



Scotland's
National Nature
Reserves

The Story of Tentsmuir National Nature Reserve



For further information about Tentsmuir NNR please contact:

Scottish Natural Heritage
Tentsmuir NNR, Reserve Office
Fetterdale
By Tayport
DD6 9PF
Tel/Fax: 01382 553704
Email: tom.cunningham@snh.gov.uk



Scottish Natural Heritage
Dualchas Nàdair na h-Alba

All of nature for all of Scotland
Nàdar air fad airson Alba air fad



**Scotland's
National Nature
Reserves**
Magical places, amazing wildlife.



**Scottish Natural Heritage
Dualchas Nàdair na h-Alba**
All of nature for all of Scotland
Nàdar air fad airson Alba air fad

The Story of Tentsmuir National Nature Reserve

An incredible coastline along the east coast of Fife, Tentsmuir is one of the most dynamic places in Scotland. Fast currents and turning tides constantly move the sand, creating and shaping the shorelines and sandbar. This section of the reserve, Tentsmuir Point, is a haven for seals and wintering wildfowl.

It is one of the few places on the east coast of Scotland where both grey and common seals can be seen together. Both types gather by the hundreds on the sandbanks along Tentsmuir Point. Each autumn, thousands of birds flock here to feed and rest during their migration. Up to 12,000 eider ducks gather together between October and March. You may also see pink-footed geese, bar-tailed godwits, grey plovers and scoters.

From Tentsmuir Point a system of sand dunes stretches south towards the Eden Estuary, along the shore to Tayport and inland. Tayport Heath located on the mouth of the Firth of Tay is an area of restored dune heath within the reserve. This is a great place for wildlife with spectacular views across the Tay. Heather, wild rose and cross-leaved heath grow on the dune heath and it is an important habitat for butterflies and other insects. The shoreline supports many bird species including oystercatchers, curlew, redshank and eider duck.

Further inland at the edge of Tentsmuir Forest are the three small lochs known as Morton Lochs. Fringed with reeds and willows they provide shelter and protection for many birds and animals attracting large numbers of breeding and wintering wildfowl. In summer water rail, little grebe, tufted duck, goldeneye, marsh harrier, ospreys, kingfishers and otters all use the lochs. During the winter hundreds of teal gather on the food-rich sheltered water.

Together these three areas, Tentsmuir Point, Tayport Heath and Morton Lochs, combine to create Tentsmuir National Nature Reserve (NNR). The reserve is managed by Scottish Natural Heritage (SNH).

It is one of more than 45 National Nature Reserves in Scotland. These are special places where some of the best examples of Scotland's wildlife and habitats are carefully managed. Whilst nature always comes first on NNRs, they also offer special opportunities for people to enjoy and find out about the richness of our natural heritage.

The Story of Tentsmuir National Nature Reserve

This document contains background information about the Reserve, describing its wildlife interest, land use history and management since it became a Reserve.

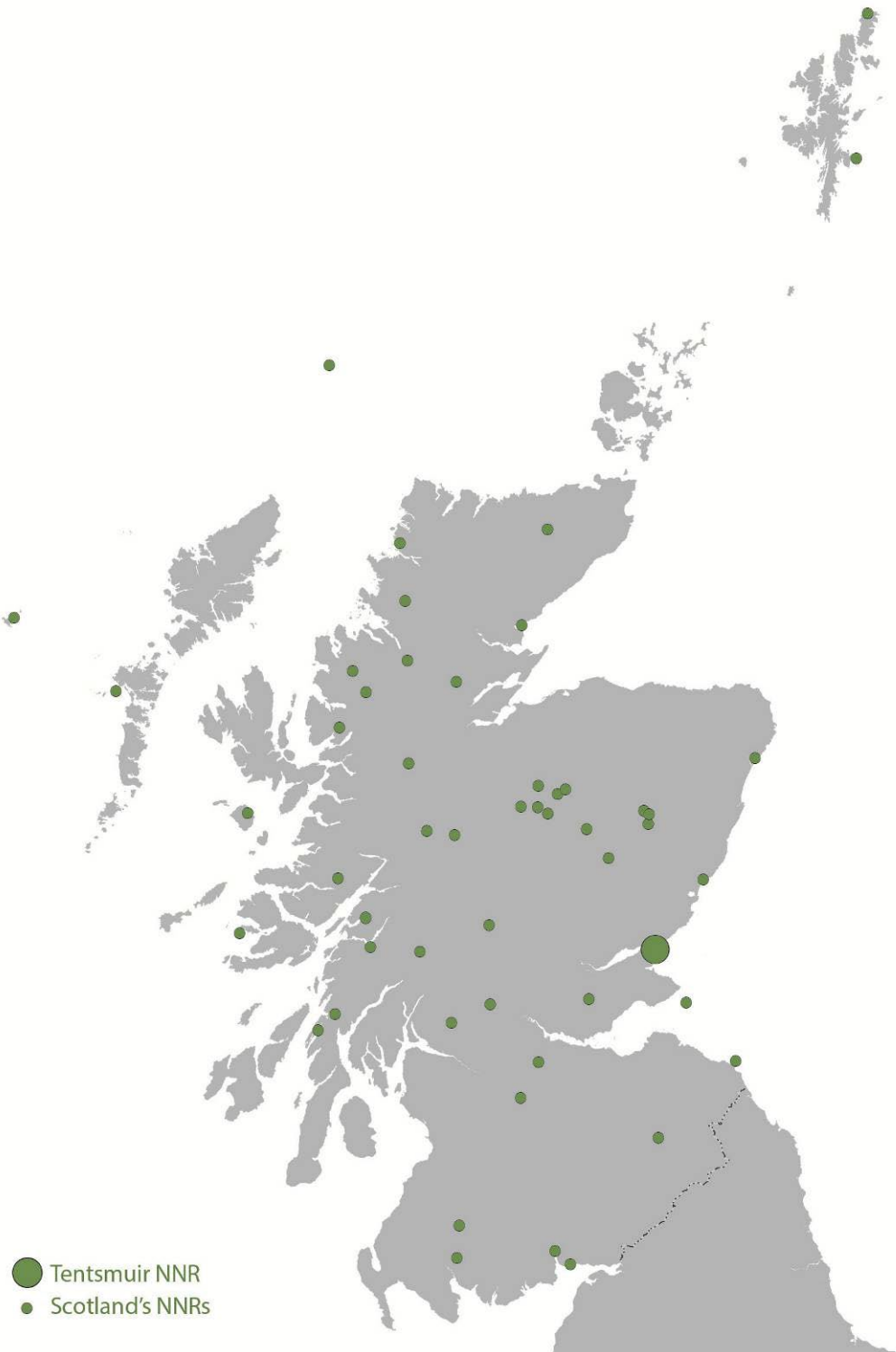
Future management of the Reserve is outlined in the Tentsmuir NNR Management Plan 2013-2023.

Contents

Maps of Tentsmuir NNR	4
1 Introduction to Tentsmuir NNR	6
2 The Natural Heritage of Tentsmuir NNR	9
3 Management of Tentsmuir before it became an NNR	19
4 Management of Tentsmuir NNR	21
5 Document properties	39

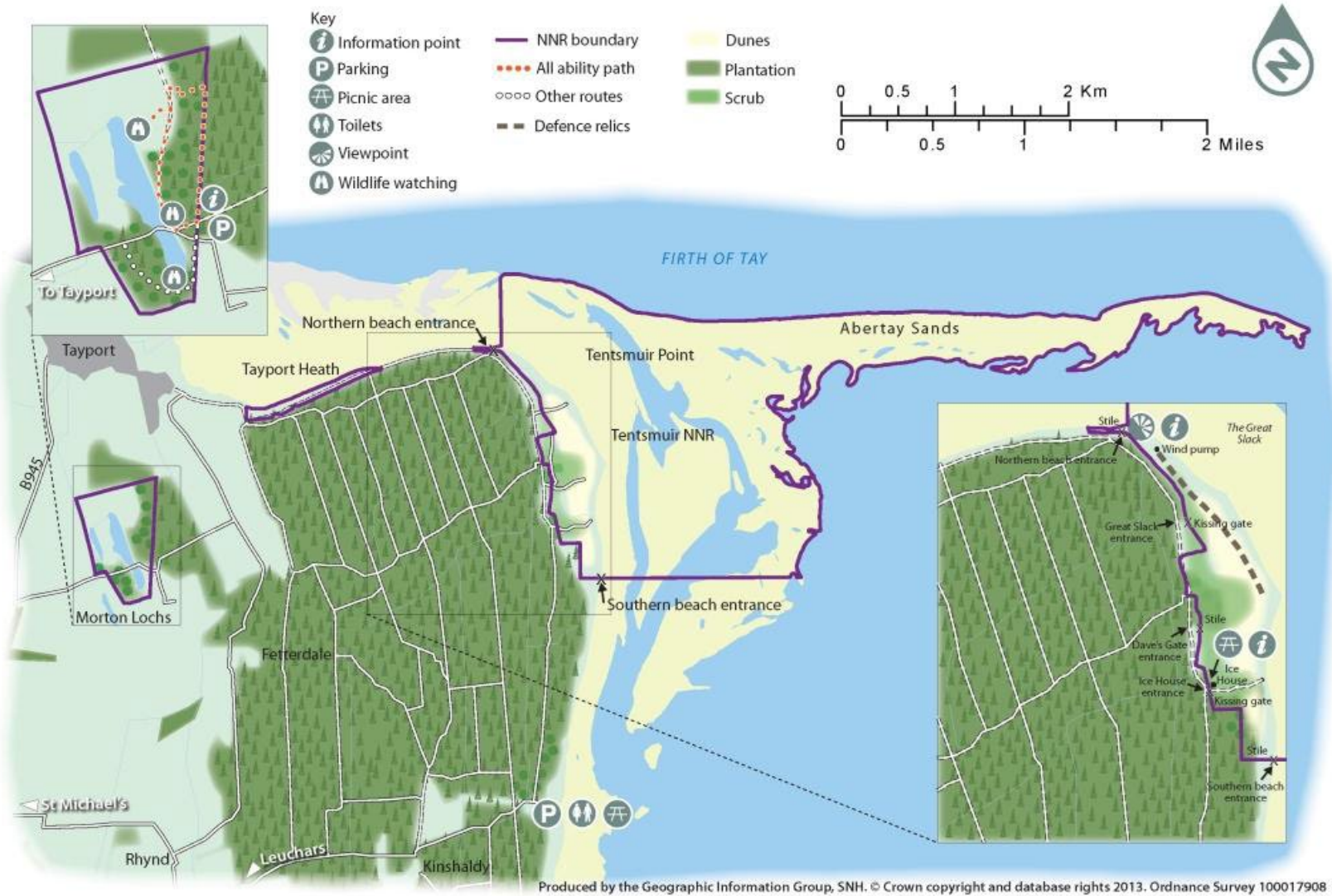
Maps of Tentsmuir NNR

Location map



The Story of Tentsmuir National Nature Reserve

Reserve map



The Story of Tentsmuir National Nature Reserve



Aerial view of Tentsmuir Point and Forest with Dundee in background.



