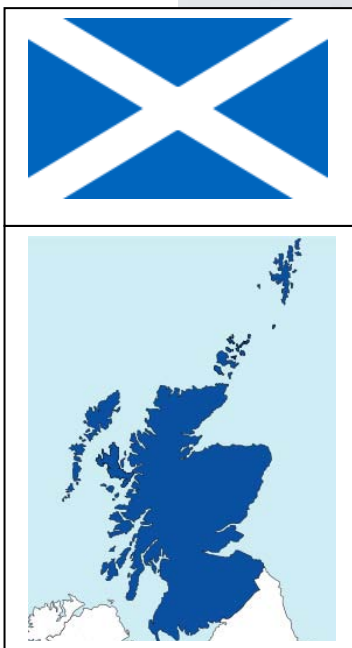


Nature Exchange

# Latvia

Report of study tour,  
7-14 September 2012

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*A bull elk crosses the road in front of our vehicle*



## 1. Introduction

Latvia covers 68,589km<sup>2</sup> and is one of the least densely populated countries in Europe with two million people, one million of whom live in the capital Riga. Forest covers c.52% of the land, there are 12,000 rivers, 3,000 small lakes, 531 km of coastline and 98% of the country lies below 200m.

From 7-14 September 2012, we visited a range of sites in Latvia, hosted by the Latvian State Forest Service. Throughout this *Nature Exchange* we were given a tour of many diverse and interesting places and offered the unique opportunity to discuss conservation management issues with local experts. From our first day onwards we noticed the close association of nature and people. The first indication of this was the local wild food in the hotel and local market. A subsequent tour of the old town showed off Riga's wonderful cultural heritage, cobbled streets and amazing architecture whilst also demonstrating the impact of beavers in the city centre and the measures which have been undertaken to reduce damage to important trees and canal banks. The wealth of wildlife was one of the highlights during our visit. One striking difference was the sheer size of the area covered by woodland, its lack of fences and how this allowed the free movements of species. This opportunity to roam allows species such as wolves and lynx to have large territories and create a much more 'natural' environment.

This report focuses on the different themes associated with our visit including forestry, hunting, wild foods, beavers, access and wetland management. Our impressions were many. The combination of a strong forest economy, a forward thinking industry spearheading cloning techniques creating trees suitable for the changing climate sat alongside planting for conservation, hunting, gathering and leisure activities which extended to huge timber play parks and even an underworld of gnomes! Latvia's environment includes the vibrancy of this balanced, well managed ecology with wolf, lynx, beaver, wild boar, deer, badger, bears, raptors, nine species of woodpecker and much more. Many of these species were once present in Scotland – we all were convinced that some could be present again.

We also were struck by the architecture - from the beautifully conserved and restored classic architecture of the cities, the charming vernacular architecture of the countryside with Aspen shingled roofs and thatched smoke houses to the delightful compost loos in many public, green and forest open spaces.



*A thatched compost toilet by Lubans Lake*

We enjoyed in every sense the food - local, seasonal and delicious, and we saw a diverse agriculture, still recovering from the aftermath of the collapse of collective farming. A mix of cereals, dairy, sheep and goats, fruit and vegetables, a rural economy of foraged berries and fungi, the rivers and lakes providing energy and fish and the apple trees planted everywhere in towns, cities, on verges, to ensure no one goes hungry. Much of this agricultural land also has a diverse wildlife community containing many species scarce elsewhere in Europe.

We learned much from our visit, but to conclude, we would very like to acknowledge the overwhelming warmth, hospitality and generosity of the people we met – this made our time in Latvia even more rewarding and enjoyable..



## 2. Main themes of the study tour

### 2.1 Forestry in Latvia - Tom Edwards

#### *Sites visited and issues*

- We visited the cone processing facility, seed orchard and tree nursery at Kalsnava. The facility processes all the cones from seed orchards in Latvia; has a seed orchard of cloned birch trees which produce the seed for all birch planted in Latvia's State Forests; has a production facility for cloned hybrid aspen which are mainly for export; and a nursery for spruce, pine, birch, aspen and alder. We also visited the arboretum which has a collection of trees from around the world
- Met with Head Foresters from the State Forest Service for three of Latvia's 10 forest districts
- Travelled over a thousand kilometres across Latvia and saw many examples of both State and private forests
- Met and discussed forest management with staff of the State Forest Service in Riga

#### *General observations*

Forest cover in Latvia has increased from one quarter in the 1930s to a little over half the land area today, largely as a result of forest spreading onto former agricultural land by natural regeneration. The balance of public to private ownership is c.50:50. As well as the extensive State Forests, forests in public ownership include holdings by municipalities – the Riga municipality has one of the largest at 60,000ha. This includes areas on the outskirts of the city managed for recreation but also large areas managed for timber production. Income from their forests is particularly important for some rural municipalities.

The table below shows the division of functions in forestry in Latvia:

Legislation	Forest Management	Regulation
Forest Section of the Ministry of Agriculture	Latvijas Vlasts Mesi (LVM), the Stock Holding Company, formed in 2000. LVM manages 1.6 million ha of forest	State Forest Service – administering forest management e.g. licensing of felling and replanting, licensing of hunting, forest fire management, support and extension to forest owners
	Private forest owners	The Nature Protection Board and Environment Inspectorate also have a regulatory role in forestry
	Municipalities	

The State Forest Service (SFS) underwent an extensive reorganisation in 2012, mainly in response to budgetary pressures brought about by the recession. In 2012 the SFS has 800 employees; in 2000 it had over 2,000 employees. The SFS works in ten forest districts, each of which has a head forester and a number of foresters each of whom are responsible for a particular area of forest, together with administrators and forest engineers. There are also seasonal staff who are taken on as fire watchers during the summer. The number of foresters has reduced significantly following recent reforms. There are currently 360 foresters, prior to the reforms there were over 800.

