88, *Report of Trail in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.16.
- ²¹⁸ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.17.
- ²¹⁹ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.17.

- ²²⁰ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.17.
- ²²¹ StAU B65/11/11, 7 Nov 1833, p.293.
- ²²² StAU B65/11/11, 4 Dec 1833, p.313.
- ²²³ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.17.
- ²²⁴ StAU B65/22 Box 69, 22 Apr 1829. Letter written by Alexander Watson to St Andrews Town Council.
- ²²⁵ StAU B65/11/11, 7 Nov 1833, p.293.
- ²²⁶ StAU B65/11/9, 15 Jan 1805, p.300.
- ²²⁷ StAU B65/11/12, 22 Dec 1842, p.238.
- ²²⁸ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ²²⁹ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ²³⁰ This estimation is based on the depth of the Green Dod scalp's relative depths.
- ²³¹ StAU Gillespie collection #113 *Plan of the Old Course*.
- ²³² StAU B65/11/12, 10 Jan 1843, p.245.
- ²³³ StAU B65/22 Box 88, 5 Jan 1843. Questions put to the Applicants for the Office of Superintendent of Mussel Scalps.
- ²³⁴ StAU B65/11/12, 10 Jan 1843, p.245.
- ²³⁵ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ²³⁶ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ²³⁷ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.15.
- ²³⁸ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ²³⁹ StAU B65/11/12, 9 Oct 1843, pp.326-332; 10 Nov 1843, p.345.
- ²⁴⁰ By 31 Oct 1844 fifty-one fishermen had registered. StAU B65/11/13, 8 Nov 1844, p.88.
- ²⁴¹ StAU B65/11/14, 20 Apr 1862, np.
- ²⁴² StAU B65/11.13, 4 Dec 846, p.256.
- ²⁴³ StAU B65/11.13, 16 Aug 1847, p.291; StAU B65/22 Box 88, *A Bill for the Protection*, 30 Jun 1847.
- ²⁴⁴ StAU B65/11/13, 15 Oct 1847, p.300.
- ²⁴⁵ StAU B65/11/13, 11 Jun 1850, p.411.
- ²⁴⁶ StAU B65/11/14, 13 Oct 1855, p.23.
- ²⁴⁷ StAU B65/11/14, 17 Jul 1857, p.171; 15 Aug 1857, pp.180-181.
- ²⁴⁸ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.30.
- ²⁴⁹ StAU B65/11/14, 15 Oct 1857, p.182.
- ²⁵⁰ StAU B65/11/13, 19 Dec 1849, p.349.
- ²⁵¹ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.114.
- ²⁵² StAU b65/11/13, 11 Jun 1850, p.411; 19 Dec 1850, p.438; StAU B65/11/14, 13 Oct 1855, p.23.
- ²⁵³ StAU B65/11/13, 4 Dec 1846, p.256.
- ²⁵⁴ StAU B65/11/14, 20 Apr 1862, np.
- ²⁵⁵ StAU B65/11/14, 7 Jun 1862, np.
- ²⁵⁶ StAU B65/11/15, 6 Feb 1867, p.228; *Fifeshire Journal*, 7 Feb 1867, p.6.

- ²⁵⁷ StAU B65/11/15, 14 Nov 1867, p.280.
- ²⁵⁸ StAU B65/22 Box 88 *Closed Record in Action of Declarator and Interdict* 26 May 1868.
- ²⁵⁹ StAU B65/11/15, 22 Sep 1869, p.386; B65/22 Box 69, *St Andrews Mussel Scalps Hand Bill; Fifeshire Journal*, 21 Oct 1869, p.6.
- ²⁶⁰ StAU B65/11/15, 15 Oct 1869, p.401.
- ²⁶¹ StAU B65/11/15, 17 Mar 1870, p.433.
- ²⁶² *Fifeshire Journal*, 9 Dec 1869, p.6.
- ²⁶³ *Fifeshire Journal*, 8 Jun 1871, pp.4-5.
- ²⁶⁴ StAU B65/11/15, 19 May 1871, pp.509-511.
- ²⁶⁵ StAU B65/22 Box 69, 4 Nov 1871, *Refreshments to Police in Connection with Mussel Riot*.
- ²⁶⁶ StAU B65/11/15, 26 Feb 1874, p.687; 5 Mar 1871.
- ²⁶⁷ StAU B65/11/15, 3 Apr 1874, p.696.
- ²⁶⁸ *Fifeshire Journal*, 9 Dec 1869.
- ²⁶⁹ StAU B65/11/16, 19 Sep 1877, pp.69-70.
- ²⁷⁰ StAU B65/11/16, 23 Dec 1879, pp.279-280.
- ²⁷¹ StAU B65/11/16, 29 Dec 1880, p.373; 29 Jun 1881, p.424.
- ²⁷² StAU B65/11/16, 19 May 1884, p.692.
- ²⁷³ StAU B65/11/16, 19 May 1884, p.692.
- ²⁷⁴ StAU B65/11/16, 19 May 1884, p.692.
- ²⁷⁵ StAU B65/11/17, 27 Dec 1887, p.48.
- ²⁷⁶ StAU B65/11/17, 31 Jan 1888, p.52.
- ²⁷⁷ StAU B65/11/17, 29 May 1888, p.78.
- ²⁷⁸ StAU B65/11/17, 27 Nov 1888, p.133; *Fifeshire Journal*, 23 May 1889, p.6.
- ²⁷⁹ StAU B65/11/18, 28 Nov 1901, p.57; Local rate in February 1892 was 1 shilling 2 pence. Reduced in May 1893 to 1s. January 1895 reduced to 10 pence. November 1901 reduced to 8 pence.
- ²⁸⁰ StAU B65/11/18, 9 Dec 1904, p.255; 23 Dec 1904, p.255.
- ²⁸¹ StAU B65/11/25, 8 Jan 1912, p.112.
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- ²⁸³ StAU B65/11/26, 20 Jan 1915, p.159; 13 Jul 1915, p.233.
- ²⁸⁴ StAU B65/11/26, 20 Jan 1915, p.159.
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- ²⁸⁷ StAU B65/11/27, 1 Jul 1918, p.82, (240 baskets per month –bpm); StAU B65/11/30, 7 Oct 1924, p.530, (800 bpm); StAU B65/11/31, 23 Jan 1928, p.419, (750 bpm); StAU B65/11/32, 25 Nov 1929, p.177, (800 bpm); StAU B65/11/34, 10 Apr 1933, p.76 (800 mo).
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- ²⁸⁹ StAU B65/11/35, 16 Jan 1936, p.252.
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- ²⁹² StAU B65/11/45, 13 Apr 1959, p.459.
- ²⁹³ StAU B65/11/47, 11 Oct 1965, p.265.
- ²⁹⁴ StAU B65/11/49, 16 Feb 1970, p.99.
- ²⁹⁵ StAU B65/11/50, 7 Feb 1972, p.15.

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- ²⁹⁸ Hickman, 'Mussel cultivation' in Gosling (ed.) *The Mussel Mytilus*, pp.471-475.
- ²⁹⁹ Mason 'Production of mussels' in (not available), p.123.
- ³⁰⁰ Hickman, 'Mussel cultivation' in Gosling (ed.) *The Mussel Mytilus*, pp.471-74; Dardigna-Corbeil, (ed.), 'La Mytiliculture' in Marteil *La Conchyliculture Francais*, p.105.
- ³⁰¹ Hickman, 'Mussel cultivation' in Gosling (ed.) *The Mussel Mytilus*, pp.471-74; Mason, 'Production of mussels', in not available), p.123.
- ³⁰² Spat – young post larvae.
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- ³⁰⁴ Dardigna-Corbeil, 'La Mytiliculture in Marteil, (ed.), *La Conchyliculture Francais*, p.107.
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- ³⁰⁸ Hickman, 'Mussel cultivation' in Gosling (ed.), *The Mussel Mytilus*, p.484.
- ³⁰⁹ StAU B65/11/11, 4 Dec 1833, p.314-316.
- ³¹⁰ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868, p.65.
- ³¹¹ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.142.
- ³¹² StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1868.
- ³¹³ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, pp.143-146.
- ³¹⁴ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, pp.143-146.
- ³¹⁵ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, pp.201-202.
- ³¹⁶ Based on photographic evidence of the individual pictured taking the measurements as if he was five feet and six feet tall (figure 13). From Cowie Collection GMC-43-13, 'Mussel scalp fishermen, St Andrews'.
- ³¹⁷ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 206 Jul 1868, p.6.
- ³¹⁸ Fenton, 'Shellfish as bait' in Smout (ed.), *Scotland and the Sea*, p.142.
- ³¹⁹ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalars, p.571.
- ³²⁰ StAU B65/11/30, 6 Jan 1925, p.596; StAU B65/11/35, 16 Jan 1936, p.252.
- ³²¹ NAS RHP 5323.
- ³²² StAU B65/11/17, 8 May 1893, p.341.
- ³²³ StAU B65/11/36, 19 Dec 1938, p.515.
- ³²⁴ StAU B65/11/15, 21 Jun 1870, p.455.
- ³²⁵ StAU B65/11/16, 27 May 1884, p.692.
- ³²⁶ StAU B65/11/17, 29 May 1888, p.78.