Aerial view of North Loch, Morton Lochs

1 Introduction to Tentsmuir NNR

Morton Lochs became a NNR in 1952, the second place in Great Britain to be declared a NNR; two years later Tentsmuir Point became an NNR and Tayport Heath was added in 1988. In 2003 Scottish Natural Heritage (SNH) combined the sites to become Tentsmuir NNR. The Reserve is situated in the far northeast corner of Fife and covers 564 hectares (ha).

As already described the NNR is made up of three discrete sections – Tentsmuir point, Tayport Heath and Morton Lochs. Although distant from each other they are all part of one extensive dune system. The majority of the area is covered by forest plantation. The forest is owned and managed by Forestry Commission Scotland. SNH works in partnership with them to manage the NNR and we share a staff post and office. Access to the NNR is through FCS land and we work together to ensure the land and visitor management are complementary across the whole area.

The Reserve has many features of national and international importance which are protected by a number of European and UK designations. The Reserve is part of the Firth of Tay and Eden Estuary Special Area of Conservation (SAC) and the Tay and Eden Estuary Special Protection Area (SPA). It is also included in the Ramsar list of Wetlands of International Importance. At a national level the Reserve is also protected as a Site of Special Scientific Interest (SSSI). It includes part of the Tayport – Tentsmuir Coast SSSI and all of Morton Lochs SSSI.

The recognition of Tentsmuir as a European site of international importance means that it is part of a Europe wide network of areas referred to as ‘Natura’ sites which reinforces the message that it can be considered one of the best sites in Europe. The features and species association with each of the designations are set out in table 1 below.



Oystercatchers at Tentsmuir Point

Table 1: Protected areas and features of Tentsmuir NNR

Feature	Firth of Tay and Eden Estuary SAC	Firth of Tay and Eden Estuary SPA	Morton Lochs SSSI	Tayport - Tentsmuir Coast SSSI
Bar-tailed godwit, non-breeding		Y		
Beetle assemblage				Y
Coastal Geomorphology of Scotland				y
Common scoter, non-breeding		Y		y
Cormorant, non-breeding		Y		
Dunlin, non-breeding		Y		
Eider, non-breeding		Y		y
Estuaries	Y			
Goldeneye, non-breeding		Y		
Goosander, non-breeding		Y		y
Grey plover, non-breeding		Y		
Greylag goose, non-breeding		Y		
Harbour seal	Y			y
Icelandic Black-tailed godwit, non-breeding		Y		
Intertidal mudflats and sandflats	Y			
Long-tailed duck, non-breeding		Y		y
Oystercatcher, non-breeding		Y		
Pink-footed goose, non-breeding		Y		y
Red-breasted merganser, non-breeding		Y		y
Redshank, non-breeding		Y		
Sanderling, non-breeding		Y		
Shelduck, non-breeding		Y		
Subtidal sandbanks	Y			
Velvet scoter, non-breeding		Y		
Waterfowl assemblage, non-breeding		Y		
Loch trophic range			Y	
Sand dunes			Y	y
Teal, non-breeding			Y	
Vascular plant assemblage				Y

2 The Natural Heritage of Tentsmuir NNR

Geology/geomorphology

The dune system at Tentsmuir is one of the most dynamic sections of coastline in Scotland. The rate of growth is in places striking. The current elbow of land has formed through sand accumulation in just over 100 years.

The growth rate at the Point was particularly rapid in the 1980s when some parts grew seawards by some 15m each year. In contrast the southern section of the Reserve reached its widest point in the mid 1980s and is now eroding.

Waves and currents concentrate huge quantities of sand towards the mouth of the River Tay, depositing an extensive offshore area of sandbanks and mud flats known as the Abertay Sands. These are exposed to strong tidal streams, giving rise to a complex pattern of erosion and deposition, which constantly changes the shape and size of the sandbanks. The shelter provided by these tidal sands creates ideal conditions for wind to carry sand on shore, building up the beach and dune ridges. The dune ridges at the seaward edge are very mobile, but with time they become stabilised by vegetation.

Breaks in the dune ridge allow the tide to flow through to flood areas. Occasionally the sand may close off these tidal inlets so forming wet dune slacks, but these may eventually dry out too.

This highly dynamic system will continue to change naturally making it an exceptionally useful site for the study of coastal land formation and erosion. A line of anti-tank blocks constructed along the shoreline in 1941, as part of Scotland's wartime defences, has provided a useful reference line for scientists studying coastal changes at Tentsmuir Point.

A full description of the changes can be found in the SNH Earth Science Site Management Report (Everett 2001).

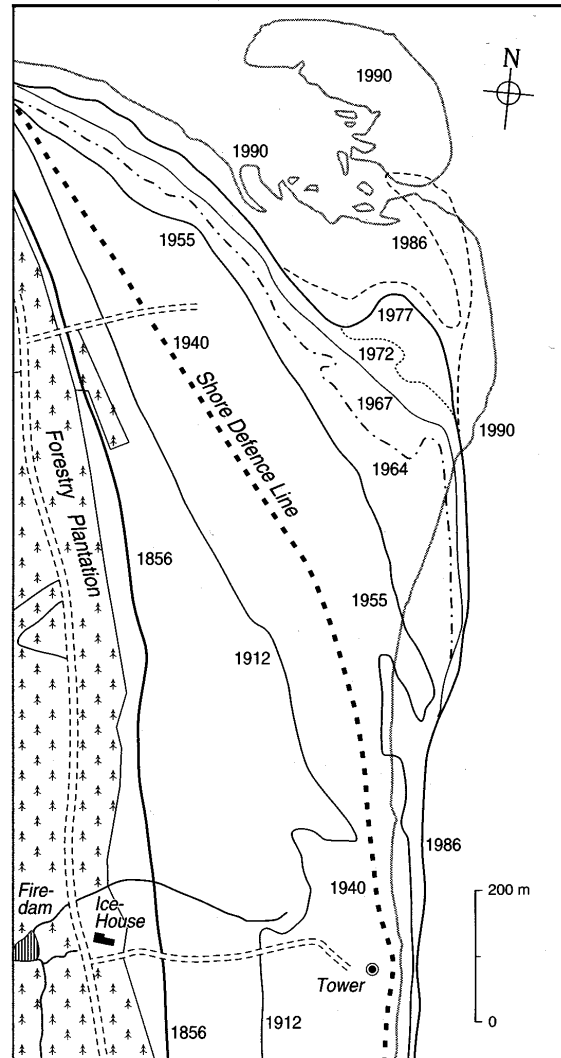


Figure 1: Coastal changes between 1856 and 1990 at Tentsmuir Point (Crawford, 1996).

The Habitats

Onshore, between the shoreline and the forest, the Reserve exhibits a sequence of sand dune communities. At the back of the beach is the strandline, behind which low-lying embryo dunes develop. These grow to form a foredune ridge parallel to the shore, sometimes called yellow dunes because of the amount of bare sand. The conditions here are hostile to plant growth. Not only is there constant burial by fresh sand, but the loose sand is very free draining and therefore subject to drought. Only a few specialist plants can survive in these conditions. At Tentsmuir the most common is marram grass, which binds the loose sand and holds it in place allowing the dunes to build. Small quantities of lyme grass are found within the marram.



Marram grass

Marram grass slowly colonises the dunes reducing the movement of sand and holding their shape. On these dunes grassland begins to form. Marram grass persists, but red fescue becomes the most important grass. Other grasses, annual and perennial herbs start to appear and sand-binding mosses and lichens join these. These dunes are known as 'fixed dunes' when the vegetation cover is more or less covers the sand. Fixed dune grassland can be a very species-rich community, having typical species such as ladies bedstraw and wild thyme, with lichens an important feature too. The colour of dunes carpeted in lichens gives rise to the name 'grey dunes'.

On the older dunes further inland dune heath has established. At Tentsmuir it is characterised by the presence of abundant crowberry and crossed-leaved heath with *Pleurozium schreberi* and *Hylocomium splendens* as the dominant mosses.

Dune slacks are wet or damp areas between dunes where the water table is close to the surface. They often flood during winter and spring. The vegetation in the slacks has had to adapt to these unusual conditions and is often very species rich. The Great Slack is the largest and richest dune slack on the Reserve. It has a number of species characteristic of a rich dune



Grass of Parnassus

The Story of Tentsmuir National Nature Reserve

slack - bird's-foot-trefoil, ragged robin, seaside centaury, common centaury, creeping willow violet, northern marsh orchid, yellow rattle, skullcap, cuckooflower, red campion, marsh pennywort, and cowslip and grass of Parnassus.

Tayport Heath is an area of dune heath which extends westward along the shore of the Tay from Tentsmuir Point. Here the dune system shows a complete sequence of dune and slack development from shoreline through foredune, yellow and grey dunes to dune heath.

Morton Lochs

The Christie family created Morton Lochs in 1906 by flooding areas within the dune slack for fishing. The Lochs were created by extending the naturally wet ponds area. There are three lochs: North, South and the smaller West Loch. These now have a mosaic of open water, reed beds, marsh and woodlands. Water levels at Morton have fluctuated over the years, and despite the lochs almost drying out on a number of occasions, they support a rich flora including water plantain, greater pond sedge, yellow flag iris, broad-leaved pondweed, greater spearwort and horned pondweed.