Forests are mainly harvested by clear cutting. The size of coupes is restricted by law to 5ha on dry soils, otherwise to 1ha, or 0.25 ha on peaty soils. Restocking is required at >3,000 stems per ha for pine and >2,000 per ha for spruce. Legislation also restricts the rotation period. It is limited either by age: 100 years for pine; 80 years for spruce; 70 years for birch or 40 years for aspen; or by setting a minimum trunk diameter which must be reached before clear-cutting can take place

In 2011 Latvia produced c.13 million m<sup>3</sup> of timber from its forests, equivalent to total UK production (production from Scottish forests in 2011 was c. 7.5 million m<sup>3</sup>). Of Latvia's production 7.6 million m<sup>3</sup> was from the State Forest and 5.3 million m<sup>3</sup> from private forests. Latvia's State Forest is subject to a limit on the total annual cut. This has been raised in recent years to make up for a decline in imports of timber from Russia, caused by an increased export duty on Russian timber imposed in 2009. This led to calls from the influential sawmilling lobby in Latvia to raise the cut to satisfy their demand – Latvia has excess sawmill capacity compared to domestic timber supply. This has raised timber prices significantly. It has also boosted revenues of forest owners - LVM's net profits more than doubled from 33 million Lats in 2009 to 78 million Lats in 2010, with only a 15% increase in timber sales.

For restocking a combination of planting, natural regeneration and broadcasting of seed are used. Planting choice is made according to a site classification system based on soil moisture and fertility. The State Forest carries out more planting than private forest owners (c.two-thirds of restocking by planting compared to one-third by private owners). Latvian forests are often a mixture of pine/spruce/birch with some aspen and alder. Forest stands are classified according to the dominant species. In the State Forest pine and spruce are the dominant species, followed by birch; while in private forests aspen and alder are the main species, together with mixed broadleaves. This reflects the fact that many private forests originated from natural regeneration of broadleaves onto former agricultural land.

The only tree protection necessary is managing the density of herbivores. Autumn browsing levels on young deciduous trees are used as a proxy to determine density of herbivores. A site is estimated to be at carrying capacity when ½ young deciduous trees show browsing in autumn. If browsing levels are higher than this the number of herbivores permitted to be shot can be increased. Grants are available to carry out pre-commercial thinning, and to compensate forest owners for damage by fire or wind throw. No grants are available to cover establishment costs.

#### **Kalsnava seed orchard, tree nursery and arboretum**

The site is the base for LVM's seeds and plants operation. LVM produces 40m tree seedlings per year, c.80% of which are for planting in Latvia's State Forests. The company has 300ha of pine and 200ha of spruce growing in seed orchards at different sites around Latvia. All the pine and c.50% of the spruce used by the company is grown from seed collected in one of its orchards. All seed collected by the company is processed at Kalsnava.

The process of extracting, cleaning and sorting seed goes through several stages using specialist equipment imported from Sweden. After cleaning to remove needles and debris, the cones are dried in the cone oven. The drying opens the scales of the cones. Once open the seeds are removed from the cones in a large rotating drum. The wings of the seeds are then removed and the seeds are cleaned, sized and dried. During the sizing empty seeds are removed. Finally the seeds are transferred to a cold store, where they are held at minus 5 degrees. The company has enough seed in storage to supply its nurseries for 10 years. At Kalsnava LVM has also built a facility for propagating cloned hybrid aspen (European x American aspen). The clones are grown in tissue culture and then grown on in cells in greenhouses until they are large enough to be planted out in the forest. The hybrid aspen grows faster than European aspen. The plants are grown for export, mainly to Sweden. The facility can produce 500,000 plants per year.

Kalsnava also has a birch seed orchard from which all seed for birches grown in LVM forests are produced. The orchard is in two sections, with trees of East and West Latvian provenance. The trees are all grafted clones from 55 plus trees selected for the quality for birch veneer. They grow inside a polytunnel in c.30-40cm of peaty soil over a free draining substrate. The warmth of the polytunnel encourages earlier flowering, which reduces the risk of cross pollination with trees from outside the orchard. Seed collections are made for around ten years, after which new clones are used. It takes about three years after grafting for a sapling to produce seed in sufficient quantity for collection.



*Janis Auzins explains seed extraction*



*Cloned birch seed trees in polytunnel*

### *Implications for Scotland*

While in Latvia we saw many fine examples of mixed pine/spruce/birch forest. The trees were much taller than they would normally be in Scotland, presumably because of the lower altitude, richer soils and less windy climate. It is particularly interesting from a silvicultural point of view to see the quality of the Latvian silver birch. It would be good to see birch of such quality being grown in Scotland. In Latvia the encroachment of forest onto abandoned agricultural land was seen as a problem, this is because Latvians feel they have enough forest. In Scotland this is something we might see more as an opportunity. It was also interesting to see forests without fencing or tree shelters, and to see natural regeneration of aspen, a highly palatable species, coming away in profusion without any protection in many places. As noted in the following section, deer densities in Latvia are an order of magnitude less than in Scotland, and this shows what can be achieved at such densities. All three of the ingredients necessary to achieve this (owners willing to accept lower deer numbers; large carnivores and several weeks a year at minus 30) are absent in Scotland so this seems likely to remain something Scottish forest owners will only dream about. Visiting such a heavily forested country also helps to put Scotland's re-forestation targets into context. It reminds us that forests cover vast areas of Europe, so we should think carefully about the type of forest we are paying with taxpayers' money to recreate in Scotland.