- ³²⁷ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps, pp.572-573.
- ³²⁸ Hickman, 'Mussel cultivation' in Gosling (ed.), *The Mussel Mytilus*, p.471.
- ³²⁹ Hickman, 'Mussel cultivation' in Gosling (ed.), *The Mussel Mytilus*, pp.471-74.
- ³³⁰ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps, pp.572-573; *Fifeshire Journal* 23 May 1889, p.6.
- ³³¹ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps, p.439.
- ³³² Seed & Suchanek, 'Population and community' in Gosling (ed.) *The Mussel Mytilus*, p.108.
- ³³³ StAU B65/11/12, 26 Sep 1843, p.311-322.
- ³³⁴ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps, p.447.
- ³³⁵ StAU B65/11/17, 8 Sep 1888, p.9; StAU B65/11/36, 8 Feb 1937, p.36.
- ³³⁶ Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps, p.447.
- ³³⁷ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.188.
- ³³⁸ Hickman, 'Mussel cultivation' in Gosling (ed.), *The Mussel Mytilus*, pp.482, 484.
- ³³⁹ B65/11/12, 26 Sep 1843; Hickman, 'Mussel cultivation' in Gosling (ed.) *The Mussel Mytilus*, p.484.
- ³⁴⁰ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ³⁴¹ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ³⁴² StAU B65/22 Box 69, 16 Jan 1866.
- ³⁴³ GBPC Minute Book 1, p.24.
- ³⁴⁴ *Fifeshire Journal*, 'The Eden and the mussel-scalps', 11 May 1871.
- ³⁴⁵ B65/11/15, 19 May 1871, p.506.
- ³⁴⁶ Weatherill, *One Hundred Years of Papermaking*, p.2.
- ³⁴⁷ GBPC Minute Book 1, p.24.
- ³⁴⁸ GBPC Minute Book 1, p.1.
- ³⁴⁹ Register of Sasines, Fife, 3789, 29 Oct 1874.
- ³⁵⁰ The siding, turntable and lines connecting the property to the railroad occurred six years after the closure of the distillery. *Fifeshire Journal*, 5 Dec 1867, p.5.
- ³⁵¹ Register of Sasines, Fife, 3879, 29 Oct 1874; 29 Oct 1874.
- ³⁵² The Haig Laing & Company was a small brewery that opened on the site in 1869. *Fifeshire Journal*, 22 Jul 1869, p.5.
- ³⁵³ GBPC Minute Book 1, 23 Oct 189?; 7 Jul 1896.
- ³⁵⁴ Weatherill, *One Hundred Years of Papermaking*, p.9.
- ³⁵⁵ StAU B65/11/17, 12 Oct 1896, p.501.
- ³⁵⁶ StAU B65/1/17, 14 Dec 1896, p.519; StAU 1896/10/15 GPW.
- ³⁵⁷ GBPC XII/3/6, 1915, Letter by James Hodge, Managing Director of Guardbridge Paper Company; Jenkins, p.201.
- ³⁵⁸ A History of R.A.F. Leuchars.
- ³⁵⁹ StAU B65/11/27, 29 Jul 1918, p.94.
- ³⁶⁰ StAU B65/11/30, 8 Jun 1925, p.683.

- ³⁶¹ StAU B65/11/30, 18 May 1925, p.667.
- ³⁶² StAU B65/11/30, 8 Jun 1925, p.683.
- ³⁶³ 'Seed, population and community ecology of *Mytilus*, in Gosling (ed.) *The Mussel Mytilus*, p.130.
- ³⁶⁴ StAU B65/22 Box 69, 3 Feb 1883.
- ³⁶⁵ StAU B65/22 Box 69, 17 Feb 1893.
- ³⁶⁶ StAU B65/11/17, 14 Oct 1895, p.455; St AU B65/11/18, 28 Nov 1901, p.57.
- ³⁶⁷ Hickman, 'Mussel cultivation' in Gosling, (ed.), *The Mussel Mytilus*, p.484.
- ³⁶⁸ Hickman, 'Mussel cultivation' in Gosling, (ed.), *The Mussel Mytilus*, p.482, 484.
- ³⁶⁹ *Committee to Inquire into the Conditions of Scottish Mussel & Bait Scalps*, pp.446, 604.
- ³⁷⁰ StAU B65/11/12, 26 Sep 1843, pp.311-322.
- ³⁷¹ The Sleep scalp had been dedicated as the seed re-depository for the St Andrews scalps. This was due to its relative high position in the inter tidal zone. StAU B65/11/12, 26 Sep 1843, p.311-322.
- ³⁷² StAU B65/11/16, 15 Oct 1877, p.78.
- ³⁷³ StAU B65/11/14, 20 Apr 1862, p.559.
- ³⁷⁴ StAU B65/11/30, 7 Oct 1924, p.530; StAU B65/11/31, 23 Jan 1928, p.419.
- ³⁷⁵ StAU B65/11/32, 21 Jan 1929, p.14; StAU B65/11/32, 19 Dec 1932, p.476.
- ³⁷⁶ StAU B65/11/17, 27 Dec 1887, p.48.
- ³⁷⁷ StAU B65/11/15, 6 Feb 1867, p.228; 10 Dec 1867, p.282; p.455 21 Jun 1870, 20 May 1874, p.714; St AU B65/11/27, 3 Jul 1917, p.76; StAU B65/11/29, 18 Apr 1922, p.69.
- ³⁷⁸ McManus and Wal, 'Sediment accumulation mechanisms on the Tentsmuir coast', pp.1-2 in Whittington (ed.) *Fragile Environments*.
- ³⁷⁹ StAU B65/11/15, 20 May 1874, p.714; StAU B65/11/35, 16 Jan 1936, p.252.
- ³⁸⁰ *Committee to Inquire into the Condition of Scottish Mussel & Bait Scalps*, p.664.
- ³⁸¹ StAU B65/11/15, 21 Jun 1870, p.455; StAU B65/11/16, 27 May 1884, p.692; StAU B65/11/17, 29 May 1888, p.78.
- ³⁸² *Committee to Inquire into the Condition of Scottish Mussel & Bait Scalps*, pp.446-447.
- ³⁸³ *Committee to Inquire into the Condition of Scottish Mussel & Bait Scalps*, pp.447, 571-572.
- ³⁸⁴ StAU B65/11/17, 8 Sep 1888, p.93; StAU B65/11/36, 8 Feb 1937, p.36.
- ³⁸⁵ StAU B65/11/15, 21 June 1870, p.455.
- ³⁸⁶ *Committee to Inquire into the Condition of Scottish Mussel & Bait Scalps*, p.445.
- ³⁸⁷ StAU B65/11/15, 22 Sep 1869, p.389.
- ³⁸⁸ *Committee to Inquire into the Condition of Scottish Mussel & Bait Scalps*, pp.571-573.
- ³⁸⁹ Gray, *The Fishing Industry of Scotland, 1790-1914*, pp.166-180.
- ³⁹⁰ Finding the mean of the total profits for 1843-1860 and 1908-1937 made this estimate. The mean was then added to the two total profits.
- ³⁹¹ Sinclair (ed.) *The Statistical Account of Scotland, Fife*, p.613.

- ³⁹² StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867.
- ³⁹³ Jenkins, *The Sea Fishers*, p.201.
- ³⁹⁴ GPPC XII/3/6, 1915 Letter by James Hodge, Managing Director; Jenkins, *The Sea Fishers*, p.201.
- ³⁹⁵ StAU B65/22 Box 88 *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867.
- ³⁹⁶ StAU B65/11/12, 3 Mar 1843, p.259.
- ³⁹⁷ StAU B65/22 Box 69, Jul 1843.
- ³⁹⁸ StAU B65/11/15, 21 Jun 1870, p.455.
- ³⁹⁹ StAU B65/11/26, 11 Jan 1916, p.278.
- ⁴⁰⁰ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867.
- ⁴⁰¹ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867.
- ⁴⁰² StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.15.
- ⁴⁰³ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867.
- ⁴⁰⁴ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.28.
- ⁴⁰⁵ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.16.
- ⁴⁰⁶ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.16.
- ⁴⁰⁷ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.19.
- ⁴⁰⁸ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.16.
- ⁴⁰⁹ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.30.
- ⁴¹⁰ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.18.
- ⁴¹¹ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.23.
- ⁴¹² StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.28.
- ⁴¹³ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.21.
- ⁴¹⁴ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.21.
- ⁴¹⁵ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.65.
- ⁴¹⁶ StAU B65/22 Box 88, *Report of Trial in Causa Sir Coutts Lindsay*, 2-6 Jul 1867, p.115.
- ⁴¹⁷ Fife Council, *The Eden Estuary Local Nature Reserve*.

- ⁴¹⁸ Chilvers, 'Eden Estuary Local Nature Reserve'. <http://www.premier-pages.co.uk/ewa/lnr.htm>
- ⁴¹⁹ Chilvers, *Eden Estuary Local Nature Reserve*.
- ⁴²⁰ Robertson, *Coastal Assessment Survey for Historic Scotland*.
- ⁴²¹ StAU B65/11/15, 21 Jun 1870, p.455.
- ⁴²² StAU B13/14/8, 2 Apr 1813, pp.129-167.
- ⁴²³ StAU B13/14.8, 2 Apr 1813, p.141.
- ⁴²⁴ StAU B13/14/8, 2 Apr 1813, pp.141-142; *Register of Sasines, Fife*.
- ⁴²⁵ Sinclair *The Statistical Account of Scotland*, p.613.
- ⁴²⁶ Sinclair *The Statistical Account of Scotland, Fife*, p.706; Simpson, *Historic Cupar*, p.1; StAU B13/22 no.17.
- ⁴²⁷ *Fifeshire Journal*, 'Guard Bridge', 18 April 1839, p.3.
- ⁴²⁸ Campbell, *Scotland Since 1707*, pp.4-6.
- ⁴²⁹ Bruce, *Wrecks and Reminiscences of St Andrews Bay*, p.187.
- ⁴³⁰ *The New Statistical Account of Scotland, Fife and Kinross*, p.724.
- ⁴³¹ *Pier and Harbour Provisional Orders (No.1), Anstruther*.
- ⁴³² *Summary of Reports, 1887 and Committee to Inquire*, 1889.
- ⁴³³ StAU B65/22 Box 88, *Abstract Statement of the Mussel Scalps*, c.Oct 1860.
- ⁴³⁴ StAU B65/11/13, 19 Dec 1849, p.349.
- ⁴³⁵ StAU B65/11/15, 19 May 1871, pp.509-511.
- ⁴³⁶ *Fifeshire Journal*, 8 Jun 1871, pp.4-5.