Morton Lochs

The surrounding wet woodland is mainly grey willow with alder, hawthorn, and birch. This woodland occurs as narrow fringes around the lochs and in damp hollows. The field layer is an open scatter of herbs, with marsh bedstraw and frequent water mint and soft rush.

The Story of Tentsmuir National Nature Reserve

Before the conifer forest was planted the lochs were surrounded by dune heath. The dunes here are relic dunes dating from some 4000 years ago; they are the oldest part of the Tentsmuir dune system. Despite being ploughed and planted with forestry in 1954, the land to the north and east of the Lochs retains some of the characteristic natural vegetation of the open heath with wet hollows alternating with dry ridges. This area has been cleared of forestry and scrub. The wettest areas contain pondweeds and other wetland species, whilst the dry ridges support remnants of dune heath with sand sedge, heather and heaths. Along the disused railway track there is a narrow strip of herb-rich grassland.

The Flora

The flora at Tentsmuir NNR has been well recorded, with the earliest botanical records dating back to about 1850. In total, 320 species of vascular plant have been recorded at Tentsmuir Point, and over 200 at Morton Lochs. This includes slender centaury, which is protected under Schedule 8 of the Wildlife and Countryside Act 1981. There are five nationally scarce species including coralroot orchid, Baltic rush, seaside centaury, creeping lady's tresses and oak-leaved goosefoot.

Creeping lady's tresses and adder's tongue fern are both UK and Fife Biodiversity Action Plan (BAP) species. Other species of regional importance include dense flowered fumitory, greater pond sedge, pink water speedwell, small-fruited yellow sedge and purple milk vetch. About 35 locally scarce species have been recorded.

Species recorded at Morton Lochs include mudwort, dark-leaved willow, greater spearwort and marsh stitchwort, wood horsetail, northern marsh orchid, square stalked St John's wort, hard rush and trailing tormentil. Adder's tongue, greater pond-sedge, field gentian, grass of Parnassus, common wintergreen and moonwort are all found here.

The Fauna

A highlight of the Reserve is the impressive number of grey and common seals which haul out on the sandbanks and shoreline of Tentsmuir Point. The colony of common seals is nationally important; they haul out at the site to rest, pup and moult. Grey seals haul out on the Abertay sands and the sandbank near the southern end of the Reserve. The seal



Grey seal at Tentsmuir Point

The Story of Tentsmuir National Nature Reserve

populations vary throughout the year.

The Sea Mammal Research Unit (SMRU) carried out a survey in August 2013 and counted 483 grey seals and 49 harbour seals. These are significantly down on peak figures of over 2000 and 500 between 1997 and 2003. SMRU are researching the reasons why. One reason may be due to shifts in foraging areas as while grey seal numbers around Fife have decreased numbers those in South East England have increased significantly. SMRU continue to have serious concerns about harbour seals and are therefore continuing to research reasons for their decline.



Grey seals hauled out on the sandbanks at Tentsmuir

Bottle nosed dolphins are regularly spotted from the shore of Tentsmuir; with less frequent sightings of minke whale and harbour porpoise. Otters are sometimes seen at Morton Lochs, and occasional sightings of young suggest they breed successfully within the local area.

Bats roost in the old icehouse, bat boxes and natural roosts throughout the reserve. Two species of pipistrelle, *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*, natterer, brown long-eared and daubenton bats have all been recorded. Other mammals found on the reserve include roe deer, fox, brown hare, and plentiful rabbits. Tentsmuir Forest surrounding the Reserve is an important habitat for red squirrels. Although no surveys have been undertaken, increased sightings suggest the population is spreading.

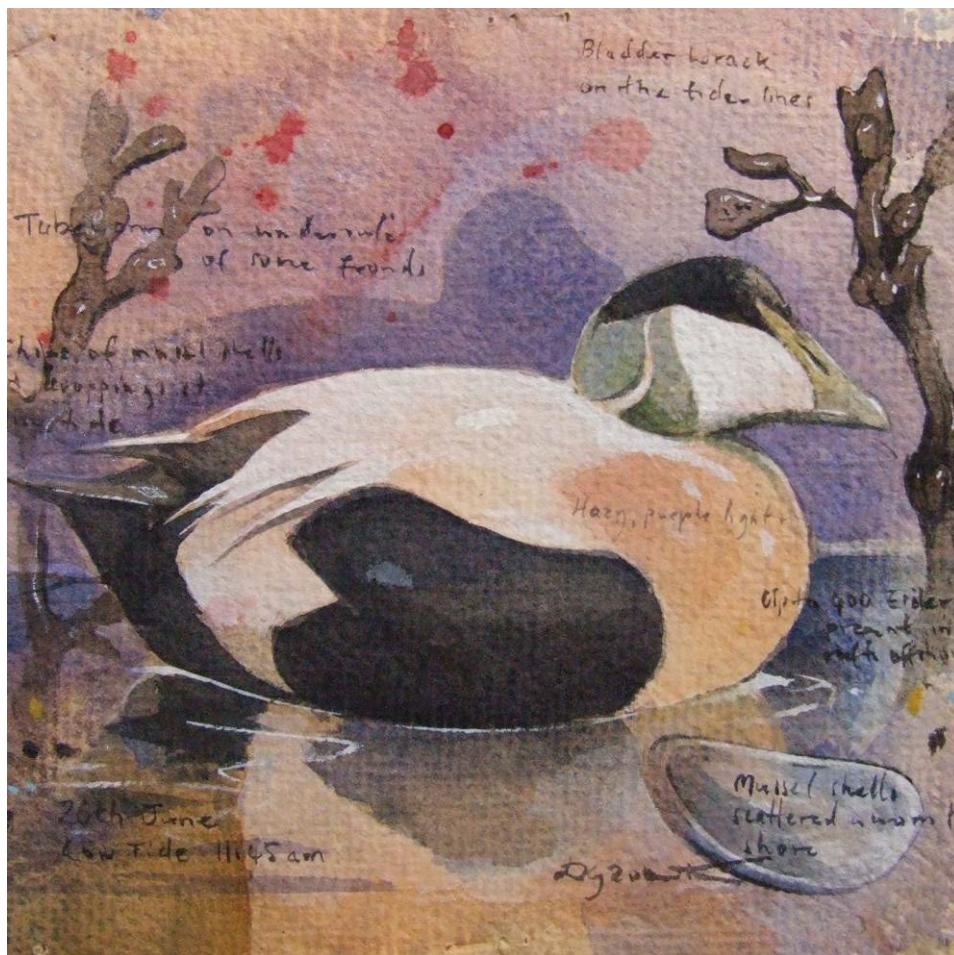
Tentsmuir Point is one of the most important sites in Scotland for migratory waders and wildfowl. The extensive offshore sand and mud flats alongside a relatively undeveloped coastline provide ideal roosting and feeding conditions for migratory

The Story of Tentsmuir National Nature Reserve

and wintering bird species. The winter populations of waders and wildfowl are of international importance with numbers peaking during the spring and autumn migrations.

The site is especially important during the winter for goosander, red-breasted merganser, common scoter and long-tailed duck, all of which gather in numbers exceeding 2% of their British population. Over 5500 eider gather offshore in flocks called rafts. More than 3000 pink-footed geese are estimated to roost on the northern foreshore and bars in the Reserve.

The birds have been counted regularly over the years. Initially counts were stored on file and reported on in warden's reports, but since 1997 the Reserve has been counted regularly as part of the national Wetland Bird Survey (WeBS). The following table provides details of actual peak bird counts from 1997 to 2013 at Tentsmuir Point.



Eider - by Derek Robertson Artist in Residence Tentsmuir NNR 2013

The Story of Tentsmuir National Nature Reserve

	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Cormorant	58	18	17	18	6	5	8	15	70	160	130	186	240	120	111	102	53
Dunlin	368	250	502	230	400	1500	150	700	1802	500	340	1350	2010	1050	160	960	44
Eider	3500	2150	9500	7500	4200	3500	550	3500	3500	1060	5000	5600	2800	3900	4000	3600	4000
Bar-tailed godwit	42	84	45	45	370	320	320	1000	110	150	250	80	120	900	94	69	38
Common scoter	38	34	35	54	33	180	42	500	500	50	600	380	67	235	1420	395	140
Golden eye	0	8	6	4	0	12	2	4	4		4	22	18	9	7	4	2
Goosander	8	9	12	12	4	10	25	12	8	4	10	9	7	7	2	3	2
Grey plover	0	7	67	56	230	550	52	170	190	221	550	690	430	900	201	170	122
Greylag goose	54	88	128	88	140	112	115	125	50	12	370	30	160	40	60	12	12
Long-tailed duck	6	2	14	6	18	320	8	80	30	3	8	39	18	27	12	20	15
Oystercatcher	138	158	390	1420	800	320	650	1200	1200	250	480	920	480	490	660	1020	423
Pink footed goose	875	6500	4000	3200	2800	2000	450	3500	3500	1500	90	750	2000	3000	3000	2250	3000
Red-breasted merganser	0	9	6	30	4	28	23	100	100	31	19	108	26	49	52	14	51
Sanderling	420	175	252	450	750	178	150	240	560	200	230	80	180	600	33	150	53
Velvet scoter	15	16	12	4	0	0		60	60	60		2	20	5	5	15	23
Shelduck	0	4	8	14	8	18	8	8	8	15	11	13	49	23	28	46	95

Table 2: Peak numbers of birds at Tentsmuir Point from monthly bird counts between 1997 and 2014