*Scots pine felling and regeneration near Bauska*

## 2.2 Hunting of large mammals - Tom Edwards

### *Sites visited and issues*

- Our guide throughout our trip was Janis Ozolins, head of game licensing for the State Forest Service, which has responsibility for licensing hunting in Latvia. Janis is responsible for managing the hunting of large carnivores. We discussed issues related to hunting and management of large mammals with Janis throughout our trip.
- We went at dawn to look for moose with Vilnis Skuya in the Slitere National Park. Although we didn't see a moose we did hear one alarm calling and saw many signs of moose and red deer.
- We visited an area of State Forest near Lake Lubans which is managed for hunting, mainly by foreign hunters. We saw a cow moose with two calves, several roe deer, and saw signs of wolves.
- Many of the people we met in Latvia were hunters and we had many formal and informal discussions with them about hunting and gained an insight into hunting culture in Latvia e.g. the three head foresters we met, Ugis Rotberga of WWF Latvia; Ugis Bergmanis of LVM and Janis Macani the owner of Zvejnieki guest house we stayed at beside Lake Lubans were all hunters
- Ugis Bergmanis gave a presentation on hunting management in Teici SAC/SPA to our group and to a group of visiting Belorussians.

### *General observations*

Large mammals which are hunted in Latvia comprise both herbivores: red and roe deer; wild boar; moose; and beaver (described in Section 2.3 of this report); and carnivores: wolf and lynx. There are an estimated 25,000 hunters in Latvia (1% of the population), and around 1,000 hunting clubs. Latvia is also visited by foreign hunters, mainly from Germany, Poland and Scandinavia. Hunting clubs rent hunting rights from both private forest owners and the State Forest (from LVM). Members are eligible for a share in the hunting quotas allocated to the club. After several years of membership and having carried out hunts under the supervision of experienced hunters, a hunter will be allocated their own area of forest or beat, in which they manage the animals. This encourages a feeling of stewardship, for example one hunter we spoke to had been waiting several years to hunt a particular stag within his beat. Hunters in Latvia must pass a theory test and a shooting test to obtain a hunting certificate. They must also hold a firearms certificate and a hunting permit, which is renewed annually on payment of a small fee. Returns for hunting large mammals must be made to the State Forest Service. The table overleaf shows some more information about hunting of large mammals in Latvia.

Red deer density in the Slitere National Park was estimated at 5 deer/1000 ha. In Eastern Latvia there are higher densities of up to 40 deer/1000ha, but still lower than the 50 deer/1000ha which is the minimum thought to be required for natural regeneration in Scottish conditions, and deer densities in large parts of Scotland are much higher than this. Factors limiting deer populations in Latvia are the availability of food in winter; interspecific competition<sup>1</sup>; predation by large carnivores; and hunting. Hunting of large carnivores in Latvia is largely opportunistic, and hunters will take a wolf or lynx if they see one while hunting other species<sup>2</sup>. Although Latvia has sizeable populations of both wolf and lynx the animals are elusive and even the experienced hunters we spoke to had seen wolves or lynx on only one or two occasions in their lives.

Latvia's wolf population is estimated at 500 individuals before the hunting season begins in July. The quota is set at 200 animals. The quota is set nationally, and once 200 wolves have been taken, all hunters receive an SMS message alerting them that the season is closed. Quotas were introduced in the 2001/2002 hunting season following the preparation of a large carnivore management plan, which

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<sup>1</sup> For example moose prefer to browse higher than red or roe deer. Where red or roe deer occur at higher numbers the amount of browse available to moose is less and so moose numbers are lower

<sup>2</sup> Wolf drives are organised in some areas, and lynx are sometimes hunted by tracking in snow



Species	Minimum area of hunting ground	Estimated population <sup>3</sup>	Annual cull (vary each year)	Hunting season	Hunting managed regionally / nationally
Wolf	N/A	c.500	Quota 130- 200 animals, not always met	15 Jul to 31 Mar	Nationally
Lynx	N/A		Quota up to 150 animals, not always met	1 Dec to 31 Mar	Nationally
Moose or Elk	2,500		3,000	1 Sept to 15 Dec	Regionally
Red deer	1,000 for hinds 2,000 for stags	40,000	5,000	Stags 1 Sept to 31 Jan; hinds 15 Aug to 31 Dec	Regionally
Roe deer	200	Population seriously reduced winter of 2010/11		Bucks 1 Jun to 30 Nov; does 15 Aug to 30 Nov	Regionally
Wild boar	1,000			1 May to 31 Jan	Regionally

was drawn up as part of Latvia's EU accession negotiations. The quota has been fulfilled four times in the last ten years. The quota is set based on sex and age analysis of the population based on the previous year's hunt and is designed to keep the population stable. There is some immigration of young wolves into Latvia from Russia, where hunting effort is low in the areas close to the Latvian border. The level of hunting keeps the wolf population at a level where conflict with livestock farmers is minimised.

While the wolf is regarded by most hunters as a dangerous pest, the lynx is held in higher esteem as a game animal. As with wolves the quota for lynx is managed nationally and the season closes if the quota is met. The quota for lynx is currently 150 animals. Large carnivores range over large areas - within the course of a year a male lynx may cover a territory of 50,000ha, and a female lynx with cubs 30,000ha, although the core area used most frequently may be significantly smaller, e.g. 5,000ha for a lactating female, and territories do overlap. Lynx territories are a function of prey availability, especially in winter. In Latvia, lynx are roe deer specialists.

Poaching of large mammals is generally not a problem, hunters are usually keen to register their kills to allow them to enter competitions, they can also get CITES permits which allows them to sell skins etc. If hunters take an animal after the season has closed, they can lose their hunting licence for up to 3 years, and receive a fine of up to 1 month's salary. Their firearms are also confiscated by police.

#### *Implications for Scotland*

The reintroduction of large carnivores in Scotland is something that is often debated, so it was fascinating to visit a country which has them, and to learn how they are managed by hunting.

Latvia's population of wolves and lynx are part of wider populations of many thousands of animals whose ranges extend East into Russia, north into Estonia and south into Lithuania and Poland. The size of these populations ensures sufficient gene flow to keep them healthy. Scotland might need a population of 100 or more Lynx to be viable. These animals might need as much as 3-4 million ha to range in, an area equivalent to half of Scotland's land area. An alternative would be to have a smaller population of lynx, which would need to be supplemented with introductions from other populations at regular intervals to keep it healthy, something which some who advocate reintroduction and rewilding might be unwilling to accept. Even a limited reintroduction of lynx would need an area of the order of the size of the

<sup>3</sup> The population estimates were given during our discussions. The absence of a figure in the table does not therefore imply that the population is not known.