FIGURES

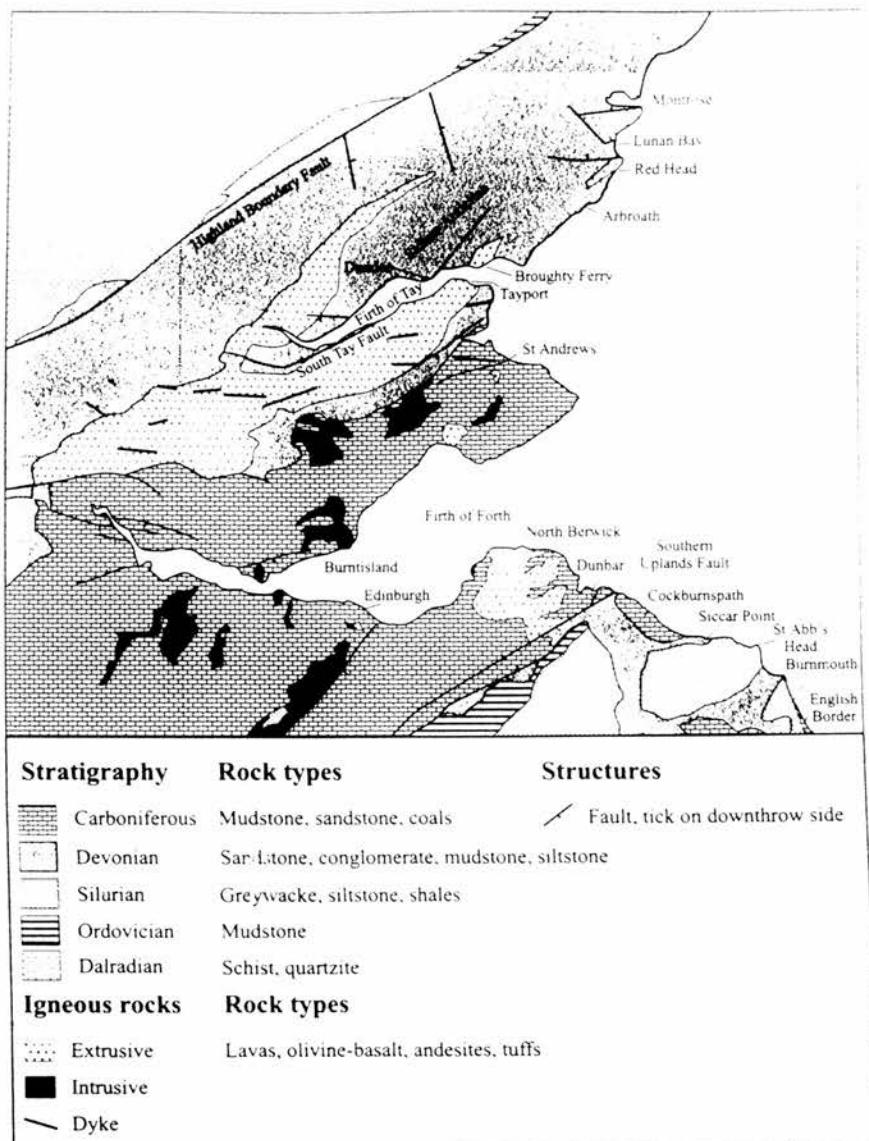


Figure 1. Onshore coastal geology. (*as in Barne (et al.), 'Coast and seas of the United Kingdom region 4'.*)



Figure 2. Conjectural map of the Eden Estuary area, c. 6500-6000 B.P., With elevations ranging from 50 O.D. (Stippled area) to over 300 feet (double stipple) inland. (*as in Coles, 'The Early Settlement of Scotland'.*)

THE EDEN PORT

- 1 BURGH OF ST ANDREWS, *c.* 1144 A.D.
- 2 BURGH OF CUPAR, *c.* 1381 A.D.
- 3 LEUCHARS AND EARLSHALL, *c.* 1792 A.D.
- 4 FLEMING, *c.* 1802 A.D. & SPENCE, *c.* 1826
- 5 HAIG, *c.* 1809

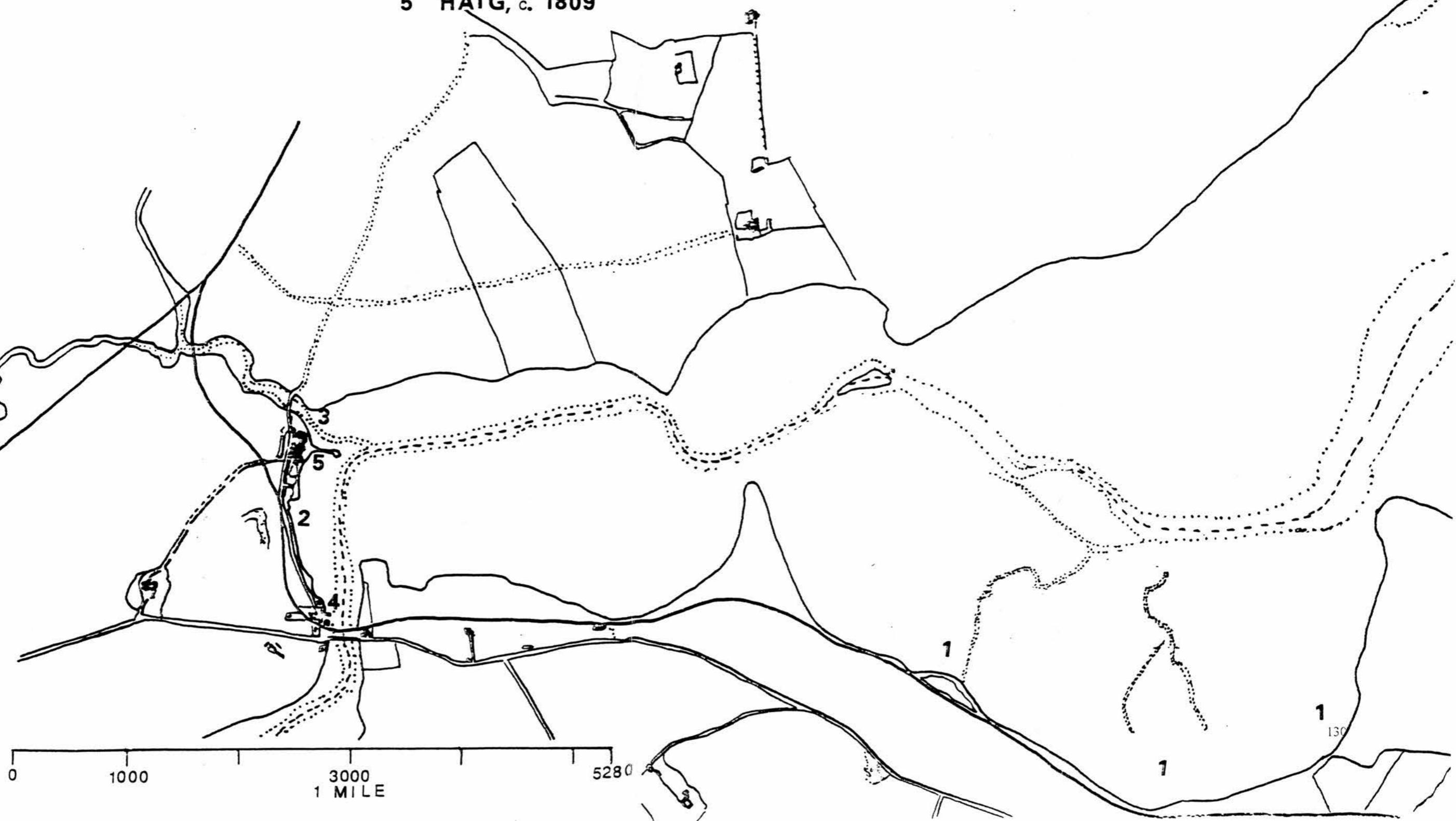


Figure 3. Map indicating landing sites on the Eden Estuary. (By: M. Fellows based on 1854 Ordnance Survey map.)

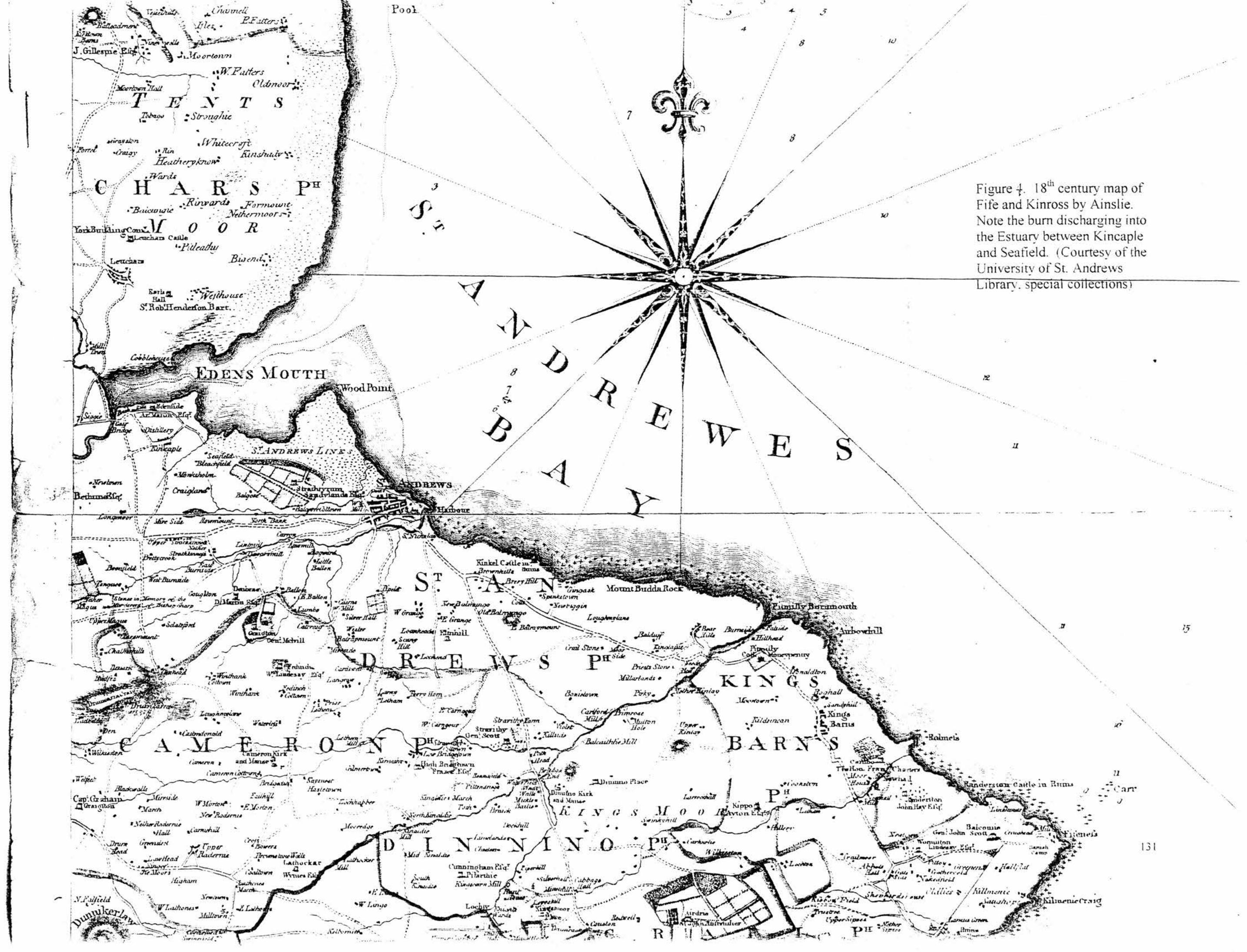


Figure 4. 18th century map of Fife and Kinross by Ainslie. Note the burn discharging into the Estuary between Kincaple and Seafield. (Courtesy of the University of St. Andrews Library, special collections)



Figure 5. 19th Century map of the counties of Fife and Kinross by Greenwood & Fowler. Note the three burns draining into the Estuary between Kincaple and Starthtyrum. The black dots represent locations referred to in the text.