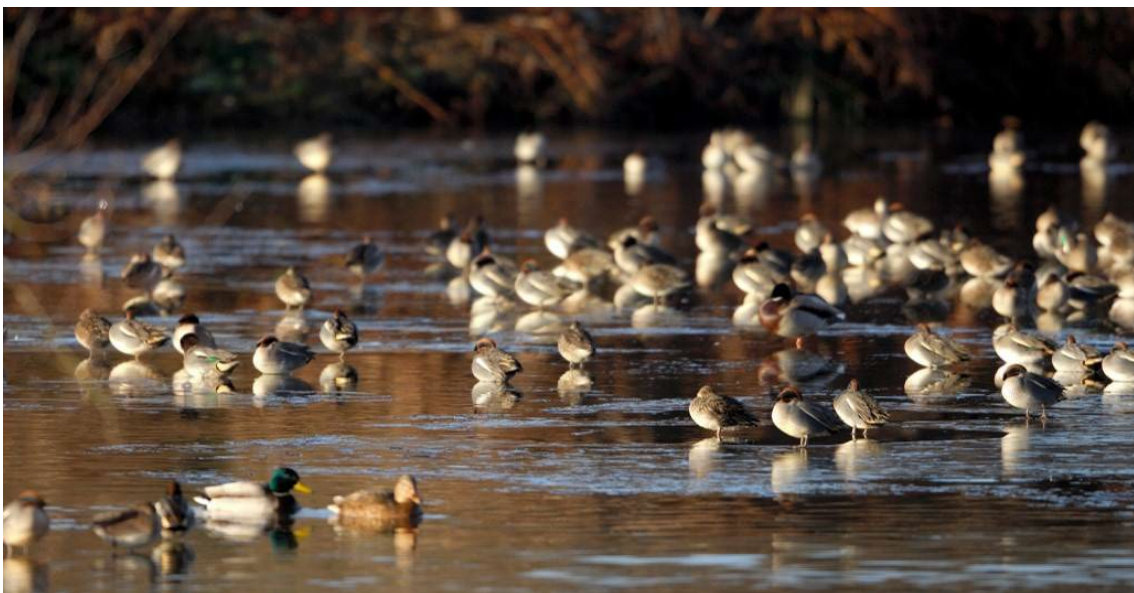
The Story of Tentsmuir National Nature Reserve

The bird life of the wider Tentsmuir area has changed markedly in the last century. In the early part of the 20th century the unfenced moorland was important for breeding birds: large numbers of eider, shelduck, teal, shoveler, dunlin, golden plover, black and red grouse and corncrake nested regularly, while snipe and redshank were considered common breeders. However as the forest grew up during the second half of the century these species were replaced by birds of the forest. Only at Earlsall Muir, which has remained clear of forestry, are some still found.

It is known the bird life of Morton Lochs has changed dramatically over the years; the early bird lists for Morton Lochs are extraordinary to the contemporary ornithologists. When first created the lochs were surrounded by the boggy heathland that covered all of Tentsmuir. Nowadays mature trees, planted in the 1950s, surround the lochs.

In the early 1900s it was not considered exceptional to see between 20 and 30 species of game and wildfowl during an autumn shoot. The records from the time show that the lochs were outstanding for waders, and there was an impressive list of rarities. The first broad-billed sandpiper in Britain was recorded at Morton Lochs by W Berry and other rarities he listed include bittern, great snipe and buff-breasted sandpiper. In 1964 Boase listed 109 species at Morton Lochs, including black-throated diver, red-throated diver, whooper, Bewick's and mute swans, eider, shelduck, common and velvet scoter, dunlin, snipe, and golden plover. Today's species list is very different, reflecting how dramatically the habitats at Morton Lochs have changed in a hundred years, but it still has over 100 species on it.

The shelter of the reeds at Morton Lochs provides ideal habitat for birds like the elusive water rail, little grebe, tufted duck and goldeneye. The reeds provide shelter for reed bunting and warblers too. Mute swans are seen every year and in the winter whooper swans have rested here on migration. Teal gather here during the winter months, with up to 800 birds being counted in years prior to 2004. Teal numbers have since declined with a count of 350 birds during 2013. Further research is being done to see if we can determine why.



Ducks at Morton Lochs

The Story of Tentsmuir National Nature Reserve

The rare marsh harrier is occasionally seen coursing across the reed-swamp and wetland areas of Morton Lochs. Ospreys use the site as a resting point and for feeding during their migrations, to and from, their summer breeding grounds in Scotland. The woodlands are home to a rich diversity of smaller birds, both during the breeding season and in the winter months, as well as those passing through on migration. In the autumn months mixed flocks of finches (bullfinch, chaffinch and greenfinch) and groups of tits (blue, great, coal and long tailed tits) gather in the treetops. Buzzard breed in the woodland, and goshawk and peregrine are regularly spotted.

The invertebrate fauna of the sand dunes is particularly rich and diverse, including 46 nationally rare or scarce species. Several more species are regionally scarce, all of which contribute to an outstanding assemblage of invertebrates associated with sand dune systems including heath, scrub and pine.

Eighteen species of butterfly have been recorded on the Reserve. The pearl-bordered fritillary is the only BAP butterfly species here. Other species include the ringlet, common blue, small copper, painted lady, small tortoiseshell, meadow brown, orange tip, small white, large white, green-veined white, grayling, dark green fritillary, small heath, peacock, comma and green hair streak. The Reserve is the only known locality where grayling still exist in Fife.

About 270 moth species, approximately 11% of the British total, have been recorded including 20 nationally notable species. Two UK BAP priority species have been recorded on the Reserve - the cousin German moth and lunar yellow underwing. A survey in 2002 found one individual of the lunar yellow underwing but failed to find the cousin German moth, last recorded here in 1970. In 2012 the Scottish Entomological Group held their annual gathering on Tentsmuir Point and recorded 82 species. They identified a few new species of micro-moth that had not been logged in Fife before, a mixture of deciduous and conifer feeding species: *Pandemis cinnamomeana*, *Apotomis turbidana*, *Rhyacionia pinivorana* and *Cydia cosmophorana*.



Common blue butterfly

Notable new species include; Shore Wainscot, Sand Dart and Lyme Grass. Discovering Shore Wainscot on the reserve was very exciting as it is a first for Fife

The Story of Tentsmuir National Nature Reserve

and only the third Scottish record in modern times. Its caterpillar feeds on marram grass during the night.

Over 460 species of beetle have been recorded on the reserve. Two of these species are rare and listed in the UK Red Data Book (RDB), and a further 39 are also noted within the RDB. Morton Lochs is an important site supporting over 50 species of water beetle.

Morton Lochs is also considered one of the best sites in Fife for damselfly and dragonfly. Eleven species have been recorded including: red veined darter, black darter, common hawkler, emerald damselfly, blue-tailed damselfly, large red damselfly, common blue damselfly, azure blue damselfly, four spot chaser and the emperor dragonfly. A recent colonist is the emperor dragonfly in 2007. In 2014, the British Dragonfly Society created a Scotland Officer and one of their first tasks is to establish a number of Dragonfly Hotspots. These are sites where there are plenty of dragonflies, good access, and local communities close by who would be keen to get involved in dragonfly recording and conservation. Morton Lochs has been selected as a Hotspot and would essentially be a focus for raising awareness about dragonflies. Along with Reserve staff the officer will carry out training for volunteers and deliver guided walks.



Shore Wainscot larva
Image by kind permission David Bryant.

Common toad and frog breed throughout the Reserve particularly in the lochs ditches and wet slacks. Smooth newt breed at Morton Lochs and in the ditches of the forest and Tentsmuir Point. Common lizard was recorded for the first time on Tentsmuir Point in 2002 and has been observed on a few occasions since.

Summary

Tentsmuir Point is an excellent example of an evolving coast, with a full range of habitats from intertidal mud and sand banks offshore, through mobile dunes to fixed dunes with lichen-rich dune heath inland. Tayport Heath represents a successful example of restored dune heath. The mosaic of wetland and woodland habitats at Morton Lochs supports a rich diversity of species. Combined they create a wonderful reserve rich in flora and fauna which protects a range of habitats and species of important in a European, UK and local context.

3 Management of Tentsmuir before it became an NNR

The wider area of Tentsmuir has a long history of use by man, and Whittington (1996) provides a fascinating summary. Man has left evidence that he has lived here since prehistory. Mesolithic hunter-gatherers left their traces at a site they occupied at Morton, and finds from the Bronze Age include pottery, beads, whetstone (a type of sharpening stone), needles and pins.

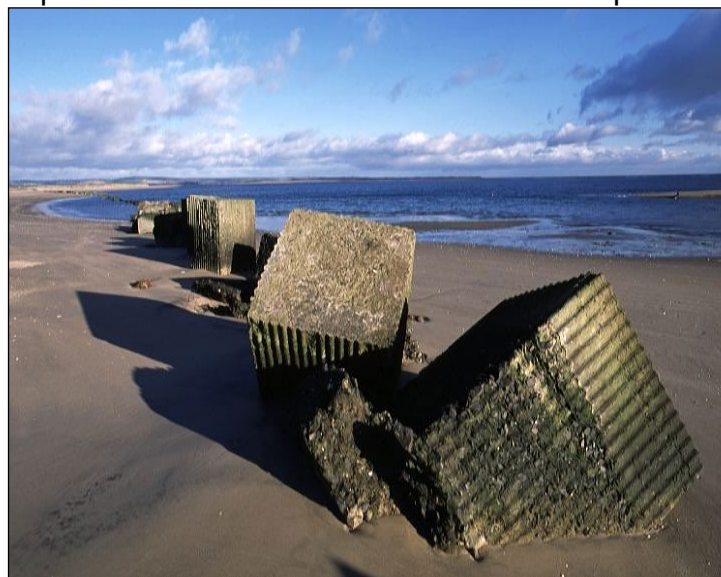
In the sixth century, research suggests that the Picts managed parts of Tentsmuir as pasture, and replaced heathland with grassland by burning. In the 8th & 9th centuries the Vikings explored the area and a few settled as farmers.

Early maps drawn in the 17th, 18th and 19th centuries show the changing pattern of land use and farming at Tentsmuir. The maps show various lochs on Tentsmuir that no longer exist today. In the 1600s "Tents Moor" was mainly marsh and lochans. During this period the digging of the Great Drain greatly reduced the marshes, allowing the land to be used for crops. In the 18th century there are accounts of large ditches or canals being cut to drain the area for cultivation, but in the 19th century when farms merged and became larger, many of the farm steadings in the east were abandoned, the drains were neglected and the land became wet again. So, at the end of the 19th century Tentsmuir was an area of heathland dotted with marsh and boggy areas. Part was managed as a grouse moor before the Great War. Earls Hall Muir is the only remnant of this once extensive habitat.