Cairngorms National Park in order to work. Losses of livestock to wolves in Latvia are low. However, Latvian farmers do not keep many sheep, and it is difficult to envisage wolf reintroduction in Scotland without huge conflict, even although upland sheep flocks have declined significantly in the last 10 years. The habitat to support both lynx and wolves in Scotland may be there, what is lacking is the will to see these animals as part of the Scottish fauna once again, and it seems unlikely that that will change anytime soon.

It was interesting that, in spite of the significantly lower deer numbers in Latvia, no hunter that we met complained about a lack of deer. The introduction of a competence test for deerstalking has also been legislated for in Scotland, though the legislation will only be enforced if the current voluntary approach does not deliver results. In Latvia the idea of a competence test for all forms of hunting was seen as completely normal, and was not seen as a burden by any of the hunters we met.



*Wolf scats, near Lubans*



*Elk trophy on wall in hunting lodge, Teici*

### **Management of hunting at Teici**

The Teici SAC/SPA extends over 19,000 ha, and mainly consists of raised bog (14,000ha) and forest (4,700ha). One of the main principles regulating hunting in protected areas in Latvia is that animals which are protected by the Habitats Directive should be protected inside protected areas, even though they are not endangered in Latvia and Latvian law allows them to be hunted. This principle was applied at Teici when it was designated as a Special Area of Conservation (SAC) / Special Protected Area (SPA) following Latvian accession to the EU in 2004. Designation led to the cessation of moose hunting at Teici. Wild boar hunting continues to be allowed on the site in forest areas. Hunting is not allowed on the bog areas.

Hunting at Teici is managed under a ten year hunting management plan. These plans are required by Latvian law for all hunting areas. They normally contain a map showing the boundaries of the hunting area, and boundaries in between different ownerships; contact details of the landowners; registration information about the hunting club, or contact details for the hunter(s); and details of legal agreements between landowners and hunters. Teici and other nature reserves have more detailed hunting management plans, which include population assessments of quarry species. The plan for Teici includes monitoring of the moose population, even though moose are no longer hunted at the site. Trials of different methods of monitoring including direct counting; dung transects; and browsing monitoring plots have shown that monitoring browsing of deciduous trees in late summer is the most accurate method of population assessment.

## 2.3 Beavers - Liz Auty

### *Sites visited and issues*

Beavers were first reintroduced to western Latvia in the 1920s when a pair was brought in from Norway after some 50 years absence. Further reintroductions were carried out in the 1950s when the country was part of the Soviet Union, at this time there was a market for fur and beaver glands. Since the breakup of the USSR and the collapse of the fur trade, the number of animals in the country has proliferated. In EU Member States beavers are protected by the Habitats Directive. On joining the EU in 2004, Latvia was judged to have a self-sustaining and viable population and an exception was inserted into the Habitats Directive, so they are not protected. In terms of hunting, quotas for beavers were abolished five years ago, and the season runs from the beginning of August until the end of March.

We saw much evidence of beavers on our visit, though we were not fortunate enough to spot one of these animals! Our first encounter with the work of beavers came in the middle of the capital city Riga, which was surprising. Here the beavers live on a canal that runs through the city parks. After inhabiting the city for a few years, the problem of the beavers damaging trees came to a head in 2010, and rather than exterminating the beavers, the city held a competition for the best ideas to deal with the problem. Over 60 entries were received and the winning solutions included metal fencing to protect individual trees and planting willow along the bank to provide extra food.



Fencing to protect trees from beavers in Riga city parks



Planting willows as beaver food in Riga

We visited a number of other sites to look at how beavers modify the habitat and as we were driving around Latvia became good at spotting where they had created ponds. Some fantastic wetlands had been created, and the associated standing and lying dead wood were great for a whole range of species including woodpeckers, which were another feature of our visit. We were able to see several beaver dams and lodges and trees that had been recently cut. Janis explained that beavers dam small streams to create a pond with more stable water levels, and avoid being flooded out when water levels rise. They construct a lodge which includes an entrance under water as protection from their predators, even in extremely dry conditions when water levels in the pond are low they will dig down to maintain a watery entrance to their home.





A beaver dam in  
Slitere National Park



Wetlands created by beavers

#### *General observations and implications for Scotland*

It was very interesting to see first-hand the impact of beavers on the landscape in the light of the beaver release trial by the Scottish Wildlife Trust at Knapdale and the fact that there are now reportedly more than a hundred wild living beavers on the river Tay catchment. As a keystone species their dam building habit is a great way of creating new wetlands, but is also likely to bring them into conflict with people. With a much lower human population density, much larger areas of forest and the impacts of the fall of the Soviet Union, it was understandable how beavers have become so successful in Latvia.

The average land holding in Latvia is much smaller than in Scotland at about 8 ha as compared to 175 ha (Scottish Government figure 2011), therefore beavers can have a relatively large impact on a particular farm or forest area. A 2007 report by WILD CRU at Oxford University 'Economics of the Beaver' concluded that the benefits of a reintroduction in terms of tourism revenue were likely to outweigh the costs of damage to forestry, fisheries and agriculture. It will be really interesting to see how the presence of beavers in Scotland develops.



A recently felled birch tree at Slitere



## 2.4 Rural economy, agriculture and food - Jools Cox

### *Sites visited and issues*

The first thing I saw when we walked into the Hotel Avalon in Riga was a chalked board menu: Marinated Chanterelle Salad, Chanterelle Soup, Chicken breast with Chanterelle and Mascarpone filling - I was in heaven. Of course we tried them all, and throughout the week we relished many local foods from the fertile countryside, forest and lakes. Perch pike soup, smoked carp, wild berry tarts, homemade butter and cheeses, elk stew, venison, 'herrings in their overcoats' - layers of roll mop herring with finely grated carrot, cabbage, beetroot and grated hard-boiled egg, wild honey, the beautiful black rye bread with caraway seeds, and a dessert made from the bread with berries, syrup and cream called 'Ambrosia'. We sampled pear cider, apple juice, Latvian beer, (every town has its own micro brewery), birch sap cordial and Black Balsam, a medicinal herbal liqueur flavoured with blackcurrant, apparently the essential aperitif but, as we discovered, also good mulled with cinnamon and orange.