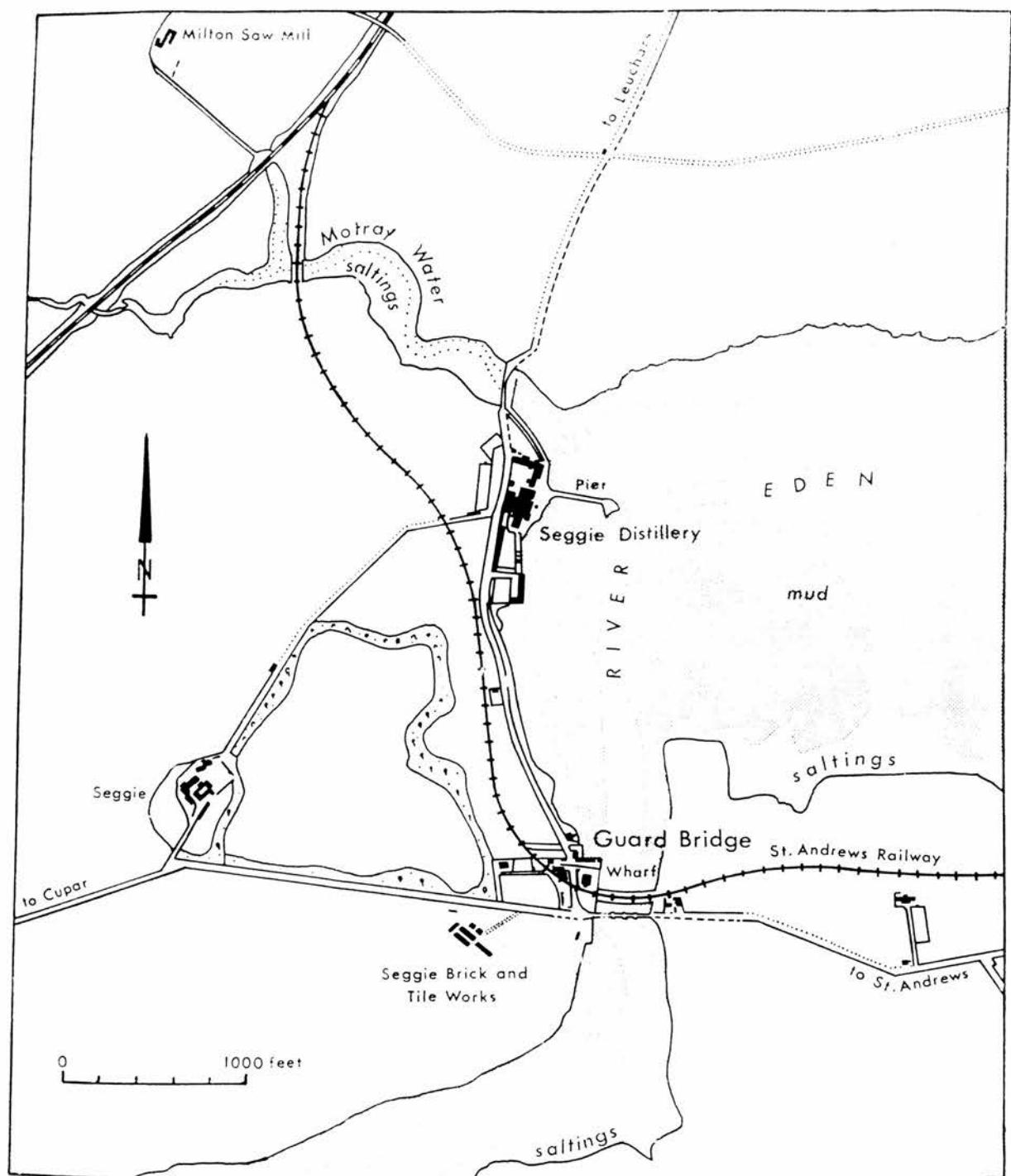


Figure 6. Map showing the Motray Water, Seggie pier, Seggie farm, Guard Bridge and the Spece's quay c. 1854 (as in Weatherill, 'One hundred years of papermaking').

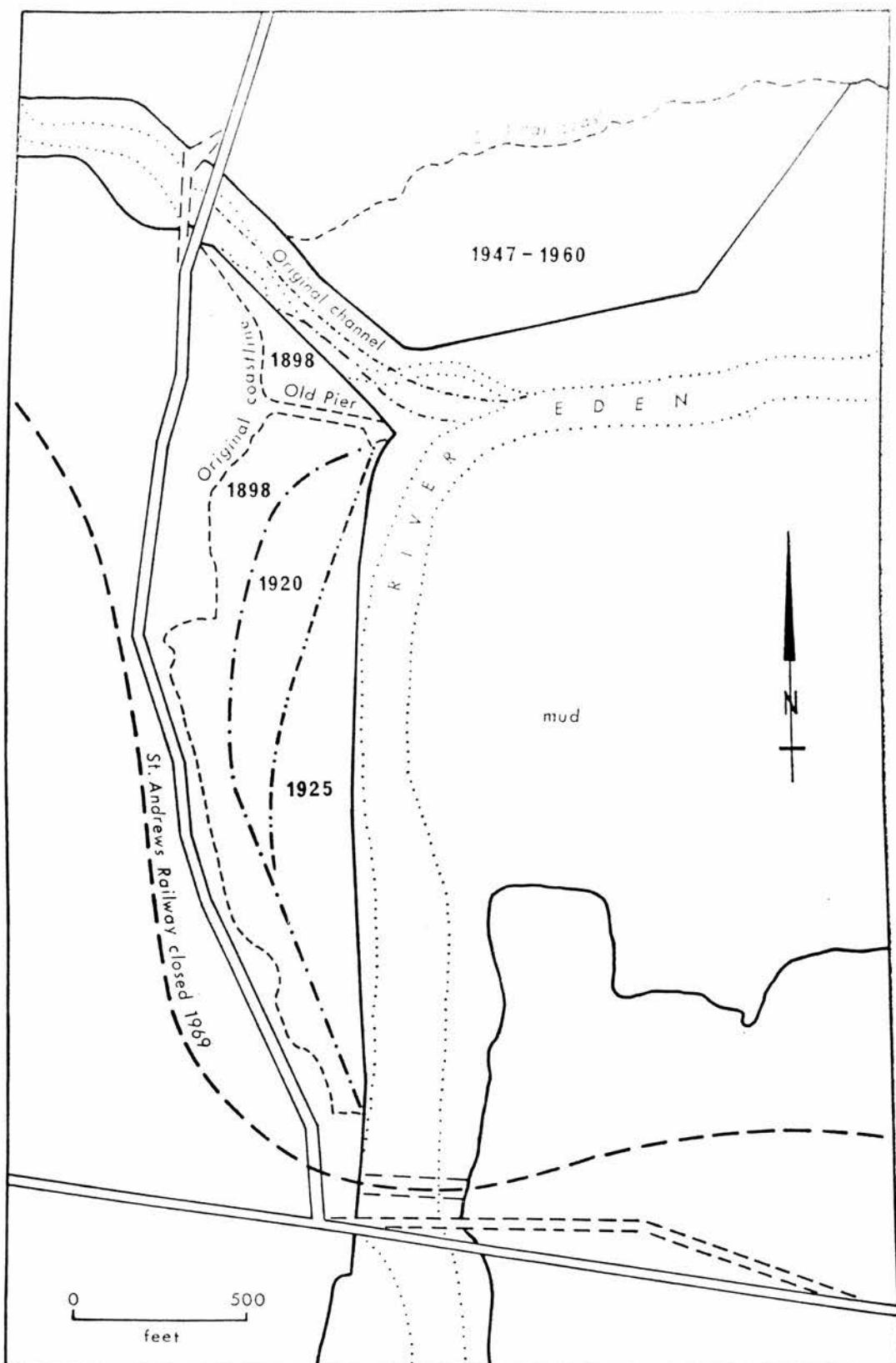


Figure 4. Map showing the Motray Water, Seggie pier, Seggie farm, Guard Bridge and the Spee's quay c. 1854 (as in Weatherill, 'One hundred years of papermaking').