Salmon netting at the Point was important from the 1840s onwards. There were seven nets on the Tentsmuir coastline and each had a bothy and ten men running it. The icehouse, which still stands in the forest next to the Reserve, was built in 1888 to store the salmon catch.

The most far-reaching change took place in the early 20th century when much of Tentsmuir was planted with conifers. The Government bought land in 1924, and by 1927 the Forestry Commission had planted 700 ha with Scots and Corsican pine. By 1954, the planted area had increased to 1500ha. The forest completely transformed the character and wildlife of the area.

The military also moved onto the southwestern corner of Tentsmuir in the 20th century, building the RAF station at Leuchars during the Great War and extending it in the Second World War. Tentsmuir was used as a military training ground, with the Air Ministry using an offshore area as a target bombing range. Indeed, a small section of the Reserve



Tentsmuir coastal defences

foreshore lay within the danger zone when the Reserve was acquired. Strong winds still occasionally expose munitions dumped and buried during the War - in 2003 an Army disposal team carried out a sweep of the shore after shells, shell clips and rolls of rusted barbed wire were exposed.

A line of concrete anti-tank blocks and pillboxes was installed along the shore in 1941. The blocks were constructed on site by Polish forces, who built and manned the defences. The defences were dual purpose, foremost to counter invasion but also providing protection for the Leuchars airfield, from where crews were engaged in anti-shipping and mine laying operations along the coast of northern Europe. Anti-glider posts were also installed on the foreshore, but many are now buried. The area is listed as a scheduled monument called Tentsmuir Coastal Defences because of its historical importance. The line of anti-tank blocks has provided a convenient reference marker for measuring coastal change.

Morton Lochs

Morton Lochs were developed from the naturally occurring ponds and wetlands in 1906 by the Christie family, on a site marked as a loch system on maps from the 1600s. The Ninewells Burn (now called the Lead Burn) was diverted into a natural depression of the land between ridges of sand. When they were created the lochs were between 4 and 8ft in depth, the North Loch half a mile long and a quarter of a mile broad, South Loch about half that size. They were connected by a narrow passage through the embankment.

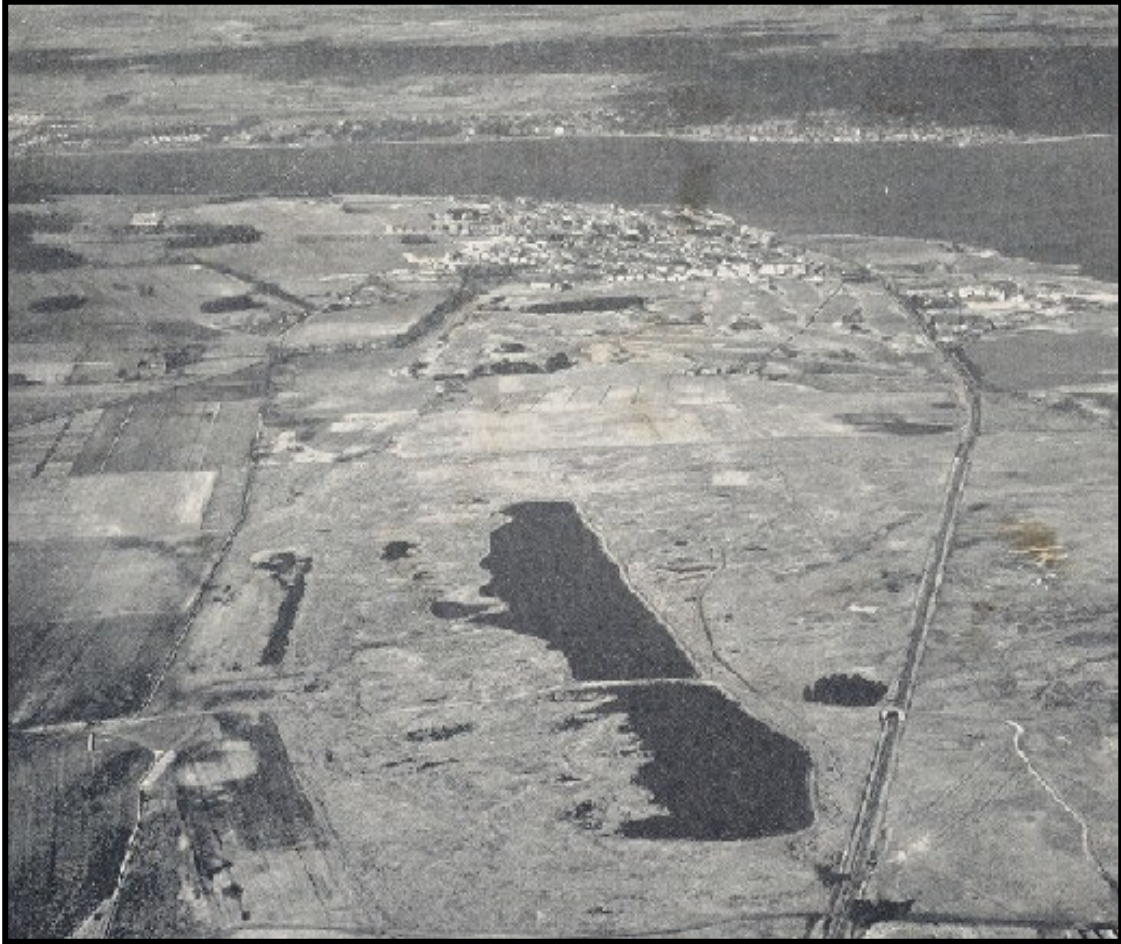
The lochs were stocked with young carp imported from Italy. Brown trout were also introduced for angling; stock was introduced annually as there was no gravel for the brown trout to spawn. In addition to carp and trout, eels, minnow, gudgeon and stickleback were raised for sale. Some years later it was discovered that swan mussels had been accidentally introduced to the lochs, presumably imported as embryos attached to the introduced fish. These mussels attracted ducks, which visited the lochs in great numbers. The shallow lochs were also outstanding for waders.

Within a few years of their creation, the spread of vegetation around the lochs was causing problems for the fishery. Vegetation was regularly cut to maintain the open water for the fishery. For many years cattle grazed the area around the lochs, but after 1940 the grazing became regular and intensive. From 1940 - 1951 there was a great increase in rabbits, which over-ran the ground and drastically reduced the plant cover. The combination of the breakdown of retaining banks by cattle and rabbits and the silting of the feeder burn caused a severe reduction in water levels. Over the summer months the lochs dried out completely and the fish and mussels disappeared. In 1952 the Reserve was declared and a programme of work to reverse the damage started.

The water supply to Morton Lochs has changed considerably over the years. Water has been variously supplied through a sluice and by a pipe from the adjacent Lead Burn for many years. In 2002 the supply of water to Morton Lochs was ceased by a

The Story of Tentsmuir National Nature Reserve

neighbouring landowner and it was restored in 2005. As a result bird species numbers fell, particularly teal. An SNH ornithologist worked on trying to establish the appropriate water level management regime for the species currently using the lochs, and we have managed the loch water levels at the required level ever since. However, the teal numbers have not returned to the numbers of a few years ago. Our research into reasons why continues.



Morton Lochs NNR in the mid 1950s

4 Management of Tentsmuir NNR

Tentsmuir Point and Morton Lochs were two of the earliest National Nature Reserves, declared not long after the National Parks and Access to the Countryside Act came onto the statute book in 1949.

A few of the key dates are given below.

1949	Tentsmuir Point and Morton Lochs recommended as Nature Reserves in the Final report of the Scottish Wild Life Conservation Committee
1952	Morton Lochs declared an NNR, the second in the UK, 47 acres purchased from FC for £23
1954	Tentsmuir Point declared an NNR, amongst the third suite in the UK. Tayport to Tentsmuir coast SSSI notified. Nature Conservancy purchased 92 acres of coastal land from the Forestry Commission.
1962	Tentsmuir Point NNR extended from 92 to 1249 acres.
1968	Forestry Commission ploughed up and planted the dunes south of the Tentsmuir Point Reserve.
1969	Archaeologists establish dig site at Morton - Mesolithic period.
1970	Tentsmuir Point & Morton Lochs NNRs, the first Reserve Booklet produced by The Nature Conservancy.
1975	Morton Lochs Public Hide constructed – one of the first in Scotland.
1976	Morton Lochs drained and silt excavated
1977	Fullerton Hide constructed and opened to commemorate Len Fullerton, a former warden, artist and naturalist.
1979	Morton Lochs was also established as a site for research and as a result two booklets were produced by the Nature Conservancy Council: Morton Lochs: Rehabilitation Management Booklet. & Morton Lochs: Habitat Management No.1 Islands. Leaflet.
1983	Morton Lochs SSSI notified
1987	Goat grazing management trial starts on the reserves.
1988	Tentsmuir Point extended to include Tayport Heath.
1996	Highland cattle brought in to graze the reserves
1998	Observation Tower falls into the sea. Erosion – 112 metres lost in 11 years.
1999	First Reserve Newsletter produced. Produced every six months.
2000	NNR Family Day Event established – A Wild Day Out. The Tay is established as a Ramsar site.
2001	Tentsmuir Point first Interpretation boards and viewpoints erected. Foot & Mouth disease outbreak closes the Reserves for 87 days. Tay Estuary designated an SPA.