On our travels we learnt that the low lying, flat farmland protected by forests with fertile, sandy loamy soil produced wheat, barley, rye, potatoes, dry beans and peas, cows for beef and dairy, chickens, fruit and flowers. This year was a good year for wheat in a year when the US and Russia had low yields. Temperatures range from minus 30°C to 30°C so trees and crops have adapted, or are being adapted, to cope with the dramatic range. We were impressed by the open landscape, no fences, hedges or stone dykes. Cows and goats are tethered whilst larger herds of cows and sheep are curtailed by electric fences.

There are 2650 ha of commercial fruit: apples, pears, raspberries, sour and sweet cherry, red, white and blackcurrants, sea buckthorn, blueberry, cranberry and quince. Fruit growing is an increasing market sector for the home market as well as export. Latvians demand and enjoy local varieties and each eats at least 15 kg of apples per year (in the UK we eat 7.87 kg). There are 9000 ha of apples grown in Latvia yet only 1300ha are grown commercially. We saw apple trees everywhere we went - in gardens, allotments, roadsides, along forest margins, orchards adorned the front of the state owned Rundale Palace, and were evident in every municipal park and square. Blueberries and currants lined the flower beds in the parks. Latvians take food security and poverty very seriously as they have known many eras of great hardship, as the average wage is still very low at approx. £400 a month, self sufficiency is very important.



*Apple trees are planted almost everywhere*



*Lingonberries (Vaccinium vitis-idaea)*

Fruit and fungi from the forests of Latvia are an essential part of the rural economy and sustainability of the Latvian people. People in Latvia live in harmony with the forest and for centuries have been dependant on the natural benefits that it provides. It is a long held tradition for people from all walks of life to visit the forests surrounding their towns and villages to pick berries and fungi. The only restricted places are the National Park Reserves and small areas of privately owned forest where landowners have chosen to restrict access. Berries and fungi are dried, bottled, preserved for home use, and the surplus sold in markets or to canning factories and exporters. Many rural people depend on this income to survive and children supplement their pocket money by foraging. The foraging season starts in February with tapping birch trees for sap to make cordials and wine, it continues with the collection of wild flowers and

mosses for teas and medicinal tisanes and continues throughout the year well into the winter when cowberries, the last survivor, is dug out from under the snow by humans, deer, beaver, racoon dog, fox and rodents.

There is a greater area of Scots Pine than in Scotland, hence typically there is more light and moisture on the forest floor and berries grow freely. The first to appear in June are Wild Strawberries (*Fragaria vesca*) followed by ground hugging Cloudberrries (*Rubus chamaemorus*) and Raspberries (*Rubus idaeas*) in July. August brings a bluish blackberry (*Rubus caesius*) and the sweet Bilberry (*Vaccinium uliginosum*) followed by the not so sweet Northern bilberry (*Vaccinium myrtillus*) these continue until the first frosts.

In eastern Latvia we were taken across the restored bog at Teici Nature Reserve a Natura 2000 site by botanist Vija Kreile where berries glistened like jewels in the deep *Sphagnum* moss. Parts of the peat bog have been restored as part of a wide spread bog restoration programme (Section 2.6 below); the area we visited included bog disturbed by a former road and fire. Nestling in the mosses, bright yellow Rannoch rush, flowering bog rosemary (*Andromeda polifolia*) and wild rosemary (*Ledum palustre*) were large red cranberries (*Oxycoccus palustris*); Cowberry or Lingonberry (*Vaccinium vitis-idaea*) a small red berry that stays on the plant throughout the winter, with a high pectin content it is used in stuffings/sauces with meat and poultry; Crowberry (*Empetrum nigrum*) an edible black berry that contains a high concentration of anthocyanin pigment that can be used as a natural food dye; and numerous bilberries.

We saw many edible fungi in forests parks, at the arboretum, and in municipal gardens, and mushroom gathering holidays have become a big part of the green tourism initiative. Mushrooms worth 35.9 million LVL per annum to the economy, 50% of non timber forest products The most common we saw were Ceps (*Boletus edulis*) - prolific and large, Chanterelles (*Cantharellus cibarius*), *Russulas* and some of the *Lactarius* family.



Fungi for sale, Riga market



Aspen baskets, Riga market

In Riga market and small shops throughout our trip we saw many non timber forest products for sale.

- Bee products – honey, honey comb, candles, propolis grains, beeswax, guesthouses offering bee product themed stays and at Guesthouse Zvejnieki we ate honey from hives kept high in the trees to protect from bears. We were told that beekeepers take their hives into the forests for the heathers and wild flowers as the rape growing is too intensive and makes thin honey and reduces the bee's immune system.
- Peat bog plant roots, grasses, exotic looking dried seed heads and hops are sold for flower arrangements. Flowers are very important to the Latvians and a dazzling array of dahlias, sunflowers, asters, roses and gladioli were seen in the markets and on every allotment or vegetable patch. The source areas of some of these include forests.

- Baskets for gathering berries and fungi comes in all sizes and are made from willow (*Salix alba*) or aspen (*Populus tremula*) the flat shavings woven into square baskets not unlike oak swills. Aspen is also used to build saunas and for shingles on the roof and sides of buildings.
- Spoons, spatulas and salads servers are carved from fruit wood and birch.

A few species cause ecological problems in Latvia. Giant Hogweed is widespread and Himalayan Balsam, Japanese Knotweed are evident there is not enough rural manpower to tackle this problem. Unlike in Scotland, water voles are abundant, they have moved away from the rivers and destroy apple trees as they like eating the roots. Wild boar can make a mess of an allotment or crop of potatoes, and beavers, whilst creating good ecological features, can damage trees. But generally the ecology is well balanced, and the timber, agriculture and green tourist economy all look set to rise in the future.