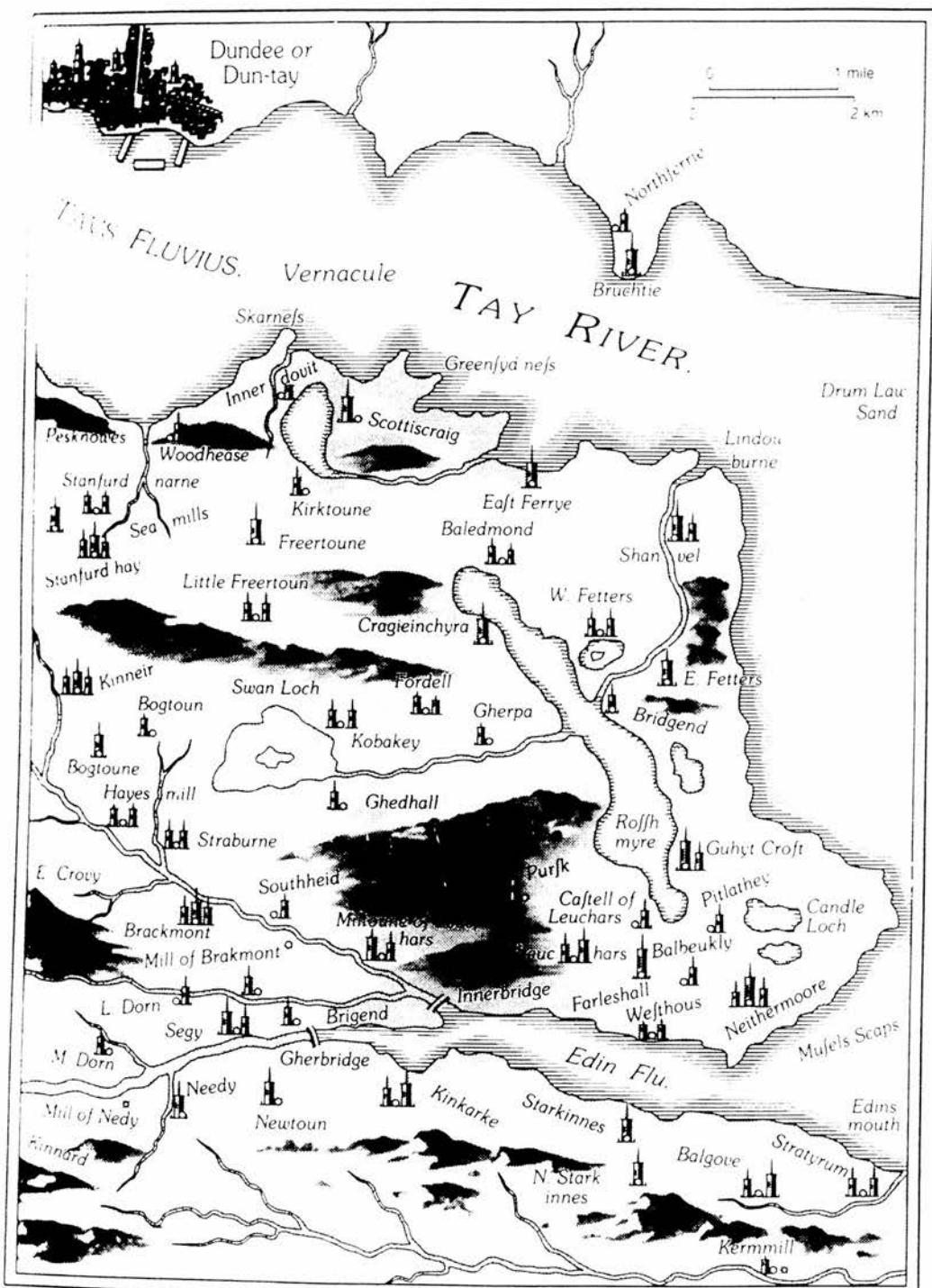


Figure 8. A recreation of a portion of a 16th century map of Fife in Blaeu's Atlas showing 'Musels Scaps' at the mouth of the Eden (as in Whittington (ed.), 'Fragile environments').

EDEN ESTUARY MUSSEL SCALPS

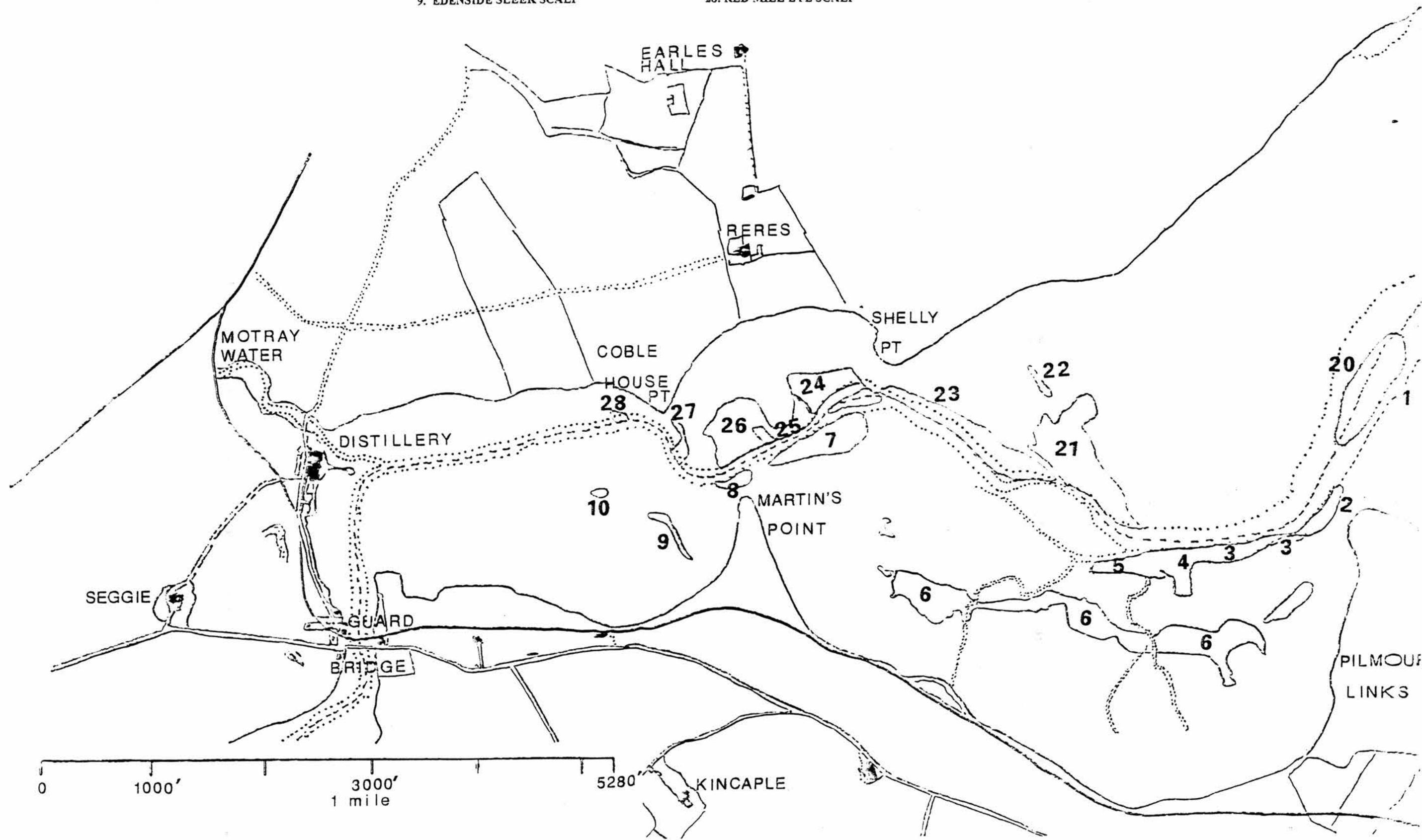
ST ANDREWS

1. DANDY SCALP
2. WYLLIE HOLE SCALP
3. MAIN SHORE SCALP
4. GREEN DOD SCALP
5. MAJOR SCALP
6. ST ANDREWS SLEEK SCALP
7. SNUFFY SANDLANDS SCALP
8. MONT FROST SCALP
9. EDENSIDE SLEEK SCALP

LEUCHARS

20. DANDY SCALP
21. NEUKE END SCALP
22. LUCKY DADDIE SCALP
23. MAIN SHORE SCALP
24. SHELLY POINT SCALP
25. MAGIE ORPHAT SCALP
26. COBLE HOUSE SCALP
27. NESS SCALP
28. RED MILL EYE SCALP

Figure 9. Mussel beds in the Eden Estuary, St Andrews and Leuchars 1867 (Drawn by: M. Fellows based on NAS RHP 5323).



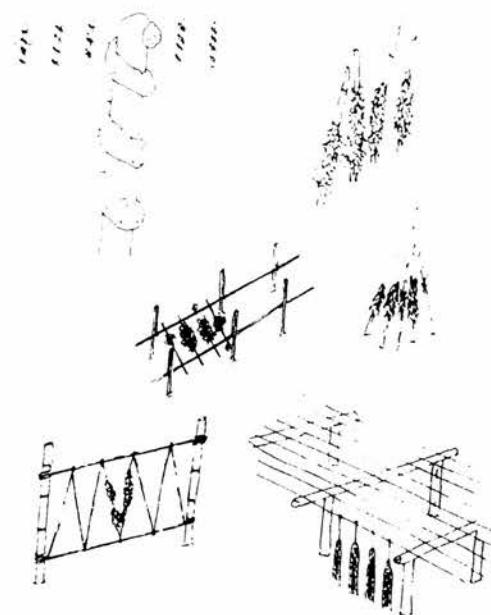
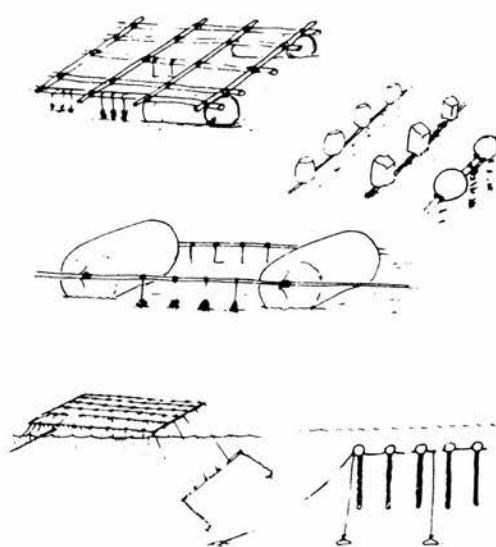


Figure 10a. Different forms of fixed-suspended cultivation (*as in Hickman, 'Mussel Cultivation'*).

Figure 10b. Different forms of floating-suspended cultivation (*as in Hickman, 'Mussel Cultivation'*).