The Story of Tentsmuir National Nature Reserve

2002	<p>Dr John Berry neighbour and former Director of Nature Conservancy in Scotland died February 16.</p> <p>Tentsmuir Point features on TV series 'Scotland the Wild'.</p>
2003	<p>Firth of Tay and Eden Estuary designated a cSAC</p> <p>Tentsmuir Point Education Pack produced and launched to Fife Schools.</p>
2003	<p>SNH Main Board reviews the national suite of NNRs and decides to merge Tentsmuir Point NNR and Morton Lochs NNR to form Tentsmuir NNR.</p>
2005	<p>Tentsmuir NNR Reserve Proposals for 2005-2011 produced.</p> <p>Tentsmuir NNR: The Reserve Story produced.</p>
2006	<p>Tentsmuir NNR Declaration and the Declaration Event was on 27 June. A fourth bird hide was constructed at Morton Lochs.</p>
2007	<p>Lycie Alfred de Vigny High School students from Loches-en-Touraine in France visit Tentsmuir Point and the Moscow City State High School students visit Tentsmuir Point as part of their dune succession studies.</p> <p>The Second Tentsmuir Interpretation Report produced.</p>
2008	<p>Tentsmuir Life in the Sands Education Pack, the second edition produced and delivered to every school in Fife, Dundee and Angus, with a few going all over the UK and over in Europe. Incorporates the curriculum for excellence.</p> <p>New interpretation panels and structures developed and installed.</p>
2009	<p>The Tenth Family Day Event was held in July.</p> <p>The 20th and 21st Reserve Newsletters were produced and sent out. (1200)</p>
2010	<p>A Eurosites management team (26) visit Tentsmuir Point.</p> <p>In September very high tides and storms erode the dune edge and reveal a narrow gauge railway wagon from WWII – a Lydd Ranges tipper produced by Hudson's.</p>
2011	<p>Tentsmuir Time Line Trail – a sculpture and feature walk completed & launched. Sculpture trail constructed & Leaflet completed and is highly acclaimed. Officially opened by Torbain Nursery School, Kirkcaldy in April.</p>
2012	<p>As well as the annual Family Fun Day a further five family day events held with over 990 visitors attending.</p>
2013	<p>Year of Natural Scotland 2013 – Artist in Residence is Derek Robertson and Writer & Poet in Residence Jim Stewart.</p> <p>A pair of White-tailed sea eagles successfully bred in Tentsmuir – one chick produced.</p>
2014	<p>Fife Coast & Countryside Trust donated a squirrel hide for Morton Lochs.</p>

Tentsmuir Point and Morton Lochs have been National Nature Reserves for over 50

The Story of Tentsmuir National Nature Reserve

years, during which there have been several management plans. The first was produced in 1957; the second in 1963, the third in 1973, between 1984-89 interim policies and prescriptions were used, before the fourth plan was written in 1991, and a further plan covered the period 1997-2002. The next plan followed from 2005 to 2011, this plan was extended to 2013. The latest plan covers 2013 – 2022. Huxley (1996) provides a critique of the first four plans.

The first plan set out three 'objects of management': firstly to retain the area in as unspoilt a condition as possible and allow coastline changes to be studied; secondly, to measure the coastal accretion and, as opportunity permits, investigate the processes which cause it; and thirdly, to encourage ecological studies within the Reserve.

The second plan was written when the NNR increased in size more than tenfold by the addition of the foreshore (468 ha). A fourth objective was added to the earlier three, i.e. to ensure minimum disturbance of the foreshore and Abertay Sands so that wildfowl will continue to visit them and to protect the nest sites of sea birds.

The third plan from 1973-1977 rephrased these objectives to make them more precise, but nonetheless maintained the same basic approach to management of the Reserve. The fourth plan in 1991 continued in the same direction but refined them into eight ideal management objectives. The fifth plan gave the main objectives as safeguarding the site and preventing the deterioration of habitats and species, and in addition aimed to encourage research and monitoring and to consider the potential of the reserve for education, interpretation and demonstration purposes.



Wildlife at sunset on Tentsmuir Point

The Story of Tentsmuir National Nature Reserve

The 2005-2013 reserve plan continued with the same overall direction. In line with the NNR policy for this period the plan divided management into three main areas – heritage, people and property. The heritage objectives focused on protecting, restoring and enhancing the natural heritage of the Reserve. The people-related ones focussed on creating a positive visitor experience, providing opportunities for community engagement, volunteers and education. The final element, property, focused on the day to day management and maintenance of the Reserve.

Throughout the existence of the Reserves the aims of management of the natural heritage have changed very little, although different methods of managing the site have been tried through the years. In later years there has been increasing effort placed on managing the reserve for visitors and balancing their needs with those of the natural heritage.

Natural Heritage Management

Dune Management

The dunes can be considered in three sections. The mobile dunes along the seaward edge have been left alone to nature, managed by the wind and the waves. In complete contrast, the management of the fixed dunes has been a never-ending effort to remove trees and shrubs and prevent the dunes turning into woodland. The management of the dune slacks has involved various attempts to prevent them drying out to retain their floristic richness.

The very mobile active seaward edge of the Reserve has always been left to develop naturally, with no intervention in the natural processes of accretion and erosion. There has been no change in this approach over the years, and there has been no interference in the processes that shape the coastline. The changing face of the coast has been well studied and is documented in many scientific papers. These are collated in SNH's Earth Science Document for the Tayport – Tentsmuir Coast SSSI (Everett, 2001).

In contrast, active management has been needed to prevent the inland dune areas turning into woodland. There have been many projects to remove the trees and stop the progressive change from dune heath to woodland. The photos on the following page were taken in 1972, 1990 and 1999; they show very clearly the spread of trees onto the dunes and their subsequent removal.

During the 1950s and 1960s, young conifer seedlings were simply pulled out by hand. Records indicate the daunting scale of the task – 5453 seedlings were uprooted in 1958 alone. One area (compartment 5) was left as a control area with no removal of trees. By the 1970s, compartment 5 had become woodland. Invasive sea-buckthorn had formed thickets at the southern end of the Reserve too, and trees and shrubs, including birch and willow, had colonised other areas.

From 1981 until 1985 regular work parties hand cleared pine trees and maintained fences. The workers were groups of unemployed people brought to work on the Reserve by Manpower Services, a community enterprise programme.

The Story of Tentsmuir National Nature Reserve

In the mid 1980s it was decided to try using livestock to graze young trees and shrubs, and in 1987 a flock of goats was introduced; but this was a controversial trial, and in 1996 the goats were removed.

In 1995 a concerted programme of work to restore the open dune system at Tentsmuir Point was developed. SNH's Scientific Advisory Committee gave their support to the work in 1997. The aim was to restore open dune habitat, allowing only 5% tree cover to remain on the Reserve.

Between 1995 and 1999 approximately 5.3 ha of mature trees were felled (including compartment 5) and a further 16.9 ha cleared of smaller trees and scrub. Over 1300 tons of quality timbers were removed from the Reserve, and large quantities of scrub and small timber were removed and burned or chipped. In 1999 the last of the sea buckthorn that had grown across large areas of the Reserve was removed. Cutting, pulling and treatment with herbicide also controlled gorse, broom and dog rose. Spraying with herbicide controls the rosebay willowherb.

In 1996 Highland cattle were brought in to continue the task started by the goats. Cattle have grazed the Reserve ever since, apart from in 2002 when no grazier could be found. In 2003 no Highland cattle were available, so Aberdeen Angus were substituted. Since 2007 Limousin cattle have grazed both Tentsmuir Point and Morton Lochs.



Highland cattle in the dunes at Tentsmuir Point

The low density grazing by cattle (less than 25) has been successful in controlling the regrowth of birch and willow, but is less effective with controlling rosebay willowherb, which the animals do not find palatable. The level of grazing has to be carefully balanced to control the scrub but avoid damaging the lichen-rich heath.

The Story of Tentsmuir National Nature Reserve

Having tried both grazing throughout the year and only during the summer months, we concluded that summer grazing was more effective and reduced damage to the lichen heath. The breeds were also monitored and Highland cattle were more robust and their grazing regime more effective than Aberdeen Angus and Limousin. However the breed used is usually determined by what is available locally. A well-established working relationship has been developed with farmer Robert Lamont of Scotsraig Farm, Tayport which will allow grazing to continue.

Aerial images of Tentsmuir point showing the changing coastline



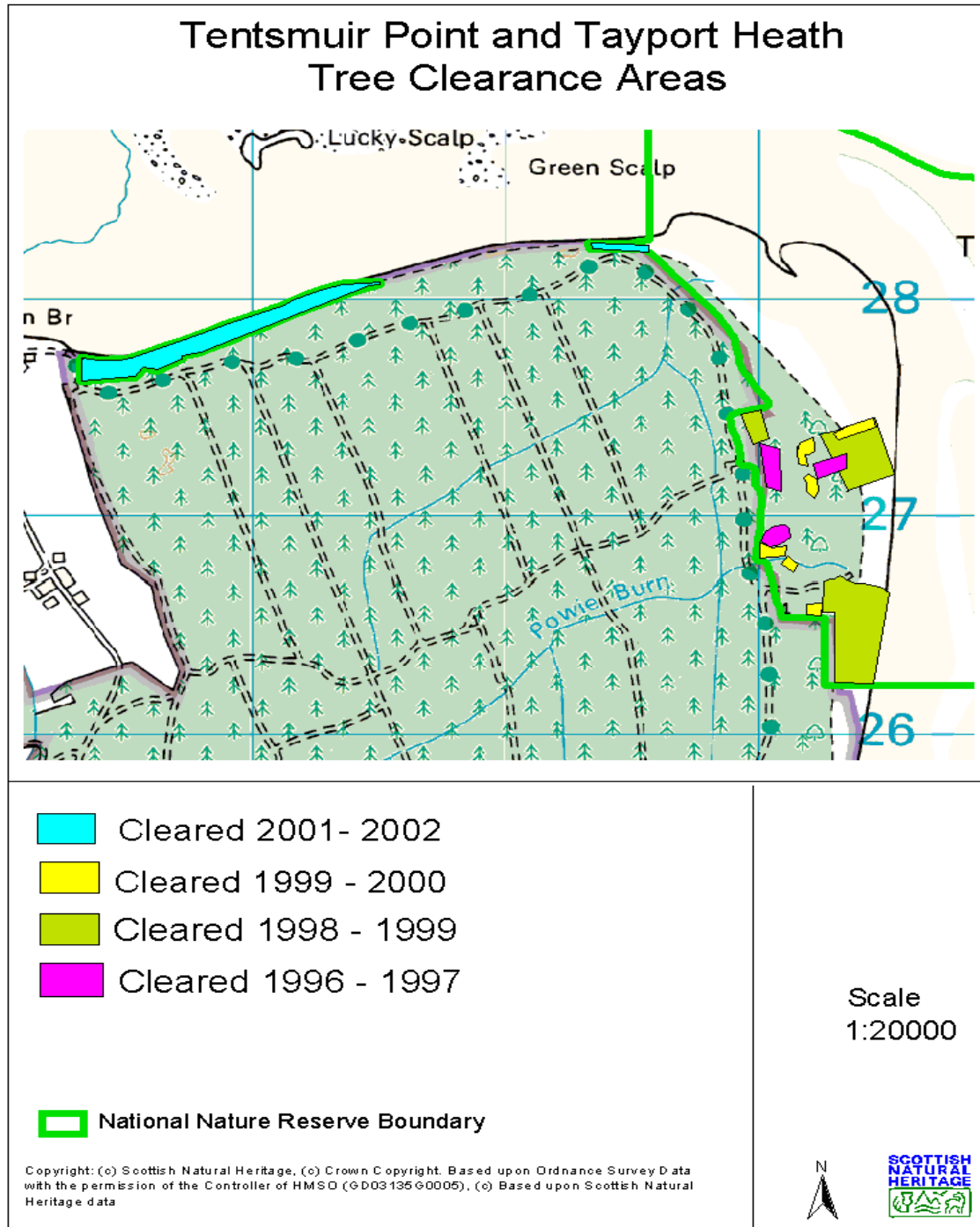
The images were taken at different heights so scales are not comparable between images.