### *General observations and implications for Scotland*

The concept of having to teach people about foraging berries and fungi that grow in the 'wild' was alien to the Latvians, as was the concept of encouraging people to enjoy the countryside. We saw classes of children with teachers on a normal school day lighting fires, cooking lunch, playing on timber play pieces. We have occasional Forest School days in a few of our schools but I think we have a lot to learn about freedom of the countryside and how to enjoy the fruits of the environment.

Our Sitka spruce forests are dark and lifeless; if we planted a greater area of native species we could produce an understorey of shrubs berries and fungi. By reducing the planting density in north eastern Spain it was proved that the yield of mushrooms intensified<sup>(1)</sup>. We could begin to plant mixed woodland timber suitable for furniture, building, animal/ bird cover, recreation and leisure. It has been well documented that walking in woods reduces stress and improves cognitive function,<sup>(2)</sup> and everything that can be done should be done to get people interacting with the environment. We need to plant more fruit trees and could encourage municipal planting to be of edible varieties; we have food security issues too!

In Latvia peat bog restoration, primarily for carbon sequestration and conservation, has created an added benefit of an enhanced lucrative rural economy in foraged berries. This could be replicated in Scotland.

### *Acknowledgements and references for this section;*

(1) Immediate effect of thinning on the yield of *Lactarius* group *deliciosus* in *Pinus pinaster* forests in North-eastern Spain 201. J.A. Bonet <sup>a,b</sup>, S. de-Miguel <sup>c</sup>, J. Martínez de Aragón <sup>b</sup>, T. Pukkala <sup>c</sup>, M. Palahí <sup>d</sup>. a Departament de Producció Vegetal i Ciència Forestal, Universitat de Lleida, Av. Rovira Roure, 191, E-25198 Lleida, Spain; b Centre Tecnològic Forestal de Catalunya, Ctra. de St. Llorenç de Morunys km 2, E-25280 Solsona, Spain; c University of Eastern Finland, P.O. Box 111, 80101 Joensuu, Finland d EFIMED – Mediterranean Regional Office of the European Forest Institute, St. Antoni M. Claret, 167, E-08025 Barcelona, Spain

(2). Wells, N. M. and Evans, G. W. (2003) 'Nearby Nature: A buffer of life stress among rural children', Environment and Behavior, 35 (3), 311-330.

Wells, N. M. (2000), 'At home with nature: effects of "greenness" on children's cognitive functioning', Environment and Behavior, 32 (6), 775-795.

Many thanks to Baiba Rotberga, Director of Forest Management and Janis Ozolins, Head of Mammal Management, for facts and information.



## 2.5 Access, recreation and Interpretation – Karen van Eeden

### *Sites visited and issues*

The forests of Latvia cover around 52% of the country and are rich in wildlife and offer numerous recreational activities from hunting to nature watching and recreation parks. During our visit to the Slitere National Park and were shown around by Vilnis Skuya from the Nature Conservation Agency. Vilnis took us to the very top of the Slitere lighthouse which was built in 1849 and is 102m above sea level. The majority of the view from the lighthouse was forest with the sea over 5km in the distance. Inside the lighthouse, school children have been involved decorating the landings with ant and butterfly models and a selection of wildlife art.



*The tower at Slitere National Park and National Park sign (right)*

Throughout Latvia, within the towns, tourist and conservation areas interpretation boards have been erected showing the history and rich natural heritage. These interpretation panels are often written in Latvian and English, and in many locations English versions of leaflets are available. Within the Slitere National Park efforts are also being made to replace broken boardwalks and steps to make areas accessible to increase the sites appeal to visitors.

Cape Kolka has seen a rise in tourist numbers over the last few years. Kolkasrags Information and Visitor Centre provides toilets, refreshments and souvenirs and there is even a mobile sauna positioned near the beach. Around 50,000 visitors now come to the Cape which is famous for its spring bird migration and beaches. In the past an unofficial camp site had developed which caused erosion to the fragile plant communities, exposing the sand and increasing the amount of erosion. Small cabins with boardwalks have now been positioned to help alleviate problems.

In contrast one of our next visits was to Tervete Nature Park (European Destination of Excellence) where we were shown around by Laura Zaicmane. The park was started over 50 years ago in the Soviet period and is now run by the Joint Stock Company “Latvijas valsts meži” under the brand name Mammadaba (mother nature). It is especially designed for families and attracts around 100,000 visitors a year. The company has invested significantly in infrastructure such as new play equipment, new buildings and cafes. The park is based on the fairytales by Anna Brigadere (1861 -1933) a famous Latvian writer and a Tervete native and bring out the stories of the fairytale and dwarf forest and features many small intricate carved wooden houses, mushrooms and mythical creatures.





*Dwarf House, Tervete Nature Park*



*Tervete Nature Park visitor centre*

This site has the ability to develop further in future years and has the space and investment to increase its market to all age groups and abilities. There are no places in Scotland that are closely similar to this park. The detail and investment they have put into a site is very impressive and they have obviously gone to considerable effort to come up with new ideas and provide facilities on their chosen fairytale theme.

#### *General observations and implications for Scotland*

One of the interesting things about Latvia is the Country's view on access. The majority of the Latvian people have access to the forest either from the partial forest belt around Riga or from the vast expanses of forest which cover the countryside. Due to the relatively low population (around 2 million), half of which live around Riga the forest remains quite quiet with no real evidence of heavy recreational use. This is hugely beneficial to wildlife. The lack of fences provides visitors with the perception of greater freedom in a wild environment.

In the National Parks there are exclusion areas where people are generally not allowed and hunting of some species is banned (except for management purposes by staff). In conservation terms, these restricted areas can hold a lot of valuable information as to how species benefit from areas of no disturbance and can be used as a control site. However, it seems that currently the monitoring of these sites is infrequent, often using different methodology making the results hard to compare. Over the next few years it is perceived that the exclusions on some of these sites will be lifted to allow people to visit and enjoy the areas.