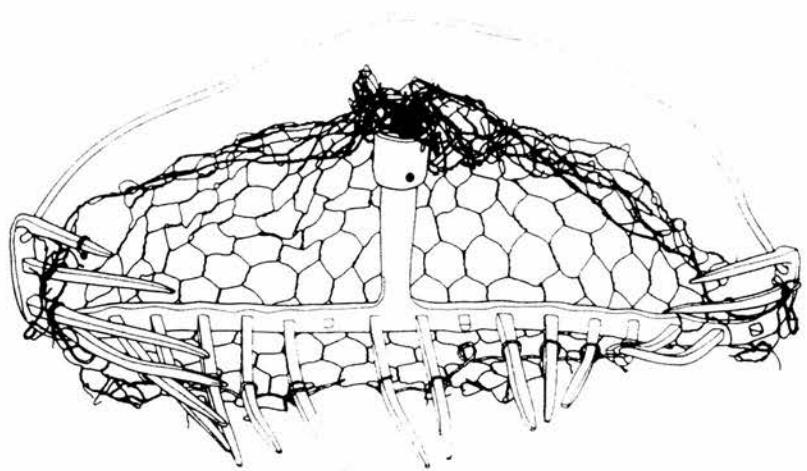


Figure 11. Two sketches of a mussel rake with bag of netting wire
(as in Fenton 'Shellfish as Bait').

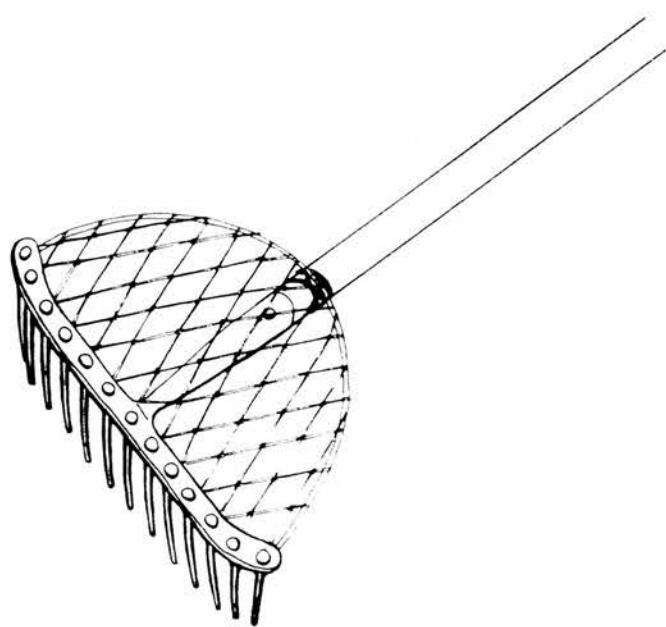


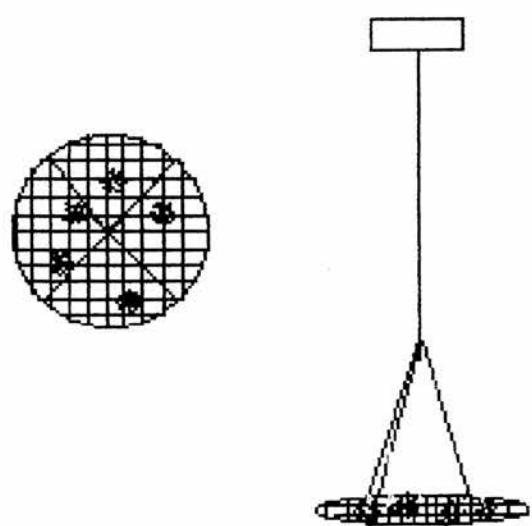


Figure 12. Photo of the St Andrews musselmen harvesting with rakes c. 1930s
(Courtesy of the University of St Andrews Library, Cowie Collection).



Figure 13. Photo of the St Andrews musselman harvesting with a rake *c.* 1930s.
Note the length of the rake as compared to the man. (Courtesy of the University of St Andrews Library, Cowie Collection).

Figure 14. A depiction of the starfish trap as recommended by Dr. Fullerton (StAU B65/22 Box 69, 17 Feb 1893).



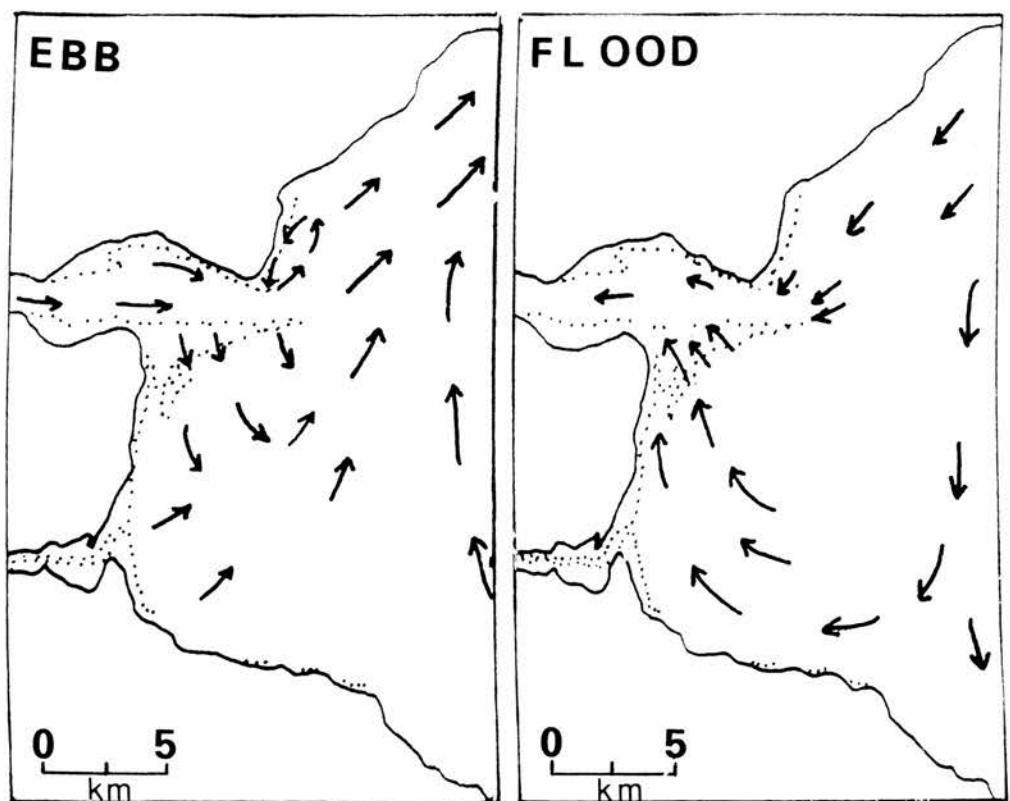


Figure 15. Tidal patterns in the St Andrews Bay (*as in McManus and Wal, 'Sediment Accumulation'*).

Figure 16. Some archaeological sites on the Eden Estuary.

The below numbers correspond to the following map indicating the location of selected archaeological sites.

1. 19th Century slipway. (This is also the area that is believed to have been the location of the Medieval Port of St Andrews.)
2. 20th Century mussel catching and collecting tank embedded in mud flats. This is now believed to be one of the oyster beds that the town had planted.
3. 20th Century fish trap.
4. 19th –20th Century wooden jetty.
5. Linear feature visible on 1946 1:10,000 aerial photo. It is now believed that this is a submarine ‘net’ constructed during World War II as part of the shore defenses for the Leuchars aerodrome.
6. Air defense platform constructed during World War II as part of shore defenses for Leuchars aerodrome.
7. Numerous cement barriers placed during World War II as part of shore defenses for Leuchars aerodrome.
8. Pill box and radio mast dating to World War II.
9. Wooden stakes in foreshore arranged in grid form (glider trap). Part of the defense system for Leuchars aerodrome.

(Robertson, P., *Coastal assessment survey for Historic Scotland, Fife, Fifeness to Newburgh, Maritime Fife*, University of St Andrews, unpublished report, 1996).



Figure 16. Map indicating some archaeological sites on the Eden Estuary.



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(B65/11/10)	(B65/11/34)
(B65/11/11)	(B65/11/35)
(B65/11/12)	(B65/11/36)
(B65/11/13)	(B65/11/37)
(B65/11/14)	(B65/11/38)
(B65/11/15)	(B65/11/39)
(B65/11/16)	(B65/11/40)
(B65/11/17)	(B65/11/41)
(B65/11/18)	(B65/11/42)
(B65/11/22)	(B65/11/43)
(B65/11/23)	(B65/11/44)
(B65/11/24)	(B65/11/45)
(B65/11/25)	(B65/11/46)
(B65/11/26)	(B65/11/47)
(B65/11/27)	(B65/11/50)
(B65/11/28)	(B65/11/51)
(B65/11/29)	(B65/11/52)
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APPENDIX

Appendix

Vessels known to have travelled the Eden 1794-1893	A
Burgh Pilots Licensed 1836-1868	B
Fishermen Believed to have acted as Pilots (Non-Licensed) in St Andrews, 1823-1896:	C
Estimated First Year Outlay	D
Questions Posed to Applicants	E
Example of Carts and Boats Loaded at the St Andrews Mussel Scalps	F1 & F2
Equipment Inventory 1937	G
Scottish Mussel Beds by District (Feb 1887)	H
Statement of Income, Expenditures and Losses, 1843-1860	I
Statement of Income, Expenditures and Losses, 1910-1937	J

Appendix A
Vessels known to have travelled the Eden 1794-1893

Name	Date	Owner
<i>Brothers</i>	c.1840	Spence, wood merchant Guard Bridge, Fife. 1880's became Dundee lighter. (S1)
<i>Brothers</i>	1859	---- of Dundee, 73 tons. (possibly belonging to D. Spence). (S4)
<i>Camel</i>	1840s	Spence, wood merchant. Guard Bridge, Fife. (S1)
<i>Catherine Spence</i>	1840s	Spence, wood merchant. Guard Bridge, Fife. (S1)
<i>Charles and Agnes</i>	1821	Wemyss. Of St Andrews. Square Danish Sloop, 45 tons. Bound for Guard Bridge with coals from Newcastle. (S1, S2)
<i>SS Curfew</i>	1889	---- Of Glasgow with cargo of China clay for the Guardbridge Paper Mill. (S7)
<i>Eagle</i>	1839	---- Schooner, of Clackmannan. Capt. J. Morrison. Inbound with coals, outbound with grain. (S5)
<i>Eden</i>	c. 1840s	Spence, wood merchant. Guard Bridge, Fife. (S1)
<i>Elisabeth Midddleton</i>	1867	---- Of Newcastle. 45 tons. (S4)
<i>Enigheden</i>	1839	---- Galliot, of Norway. Capt. Frederickson. Cargo of timber. (S5)
<i>Euphemia</i>	1859	---- Of Dundee, 62 tons. (S4)
<i>Eureka</i>	1868	---- of St Andrews. 69 tons. (S4)