The Story of Tentsmuir National Nature Reserve

In 2001 the mature trees and scrub vegetation were cleared from Tayport Heath, an area of fixed dune heath. A contractor was employed to remove all trees and scrub sensitively, avoiding as far as possible any damage to the dune heath. The trees were extracted whole using a crane. The trees were chipped on a site nearby in the forest, and the wood chip transported to an equestrian centre for their sustainable use.

The diagram below shows the areas cleared of trees between 1996 and 2002. Once the trees in an area have been felled the brash is removed, stumps are treated and scrub vegetation is cleared. Throughout the Reserve target species (gorse, broom and dog rose) are treated with herbicide, ragwort is pulled and scrub cleared. This work is repeated in selected areas on an annual basis.

By 2002 the target had been achieved. Only 5% of the original tree and scrub remained. The remaining trees are alder and small areas of willow and birch. These trees will remain to provide habitat for invertebrates, and in particular butterflies. The heath and dune vegetation has recovered to a more natural state following the tree and scrub removal and the area of cover has expanded.



27-Jan-05

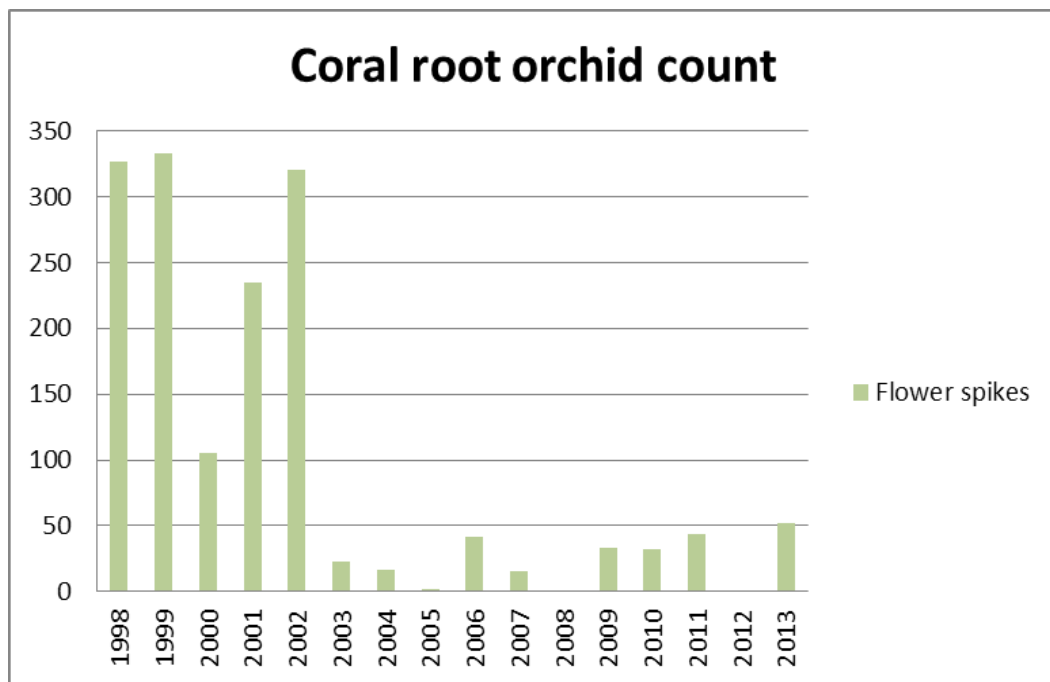
It is clear that as long as there are forest plantations adjacent to the Reserve, trees will continue to seed in and colonise the dunes. The cattle grazing, herbicide treatment and removal of scrub and saplings will have to continue to keep the dunes open and prevent the woodland spreading.

Another cause for concern has been the decline in floristic richness of the dune slacks, attributed to a lowering of the water table in the slacks. The records show that in the mid-1960s, when the Great Slack was prone to flooding by freshwater, it had good populations of salt-loving plants and the largest colony of coral root orchid

The Story of Tentsmuir National Nature Reserve

in Britain. The forest plantations and associated drains have been blamed for lowering the water table, although there may be natural causes too. Various projects have been undertaken to try to re-wet the slacks, for instance in 1989 a sluice was installed on a drain to re-direct water back into the Reserve. In the 1980s it was proposed that pumps be used to enhance flooding and this was recommended in the 1991 management plan. In March 1998 a wind pump was installed to feed water into the Great Slack from ditches and burns. The wind pump has had varying degrees of success in topping up the water levels of the Great Slack. The success rate is higher in wetter winters.

Spikes of coral root orchid in the slacks are counted each year. Fluctuations in number can be attributed to visitor disturbance, cattle trampling and weather. 2003 was a particularly dry year, which reduced the number of spikes found. In 2009 and 2013 new sites were discovered particularly on the Great Slack. Emeritus Professor Sir David Read from the University of Sheffield has studied and surveyed the coral root orchid for over eighteen years and continues to carry out the research on Tentsmuir Point and the adjacent forest.



The numbers of rabbits on the Reserve has fluctuated widely over the years, and from time to time there have been projects to control their numbers because of the damage they can cause. After myxomatosis, in 1955 the Nature Conservancy paid a small subscription to the Cupar and District Rabbit Clearance Society to trap rabbits to keep their numbers down. This seems to have worked for it was reported that rabbits had been eliminated by 1960. But by the 1970s the rabbits had returned, and were held responsible for virtually eliminating scrub vegetation in the slacks, and encouraging the spread of rosebay willow herb over the drier dunes. Rabbit control was re-introduced and exclosures maintained until the mid 1990s. The exclosures were removed in 1997 and 1998 when a visual assessment suggested that there was no significant difference between the vegetation within and out with the exclosures. The rabbit population remained steady until 2001 when myxomatosis once again devastated the population. The rabbit population has varied very little

The Story of Tentsmuir National Nature Reserve

since 2001, they remain on Tentsmuir Point however, and they are not causing any problems and of course are a food source to a few species.

Bird and Seal Management

At Tentsmuir Point preventing disturbance to birds and seals has always been an aim. Byelaws were introduced in 1962 and Reserve wardens and volunteers carried out routine patrols to make sure visitors observed the byelaws and did not damage the flora and fauna.

However with the number of visitors using the site steadily climbing there have been increasing concerns about the impact of visitors on the birds and seals.

In 2008 we installed new signage across the Reserve. The signs include behavioural messages for visitors in an attempt to raise awareness of the issue of disturbance to birds and seals. They include information on why we are concerned



Waders at Tentsmuir with Dundee in the distance

and what visitors can do to reduce their impact. In recent years there has been particular concern about the increasing use of the Reserve by dog walkers and the level of disturbance that dogs cause to wildlife. There have also been complaints from visitors about the behaviour of some dogs.

Until 2011-12 the majority of information had been anecdotal but concern about the level of disturbance continued to increase. Therefore during this year we carried out a Behaviour and Attitudes study to collate evidence about visitors use of the reserve, their attitude to wildlife conservation and the level and types of disturbance

occurring. As a result of the information collated we have increased face to face contact with visitors. We are also looking into new approaches to deal with this problem. The Reserve manager still has to persuade a few visitors to behave responsibly and keep dogs under control to prevent disturbance to the birds and the seals.

When mink spraints were observed at Morton Lochs in 2000, a mink control programme was started straight away because mink are such voracious predators. The first year (2000) two mink were caught and destroyed. Annual monitoring has shown no further sign of mink at Morton. Mink control was carried out at Tentsmuir Point in winter 2003 as spraints had been observed earlier in the year. However, none was caught. Again in 2012 spraints and paw prints were observed and one mink was caught. Adjacent landowners control foxes, but there is no fox control on the reserve.

There have been a number of research projects on the seals, current research is looking into the behaviour and feeding patterns of common seals. As part of this research, satellite recorders are being attached to seals to monitor their movements. The University of St. Andrews Sea Mammal Research Unit carries out the research.

Wetland Management at Morton Lochs

Morton Lochs have undergone many changes since their creation. Before becoming a Reserve, the lochs periodically dried up during summer because the supply burn silted up and the retaining banks were breached.

In the 1950s when the Reserve was set up, the lochs were in need of extensive repair work to improve the retaining banks and restore an adequate water supply. This work was completed in 1952, the water levels were adjusted, and the vegetation recovered. In the late 1950s the lochs were stocked with roach introduced from the Tay, in an effort to replace the fish stocks lost when the lochs dried out in the 1940s. The lochs dried out on three further occasions in the 1960s and 1970s.