The idea of exclusion zones is interesting and quite a contrast to Scotland's current thinking on access. I have seen several reports on heavily used areas in England which have demonstrated the impacts on some nesting birds near paths and I wanted to discover if there were obvious benefits to excluding access on sensitive sites. One of the conclusions that I came to on the trip was that disturbance near paths will not occur to the same extent in Latvia due to the low population size and ample access to local forest areas. The vast majority of areas do not have high recreational use and as a result open access similar to Scotland would be unlikely to have a detrimental effect on the country's wildlife.

## 2.6 Wetland management - Ian Francis

### *Sites visited and issues*

We visited three major wetland areas, though wetlands of many sizes are frequent throughout Latvian farmland and in forests. In many areas, beavers are a major influence on this (see 2.3 above). Our first visit was to an area of restored river and floodplain grassland by the edge of **Kemeru National Park**. Here, the river Slempe, which previously had been straightened for agricultural drainage, was restored to a meandering course in 2005 (see photograph). It was the first project of its kind in the Baltic states, and was funded through the EU LIFE programme. The aim was to restore the former flooding regime and improve biodiversity within the floodplain. Since 2004, Konik ponies and Heck cattle have been used as a grazing management tool, with some 60 and 25 of each present on our visit. It was too late in the season to evaluate the botanical or breeding bird interest, but the area was frequented by two juvenile White-tailed Eagles on our visit.



*Restored meanders, Kemeru NP*



*Koniks grazing the floodplain grassland*

In the east of Latvia, we briefly visited **Lubans Lake**, an important wetland for many species, though heavily modified by fish farming activities, both during Soviet times and currently. We were not able to explore the area due to time constraints, but clearly many migrant and wintering birds use the site; we noted a Swallow roost of many thousands in areas of *Phragmites* reed.



*White-tailed Eagle*



*Lubans Lake, showing area with large Swallow roost*

We spent one day learning about and visiting **Teici Nature Reserve**, a large raised bog with associated flood plain meadows. We were able to join a seminar about the site given to a visiting party from Belarus by Dr Ugis Bergmanis. Teici is a Ramsar and Natura 2000 site covering some 51,000ha. It was drained for land reclamation and economic growth in 1960s to the 1980s. The drainage ditches connect bog with peripheral streams and internal lochs were drained. This caused increased woody growth on the open raised bog. Forest and peat soils were reclaimed too, so impacting bog land. Capercaillie leks suffered and there were changes in tree and plant communities.

When Latvia joined the EU in 2004, priorities changed for the area, influenced particularly by the Habitats Directive 1992; qualifying habitats included *Alluvial meadows of river floodplains*, *Active raised bog* and *Degraded raised bog still capable of natural regeneration*. The main goal was to stop habitat degradation. From 2002-2004 a LIFE project began, supported by financing for candidate states. The nature reserve was founded in 2005. Since 2002, 90 dams have been built to stop drainage after formulating a hydrological plan which included all relevant management issue. It was necessary to overcome legal issues through amendments to legislation. The project was expanded to include the whole Lubans wetland area from 2004-2007. Restoration techniques were developed for areas where it was not possible to access with machines. Chainsaws were used to create ditch profiles in the peat soil to sever tree roots. Wooden dams were the predominant method for ditch blocking. Double dams were reinforced with stakes and filled with trampled turves and *Sphagnum* moss. Vegetation growth began after 2-3 yrs and eventually the dams become held only by vegetation growth and *Sphagnum* binds, so preserving the timbers. There were no major tree deaths as water levels began to rise, just a few along edges. The aim was not to kill trees but to stop the high growth increment. The level of a lake drained 100 years ago was also raised, which killed some trees along shore line. Since the bog lies in a forested area, it was necessary to ensure there was not too much woodland damage. Although beavers are present on the site, the habitat is not extensive enough to sustain the family groups that are more likely to create extensive flooding caused by beaver works. Human intervention through ditch blocking was the most practical method of restoration.



*Bog pools on Teici*

The restoration project also included 1000ha of flood plain habitats, though it was not possible to work over all of this. 341ha of willows and birches removed, with local unemployed people undertaking the work with tractors and hand tools. Ditches were blocked, and late summer grass mowing took place for bird and botanical interest. A problem remained of what to do with the grass cuttings: in the time of Soviet collective farming, the grass crop was used. One of the main imperatives for the management here was its importance for breeding wading birds, especially Great Snipe, with 30% of the Latvian population present, along with Lapwings, Ruff, Green Sandpiper, Black-tailed Godwit and Marsh Sandpiper.

#### *General observations and implications for Scotland*

The management techniques encountered at the wetlands visited have been used at several sites in Scotland, including grazing by hardy horses and cattle. At Teici, though, the scale is enormous, and the robust wooden dams to block ditches have been rarely used in Scotland, in part due to the absence of suitable trees on many of our open raised bogs. The imperative for the work described came primarily from EU Directives, which have also been extremely influential in Scotland, and the funding sources used (principally LIFE) are also similar. There is clearly shared thinking on wetland management issues and allowing good practice to be better exchanged would help develop further wetland restoration techniques.



### 3. Conclusions

In our exchange visit, we gained real insights into the Latvian forestry sector and it was interesting to compare similarities with Scotland and identify differences. It was fascinating to see forests and deer populations in balance, to spend time in a country with substantial populations of large carnivores and learn how they are managed by hunting. This gave us much food for thought about the practicalities of reintroducing such species to Scotland. In addition, now that the beaver is once again part of the Scottish fauna it was very timely to visit a country where beavers were successfully reintroduced and where they are now numerous.