<i>Fame</i>	1830s	----- Possibly Haig of Kincaple or Peter Robertson. Sloop of St Andrews, Fife. Carried raw grain whisky from Seggie distillery to London returning with coals from East Anglea. (S1)
<i>Fear Not</i>	1870	---- Of St Andrews. 64 tons. (S4)
<i>Friends</i>	1826	Dorritt of Tayport. Sloop of 30 tons. Bound to Guard Bridge loaded with Guano for Spence. Lost at Eden Bar. Total wreck.
<i>Friends</i>	1859	---- Of Pittenweem. 68 tons. (S4)
<i>Friends</i>	1860	---- Of Crail, 32 tons (S4).
<i>Fortuna.</i>	1839	----- Galliot of Germany. Capt. Johan, Guard Bridge. Bones. (S5)
<i>Gipsey Queen</i>	1869	---- Of St Andrews, 31 tons. (S4)
<i>Glenco</i>	1888	---- Of Glasgow, 48 tons. (S4)
<i>Grace</i>	1861	---- Of Newcastle, 32 tons. (S4)
<i>Grace</i>	1864	---- Of Newcastle, 30 tons. (S4)
<i>Highlander</i>	Oct 1847 & Jan 1848	A.P. Ross of Kingston. 74 ton schooner, built in Kingston in 1840. (Assumed cargo - timber) (S6)
<i>Hope</i>	1863	---- Of Newcastle, 32 tons. (S4)
<i>Hope</i>	1864	---- Of Newcastle, 36 tons. (S4)
<i>James Dowell</i>	1861	---- Of Newcastle, 41 tons. (S4)
<i>Jane & H...</i>	1879	---- Of Newcastle, 30 tons. (S4)
<i>Jane & Mary.</i>	1821	C. Wemyss Master and owner of St Andrews. Cargo to Guard Bridge. (S1)
<i>Jem</i>	1864	---- Of Newcastle, 52 tons. (S4)
<i>Jessie</i>	1860	---- Of Sunderland, 79 tons. (S4)

<i>Jessie</i>	1874	----	Of St Andrews, 54 tons. (S4)
<i>Ikinawilmina</i>	1839	----	Galliot of Holland. Capt. H.L. Tops. Inbound Guard bridge with cargo of bones. (S5)
<i>John & Barbara</i>	1866	----	Of Crail, 31 tons. (S4)
<i>John & Hannan</i>	1879	----	Of Newcastle, 36 tons. (S4)
<i>John Strahan</i>	1893	----	Of Kirchaldy, 43 tons. (S4)
<i>John & William</i>	c.1794	----	Of Crail. Lost around in the River Eden prior to April 1794. (S3)
<i>Lark</i>	1868	----	Of Dundee, 50 tons. (S4)
<i>Lawson</i>	1870	----	Of Arbroath, 30 tons. (S4)
<i>Lukiesale</i>	1866	----	Of Stockton, 30 tons. (S4)
<i>Margaret</i>	1866	----	Of Sunderland, 30 tons. (S4)
<i>Market Maid</i>	1861	----	Of Newcastle, 36 tons. (S4)
<i>Mary</i>	1859	Pringle,	Of St Andrews, 59 tons. (S2, S4)
<i>Mary</i>	1860	----	Of Crail, 43 tons. (S4)
<i>Mary</i>	1871	----	Of Newcastle, 37 tons. (S4)
<i>Mary & Elizabeth</i>	1863	----	Of Newcastle, 34 tons. (S4)
<i>Mary Ann</i>	1867	----	Of Berwick, 45 tons. (S4)
<i>Marjery</i>	1839	----	Schooner of Newcastle. Capt. D. Pringle. Inbound with coals, outbound with potatoes. (S5)
<i>Marjory</i>	1840s	Spence, wood merchant. Guard Bridge, Fife. Sloop. (S1)	
<i>Nil Desperandus</i>	1868	----	Of Sunderland, 38 tons. (S4)
<i>Nil Desperan</i>	1868	----	Of Sunderland, 34 tons. (S4)
<i>Nil Desperandum</i>	1867	----	Of Sunderland, 30 tons. (S4)
<i>Oak</i>	1861	----	Of Newcastle, 33 tons. (S4)

<i>Packet</i>	1817	---- Sloop. Master Willie Hutchinson. Sunk December 1817 in St Andrews Bay after delivering coal to Seggie. (S1)
<i>Palaro</i>	1870	---- Of Newcastle, 32 tons. (S4)
<i>Peace & Plenty</i>	1869	---- Of Banniff, 40 tons. (S4)
<i>Pelau</i>	1876	---- Of Newcastle, 32 tons. (S4)
<i>Pillow</i>	1868	---- Of Newcastle, 32 tons. (S4)
<i>Prospect</i>	1868	---- Of Eyemouth, 38 tons. (S4)
<i>Richard & George</i>	1878	---- Of Eyemouth, 65 tons. (S4)
<i>Sarah & Ann</i>	1866	---- Of Hartpool, 33 tons. (S4)
<i>Southwick.</i>	1820	Peter Robertson, Master and owner. (S6)
<i>Time</i>	1867	---- Of Alloa, 44 tons. (S4)
<i>Thomas & George.</i>	1841	---- Sloop. Went a wreck on Brunstool. (S1)
<i>True Blue</i>	1858	---- of St Andrews. Outbound with cargo of Laden with small potatoes from Guard bridge she struck a sandbank in the Eden. Re-floated only to be blown onto the south bank. Towed to St Andrews and repaired. (S1)
<i>Turstein</i>	1871	---- Of Stormstadt, 42 tons. (S4)
<i>Twin Brothers</i>	1840s	Spence, wood merchant. Guard Bridge, Fife. (S1)
<i>Virtue</i>	1867	---- Of Whitby, 46 tons. (S4)
<i>Weir</i>	1865	---- Of Sunderland, 35 or 50 tons. (S4)
<i>William & John</i>	1868	---- Of Sunderland, 62 tons. (S4)
<i>Woodyard</i>	1842	Spence, wood merchant, Guard Bridge, Fife. Sloop. Lost autumn 1842 on the 'Luckies', near the entrance to the Boarhills harbour. (S1, S2)

Unknown	1841	---- Dunbar Sloop c.40 tons. Cleghorn Skipper. Bound for Eden laden with coal. Wrecked on Burn stools October 1841. (S1)
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Source:

S1 = Bruce, George. 'Wrecks and reminiscences of St Andrews Bay'.

S2 = Dobson, 'An Analysis of shipping incidents.'

S3 = StAU 1794/4/11 LB.

S4 = StAU B65/18/4, Harbour Dues 1859-1920.

S5 = Fifeshire Journal, 18 April 1839, p.3.

S6 = Hustwick, I., 'Moray Firth', p. 64.

S7 = Fifeshire Journal, 23 Jun 1889, p.5.

Appendix B

Licensed pilots of St Andrews

By Trinity House

Name

Date

Source

Brown, Andrew	6 Mar 1846 24 years old	Pilot Bond Book ‡ Crew: T. Goodfellow and T. Brown.
Chisholm, William	22 Oct 1847 36 years old	Pilot Bond Book Crew: T. Miles and A. Sine.
Gardner, David	30 Sep 1858 62 years old	Pilot Bond Book ± Crew: J. Mackie and D. Pringle replaced 1863 by J. Paterson.
Harley, Andrew	3 Nov 1863 40 years old	Pilot Bond Book ‡ Crew: T. Kay and J. Paterson.
Henderson, Alexander (Sandy)	4 Jun 1852 42 years old	Pilot Bond Book ‡ Crew: D. Pringel and W. Boyd.
Miles, John	28 Jan 1868 29 years old	Pilot Bond Book ‡ Crew: H. Gibson and D. Anderson.
Wallace, George	7 Apr 1836 48 years old	Pilot Bond Book † Crew: A. Duncan and W. Stobie.
Wilson, John	19 Apr 1836 32 years old	Pilot Bond Book † Crew: D. Cre____(?) and P. Mitchel.

† NAS GD 226/13/5

‡ NAS GD 226/13/6

± NAS GD 226/13/7

By St Andrews 1898-1906

Jan 1898	2 pilots licenses
Mar 1899	Alexander Chisholm & James Gourlay pilot license
Jan 1900	2 Pilots license issued
Jan 1902	James Gourlay pilots license
Oct 1902	2 Pilots license issued
Nov 1903	Pilots license William Chisholm
Oct 1904	2 Pilots license issued
Aug 1906	Andrew Chisholm pilot license

(StAU B65/18/4)

Other pilots who worked the Eden

<u>Name</u>	<u>Date</u>	<u>Of</u>	<u>Source</u>
Keddie, Andrew	1842	Tayport	Pilot Bond Book [‡] Crew: Mr. Adam and T. Pringle.
Henderson, David	1862/1866	Tayport	Westwood
M'Intosh, James	1862	Tayport	Westwood
White, James	1866	Tayport	Westwood

[‡] NAS GD 226/13/6

Appendix C
Fishermen believed to have acted as pilots (non-licensed)
in St Andrews, 1823-1897

Name	Date	Source
Fenton, Walter (Wattie)	1836	1841 Census of St Andrews, Bruce
Hutchinson, Bob	1830s	Bruce
Martin, Sandy	1838	Bruce
Peattie, Peter	1836	Bruce

Appendix D

Estimated first year outlay

(1) Large coble with gear	£7
(1) Small coble with gear	5
(1) Temporary wood house	<u>£10</u>
	£ 22
(1) Superintendent wages for one year 10s wk	£25
Gratuity for every cart loaded	2s
Gratuity for every boat loaded	5s
Occasional labour... 10s (wk)	<u>£12</u>
First years outlay =	£59 pounds

(B65/11/12, 13 Dec 1842)