Left unchecked, the fen vegetation in the Lochs will spread rapidly reducing the area of open water. Before it became a Reserve, cattle grazed around the lochs keeping the vegetation in check, but when grazing ceased the reeds spread rapidly. Various projects have been undertaken to prevent vegetation, particularly reeds, choking the lochs. In 1976 a major programme of work was undertaken. The aim of these works was to recreate open water, reduce the vegetation cover and create islands for breeding birds. The lochs were drained, silt and sediment which had built up was excavated with machinery, landscaping work was undertaken; islands were created, ditches cleared and the lochs expanded.

These works benefited the lochs for a period. However, by the late 1990s the lochs were again dominated by reeds, so an annual programme of reed clearance was introduced to increase the area of open water.

The aim of management of the lochs is to keep a balance of open water and wetland for wildlife; this is achieved by a number of management projects. The water level is monitored closely, and is manipulated by use of the spillways. An agreement with a

The Story of Tentsmuir National Nature Reserve

neighbouring farmer created in 1992 was needed to maintain the water level in the lochs. The inflow and outflow ditches are kept clear. Herbicide applied by a piston pump sprayer mounted on a boom lance from either the loch shore or dinghy contains the spread of reeds. In 2003, trees and scrub were cut and cleared from around the southern margins of the South Loch to recreate open ground and reduce shading of the loch. Silt is periodically removed from the ditches and inflow.



Morton Lochs

The catchment area for Morton Lochs is mainly agricultural. This has caused occasional water quality problems due to high levels of nitrates and phosphates. The impact of the high levels of nutrients are threefold – the death of macrophytes, algal blooms and epiphytic scums. This is exacerbated by not being able to maintain a high through flow of water throughout the year. In 2002 and 2003 bales of barley straw were put into the North Loch to help alleviate the algal problems, but with only limited success. The SNH hydrologist, SEPA and Reserve staff are monitoring the Lead Burn and catchment area and researching a solution of managing and alleviating the nutrient enrichment problem in the north loch.

One species that had responded particularly well to the reduction of reeds and increase in open water has been the teal, the number counted on the lochs in winter rose from 100 in 1998 to 800 in 2003. However, when the Lead Burn was diverted the teal numbers dropped. We restored the burn in 2005 but the teal numbers have not recovered. From 2004 to 2014 the numbers have averaged between 300 and 350.

There have been several other small-scale projects to encourage the wildlife. Bird boxes have been put up in the woodlands. Bat boxes have been put up around

The Story of Tentsmuir National Nature Reserve

Morton Lochs and near the icehouse, and an otter holt was built from brash left from a felling contract.

In the conifer forest that surrounds the Lochs, remnants of the dune heath still survive under the forest canopy. In the area to the north of the Lochs, a programme has been initiated to restore the dune heath. This area was cleared of quality timber in 1998, but brash and poor timber, smaller trees and scrub were left. In 2003 the remaining birch and scrub were cleared and the brash and debris removed from the site. The management methods being used have been developed from those used on the dunes at Tentsmuir Point.

Management for People

People have always been able to visit Tentsmuir Point and Morton Lochs, but in recent years SNH has put more effort into providing facilities for visitors.

The first booklet about the Reserve was produced in 1970. A public hide was constructed at Morton Lochs in 1975 so that visitors could view the wildlife. A second hide, the Fullerton hide named after one of the first wardens, was opened in 1977.

In the late 1990s there was a burst of activity at Morton Lochs stimulated by the policy for National Nature Reserves in Scotland developed in 1996. The policy identified three purposes for NNRs, one of which was to use Reserves to raise awareness of Scotland's natural heritage.

To implement the policy new interpretative panels were installed, and new leaflets were printed, one for the NNR and another for sites in the local area in partnership with others. A Reserve Newsletter was started in 1999. This

proved so popular that in the course of the next 14 years the print run has grown from 80 to over 1200. In an effort to reduce our carbon footprint we now send electronic copies to more than half the people who wish to receive the newsletter.

A family fun day was introduced in 2000, and has been held annually since. This popular event with a programme of varied activities attracts upwards of 160 visitors. Four other events are run annually in conjunction with Forestry Commission Scotland (FCS) and have proved to be very successful. There used to be a



Open day at Tentsmuir NNR

The Story of Tentsmuir National Nature Reserve

programme of guided walks but attendance was falling, so guided walks are now available on request rather than through a scheduled programme. This has proved a popular move.

In 2002 new footpaths and boardwalks, some suited for all abilities, were constructed at Morton Lochs, including an educational boardwalk across the Fullerton Lagoon. A third hide, the John Berry hide, was added in 2003 and the South hide was replaced. In 2011 the stair to the Fullerton bird hide was replaced to make it as accessible as possible. In 2013 the all ability footpaths around Morton Lochs were resurfaced and this was welcomed by visitors. In 2014 a squirrel hide was constructed due to the increased red squirrel sightings.



Bird hide at Morton Lochs

A Teachers Education Pack for the 5-15 age group was produced for Tentsmuir Point in 2003 and distributed to mainly Fife schools. The pack proved very popular, with requests for copies being received from across Scotland and the number of schools visiting the Reserve has since increased. In 2008 the second edition was produced for working with the new 'Curriculum for Excellence'. The pack was distributed to schools in Fife, and further afield with copies going as far as schools in England & Wales, Sweden, France, USA and a copy to a State High School in Moscow. School visits remain high as well as education visits from nurseries, universities and colleges. As an example in 2013-14 38 nursery, schools, colleges and university education visits with over 1200 students visited Tentsmuir Point and Morton Lochs.

Management of the Property

SNH manages all the land in the Reserve. We own 57 ha split between Tayport Heath and Tentsmuir Point. The foreshore is leased from the Crown Estate Commissioners, and the remainder from Forestry Commission Scotland (FCS). At Morton Lochs (24ha) are owned by SNH and we lease the car park from FCS.

The Reserve office at Fetterdale (off the NNR) has been rented from FCS since the mid 1960s. Since 1994 SNH has owned a storage workshop for tractors and other equipment at the Fetterdale office.

The boundary of the Reserve is marked by sea fences maintained to keep the cattle within agreed areas. Maintenance of the sea fences is done on a day-to-day basis by Reserve staff, but due to the difficult conditions, specialist contractors are employed at the end of each winter to carry out maintenance.

The visitor infrastructure - the car park, paths, hides and information boards - have to be maintained by Reserve staff and contractors.

The number of staff at Tentsmuir has fluctuated over the years. Since the establishment of the Reserves there has been a warden, and in many years an assistant warden too, either throughout the year or as a seasonal post. The assistant warden post is currently shared with FCS.

The Reserve has benefited from an enormous amount of time from volunteers who have helped with biological recording, building projects, beach clean ups, patrols and organising events. In addition, the many voluntary wardens for the reserve have greatly contributed to the knowledge, management and maintenance of the NNR.

The Reserve staff meet The Tentsmuir and Eden Liaison Group to discuss local management issues, co-ordinate activities with local activities and to develop the interpretation and education strategy. There are representatives on the group from Forestry Commission Scotland, Fife Coast & Countryside Trust, SNH, Tayport Community Council, and local landowners and land managers.

In Conclusion

Tentsmuir NNR, comprising Tentsmuir Point, Tayport Heath and Morton Lochs has a rich natural heritage. Management of the Reserve has maintained this interest for more than 60 years. The coastal sandflats and banks remain largely undisturbed and the numbers of birds and seals using the area continue to be internationally significant. The dune heath at Tentsmuir Point and Tayport Heath has been cleared of trees and scrub vegetation and is recovering. Morton Lochs have been restored to a mosaic of open water and wetland habitats supporting a diverse range of wildlife.

The Reserve is well used by visitors and the number of educational visits has increased since the teachers pack was produced. The success of the Reserve newsletter shows there is continuing interest in the Reserve.

The Story of Tentsmuir National Nature Reserve

This document introduces Tentsmuir National Nature Reserve. We hope you have enjoyed finding out more about this special Reserve, if you can add to our knowledge please let us know.



View from the bird hide at Morton Lochs

5 Document properties

References

Crawford, R. (1996) Tentsmuir Point: a National Nature Reserve in decline? In *Fragile Environments: The Use and Management of Tentsmuir NNR, Fife* (ed G. Whittington), Scottish Cultural Press pp65-87

Everett, N (2001) Tayport- Tentsmuir Coast Site of Special Scientific Interest: Tentsmuir Geological Conservation Review Site. Scottish Natural Heritage. Earth Science Management Report 621.pp1-91

Huxley, T. (1996) The management plans of Tentsmuir Point NNR. In *Fragile Environments: The Use and Management of Tentsmuir NNR, Fife* (ed G. Whittington), Scottish Cultural Press pp53-64

Whittington, G (1996) Landuse of Tentsmuir: A History of Diverse Activities. In *Fragile Environments: The Use and Management of Tentsmuir NNR, Fife* (ed G. Whittington), Scottish Cultural Press pp16-25

Photography

Photography by Lorne Gill, P.A. MacDonald and SNH.
Artwork – [Derek Robertson, Artist in Residence 2013, Tentsmuir NNR](#)

Aerial photography:
1955, 1972, 1990 – Copyright Cambridge University Collection
1999 – Flown by W.H. Ekin for Scottish Natural Heritage
2004 – Copyright Ken Whitcombe, Ken Barry Photography
2010 - Copyright Aerial Photography Solutions
2013 – Copyright Caledonian Air Surveys

Acknowledgments

The first edition (2003) of the Story of Tentsmuir NNR has been written by Tom Cunningham (Reserve Manager), Caroline Gallacher (Operations Officer - Forth) and Susan Luurtsema (Managed Sites Officer) and approved by Iain Rennick (Area Manager).

This second edition (2014) of the Story of Tentsmuir NNR has been edited by Tom Cunningham (Reserve Manager) and Susan Luurtsema (Operations Officer – NNRs), and approved by Caroline Gallacher (Operations Officer - Forth).

Links

For information about NNRs in general and further information about Noss NNR please visit the [Scotland's National Nature Reserves website](#)..

For information on the protected areas associated with Tentsmuir NNR please visit [SNHi](#).

Other useful links:

Scottish Natural Heritage

www.snh.org.uk

Joint Nature Conservation Committee

www.jncc.gov.uk