Applications for
the Appointment
for
the Office
of
Superintendent
of
Mussel scalpers

**Appendix E: Questions put to
the applicants for the office of
superintendent of the mussel
scalp. (StAU B65/22 Box 88)**

	1st April 1844	1st April 1844	1st April 1844
	Supplies issued from 3rd Feb ^r to 31 st July 1844		
Ldy ^r 5 th	George Hodge		Baskets
"	James Invie		16 £ 10.8
March 27		Order lost.	18 " 12 -
April 22	George Thomson		13 ^{1/2} " 4.6
" 29	George Thomson		16 " 10.8
May 11	George Thomson		16 " 10.8
" 17	James Scott		16 " 10.8
" "	George Hodge		18 " 12 -
" 18	Alex ^r Miles		18 " 12 -
" "	George Thomson		16 " 10.8
" 26	George Hodge		18 " 12 -
" "	Robert Cruckshank		18 " 12 -
" 21	James Scott		18 " 12 -
" "	George Henderson		18 " 12 -
" 23	Alex ^r Miles		18 " 12 -
" "	George Bell		18 " 14 -
" "	George Henderson 2 carts		36 1 4 -
" 24	James Scott 2 carts		36 1 4 -
" "	George Hodge		18 " 12 -
" "	Alex ^r Miles		18 " 12 -
" "	George Henderson 2 carts		36 1 4 -
" 25	George Thomson		16 " 10.8
" 27	John Simpson		18 " 12 -
" "	Robert Cruckshank		18 " 12 -
" "	George Hodge		18 " 12 -
" "	Alex ^r Miles		18 " 12 -
" "	James Scott		18 " 12 -
" 28	James Scott		18 " 12 -
" "	Alex ^r Miles		17 ^{1/2} " 11 4
" 29	George Bell		18 " 12 -
Carried Over			57 ^{1/2} 18 19 10

Appendix F1
Example of mussel sales at the
St Andrews mussel scalps

Cards traded in Edens				1854	Books
Oct 2 ^d	1	Cat-	James Brown		16
Sept 17 th	1	Le	George Thompson		16
Nov 12 th	1	Le			17
* 15 th	1	x	William Pest	Coastside	18
" 21 st	1	Le	George Hemmings		16
" 25 th	1	Le	George Elliot	Coastside	18
" 11 th	1	Le	David Duncan	Le	18
27 th	1	x	David Wdg	Le	15
Dec 20 th	1	x	Henry Miles	Le	18

Baskets 152
Correct David Bruce

8 carts at 2/- £11 16/-
2 dr - " 1/- £11 17/-

Boats 32 tons ~~24 2 -~~
~~24 19~~
From Frank Kenoteon Phillips
May the 1st 1874 received payment
of his bill for 1974
Wm. C. C. 1974

Appendix F2

Example of boats and carts loaded at the St Andrew mussel scalps

Appendix G

Equipment inventory 1937

- (3) Cobles in fair condition
- (1) Small ferry-boat in fair condition
- (4) Mussel rakes in good condition
- (3) Pairs of rubber thigh boots in good condition
- (3) Grips in good condition
- Hut with fireplace in good condition
- Mooring ropes for boats in good condition.

Appendix H

Scottish mussel beds by district (Feb. 1887)

East Coast

Eyemouth District – no beds.

Leith District –

1. Newhaven to Inchkeith and Portobello. They belong to the city of Edinburgh.
2. Fisher Row, near Musselburgh – two scalps owned jointly by the Burgh of Musselburgh and Benhar Coal company
3. Small beds near South Queensferry (property of the Crown), Burntisland (Lord Norton), Gullance (Lord Wemyss) Tyninghame (Lord Haddington).

Anstruther District –

Eden Mouth

4. St Andrews beds – owned by the Burgh of St Andrews. ©
5. Leuchars beds – owned by Sir Lindsay and Col. Long's heirs. ©
6. Tay – Eight to 10 miles long by one and a half miles wide.

Montrose District –

7. Tay – From Dundee harbour to Broughty Ferry. Owned by the City of Dundee. Seven miles long.

Montrose Basin (South Esk)

8. Don beds – Owned by W. Kennedy, 60 acres. ©
9. Rossie – Owned by J. Johnston, 35-40 acres. ©
10. North Esk – Mr. Scott owner 2-3 acres

Stonehaven District –

No beds

Aberdeen District –

No beds.

Peterhead District –

11. Ythan beds near Newburgh – Mr. Udny owner.

Fraserburgh District –

No beds.

Bannff District –

No beds.

Buckie District –

No beds.

Findhorn District –

12. Findhorn river mouth – owned by Mr. Ferguson.
13. Inverness (mouth of Ness) – owned by Town of Inverness.

Cromarly District –

14. Beauly Firth – owned by the town of Inverness.
15. Munlochy Bay – owned by Mr. Fletcher.

Cromarchy Firth –

16. Nigg to Newton Point – Cromarty Fishermen claimed,
Duchess of Sutherland owned oyster beds in same location.
Exhausted late 1880s.
17. Tain – owned by Town of Tain. © Depleted by 1888.

Helmsdale District –

18. Little Ferry – owned by the Duke of Sutherland. ©
19. Meikle Ferry – owned by Mr. Sutherland.

Lybster District –

No beds

Wick District –

20. Loch Tongue – owned by Duke of Sutherland
21. Loch Erriboll – owned by Duke of Sutherland
22. Kyle of Durness – owned by Duke of Sutherland

Orkney & Shetlands**Orkney District –**

No beds

Shetland District -

23. Several beds scattered in various bays. No major beds.

West Coast**Stornoway District -**

24. Island of Lewis – owned by Lady Matherson
25. Barra – inside Grianamal Isalnd

Lock Broom District –

26. Loch Urchard – owned Duke of Sutherland
27. Lochlasford – owned Duke of Sutherland
28. Loch Glendhu – owned Duke of Sutherland
29. Loch Canaird – owned Countess of Cromertie
30. Loch Broom – owned Sir Mackenzie
31. Loch Ewe – owned Sir Mackenzie
32. Gairloch – owned Sir Mackenzie

Fort William District –

33. Kintra – owned Mr. Dagleish
34. Loch Scriddon – owned Mr. Mitchell
35. Ulua – owned Messrs Clark and Parr.

Campbelltown District –

No beds.

Inverary District –

36. West Loch Tarberv – owned by Messers Campbell and McLeod
37. Otter Spit – owned Mr. Rankin
38. Loch Fyne – owned Mr. Callander

Greenock District –

River Clyde

39. Helensburgh to Dumbarton – owned by town of Greenock.
Depleted late 1880s.

© = Cultivated

*Source – Summary of reports by officers of Fishery Board on mussel beds in tidal waters and drying grounds for fishermen's nets in Scotland, 1887 and Committee to inquire into the condition of Scottish mussel and bait beds, Rep., EV., App 1889.

Appendix I
Statement of income, expenditures, and losses
1843 –1860

Year Ending	Income	Loss
1843-1844	£38.03.07	£0.0.0
1844-1845	----	39.9.3
1845-1846	48.19.11	0.0.0
1846-1847	72.07.10	0.0.0
1847-1848	56.10.07	0.0.0
1848-1849	156.10.00	0.0.0
1849-1850	122.14.40	0.0.0
1850-1851	87.04.10	0.0.0
1851-1852	50.19.10	0.0.0
1852-1853	114.15.90	0.0.0
1853-1854	119.19.11 ½	0.0.0
1854-1855	387.07.00	0.0.0
1855-1856	359.09.70	0.0.0
1856-1857	339.09.10	0.0.0
1857-1858	98.15.10	0.0.0
1858-1859	326.14.50	0.0.0
1859-1860	<u>388.00.60</u>	0.0.0
	£2789.02.06 ½	£39.9.3
	Loss	- <u>39.9.3</u>
	Total	£2749.18.0 ½

(Abstract statement of the mussel scalps belonging tot he City of St Andrews from the Years 1843 to October 1860. StAU B65/22 Box 88)

Appendix J
Statement of income, expenditures, and losses
1910-1937

Ending 15 May	Baskets Sold	Year Income	Total Number Expenditures	Profit
1908	N/A	534.11.12	341.16.7*	192.15.5*
1907	N/A	555.2.4	341.16.7*	213.5.9*
1910	11,350	577.6.8	341.16.7	255.10.1
1911	9,133	472.13.10	368.10.1	104.3.9
1912	9,116	464.6.4	334.6.1	130.0.3
1913	7,029	350.3.8	302.14.0	47.9.8
1914	10,147	531.16.8	328.17.9	202.18.11
1915	12,616	643.2.0	420.19.3	222.12.9
1916	7,381	380.12.3	394.17.6	--
1917	7,436	496.15.4	367.9.4	129.6.0
1918	6,004	465.1.4	376.18.1	88.3.3
1919	4,993	560.10.0	499.15.2	60.14.10
1920	11,094	1545.7.6	36.0.3	809.7.3
1921	11,659	1691.12.0	065.0.8	626.11.4
1922	9,660	1407.4.4	1123.13.8	283.10.8
1923	4,743	553.17.11	864.1.7	--
1924	7,343	735.5.9	599.10.0	135.15.9
1925	8,003	797.12.0	621.9.6	176.2.6
1926	3,199	316.10.6	502.5.7	---
1927	1,300	129.14.6	483.13.5	--
1928	N/A	692.19.6	601.11.10	91.7.8
1929	N/A	797.4.6	701.5.0	95.19.6
1930	N/A	793.9.6	549.1.0	244.8.6
1931	N/A	764.15.6	615.5.3	149.10.3
1932	N/A	503.8.6	495.19.9	7.8.9
1933	N/A	765.14.0	543.8.2	222.5.10
1934	N/A	561.13.1	540.6.4	21.6.9
1935	N/A	626.4.9	566.12.8	59.12.1
1936	N/A	37.19.10	601.1.6	--
1937	N/A	1.10.0	363.6.3	--
<hr/>				
Totals	142,206	18754.05.03	18043.9.5	4569.17.6

Between 1910 and 1937 142,206 baskets were sold. 7900 baskets per years or 438 cartloads = 438 tons per years or 7884 tons over 18 years.

1 ton = 18-19 baskets

N/A = Not Available

* estimated based on 1910 expenses.