Latvians are a people who grow up spending time in their forests and enjoying their many products: fruit, fungi, game, herbs and who use them in a wide range of crafts and cultural activities. The trip highlighted the scope to develop greater appreciation and use of forests in Scotland. Latvia is much less densely populated than Scotland and large parts of the country experience very low recreation pressure. Nonetheless we saw interesting examples of work to encourage public recreation in forests, and in particular to encourage children to learn about and enjoy them; and also the example of exclusion areas within Latvia's National Parks.

Increasing attention is being given to wetland restoration and in particular peatland restoration in Scotland after many years of mismanagement and neglect. It was very apposite to see some interesting examples of restoration work in Latvia. It was also very interesting to explore the raised bog at Teici and see in profusion many species which are scarce or absent on bogs in Scotland.

Finally, here are some thoughts from each of us, providing our personal reflections on this very informative and enjoyable *Nature Exchange* to Latvia:

*"The visit to Latvia has been of huge benefit both personally and professionally. I have returned to my role here with renewed enthusiasm and determination. It was an extremely well put together visit, with a huge amount packed in to the seven days, and we had the opportunity to see many different areas in Latvia, both geographically and in terms of different habitats. The people we met were very welcoming and willing to share their knowledge, expertise and experiences with us. Special thanks to Janis and Andris for making it such an educational and fun visit". (Liz)*

*"I have been truly amazed by the wealth of wildlife and forests of Latvia. This trip has been inspirational and the warm hospitality has made this a trip to remember". (Karen)*

*"This report only covers a fraction of what we would like to say about Latvia, we all appreciate the opportunity given to us to sample a taste of the country by ARCH and the Leonardo da Vinci programme. Our visit to Latvia was inspiring and truly memorable. There were so many aspects and issues that had us thinking and that will influence our lives". (Jools)*

*"We all enjoyed the exchange immensely, and more importantly learned an enormous amount from it which is relevant to our work in Scotland". (Tom)*

*"For me, the visit enabled us to see alternative ways of managing some ecosystems quite similar to those in Scotland. Land management grows up through tradition, and often there are better methods of approaching similar issues and problems. I think Latvia has much to teach us and I will use what I learned to help broaden the debate on such matters as forests, land, wetlands and predators in Scotland." (Ian)*



## 4. Acknowledgements

We gratefully acknowledge support from Nature Exchange, funded within the framework of the 'Leonardo da Vinci' programme of the European Commission (DG EAC) and from ARCH as the project promoters – especially **Libby Urquhart**, who helped and guided us enormously.

We are extremely grateful to the Latvian State Forest Service, which acted a host partner for the exchange, and in particular:

**Janis Ozolins** (Head of Mammal Management) was our main guide during the trip. His vast knowledge of mammal ecology and issues associated with this subject meant he was the perfect guide to describe to us the ecology and landscape of Latvia.

**Andris Cormanis** (Head of Transport) provided us with transportation and good humoured company for our amazing 1000 km tour.

**Baiba Rotberga** (Director of Forest Management) helped devise the programme for our trip and met up with us on several occasions during our visit, providing us with clear insights into Forest Management in the country.

We also thank the following, who generously provided their knowledge and time, which made our visit most memorable, informative and enjoyable:

Aigars Kalvans (State Forest Service)  
Eugenijs Upenieks (Head Forester, State Forest Service Lubans area)  
Ingus Purgalis (Baltic Sea and Freshwater Programme Manager, Pasaules Dabas Fonds/WWF)  
Janis Auzins (Kalsnava tree nursery)  
Janis Grava (Head Forester, State Forest Service, Zemgale)  
Janis Iesalnieks (Head Forester, State Forest Service, Kuldiga)  
Laura Zaicmane (Mammadaba, Deputy Head of Tervete Nature Park)  
Ugis Bergmanis (Environmental Expert, State Forest service)  
Ugis Rotberga (Chair, WWF Latvia)  
Vija Kreile (Botanical guide, Teici)  
Vilnis Skuya (Forester, Slijtere)

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Latvijas Meza Politik (Latvia's Forest Policy) 1998  
State Forest Stock Company brochures: *Forest facts and figures*; and *Seeds and plants*  
State Forest Service (2008) *Growth ring* (brochure about the SFS)  
State Forest Service: *Hunting in Latvia* (brochure)

## Appendix 1. Details of participants from Scotland

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*Ian, Liz, Karen, Jools, Tom and Janis, Kalsnavas Arboretum Tower*

## **Appendix 2. Itinerary, sites visited and subjects covered**

### **Friday 7th Sept.**

Arrival, Riga airport.

Accommodation, Riga, Avalon Hotel [www.hotelavalon.eu](http://www.hotelavalon.eu)

### **Saturday 8th Sept.**

Riga market and tour of old town

View evidence of beavers in central Riga

Visit to the Botanical Garden of the University of Latvia

[www.latvia.travel/en/botanical-garden-university-latvia](http://www.latvia.travel/en/botanical-garden-university-latvia)

Cultural program in Riga – ‘White Nights’ events

Accommodation, Riga, Avalon Hotel [www.hotelavalon.eu](http://www.hotelavalon.eu)

### **Sunday 9th Sept.**

Kemeru National Park

Trip to Courland (north-west of Latvia)

[http://www.vietas.lv/eng/objekts/talsu\\_pauguraines\\_dabas\\_parks](http://www.vietas.lv/eng/objekts/talsu_pauguraines_dabas_parks)

Restored estate and manor house at Numuzulas

Kamparkalms viewing tower

Sabile art trail and meadows

River Valley Nature Park Abava

[http://www.celotajs.lv/en/e/abavassenleja/index\\_en.html](http://www.celotajs.lv/en/e/abavassenleja/index_en.html)

Accommodation, Guest House “Mežmāja” near Talsi Town [www.mps.gov.lv/ForHouse.html](http://www.mps.gov.lv/ForHouse.html)

### **Monday 10th Sept.**

National Park Slitere [www.slitere.lv](http://www.slitere.lv)

Trip to the coastal area of the open Baltic Sea – discussion of marine conservation issues

Cape Kolka [www.kolkasrags.lv](http://www.kolkasrags.lv)

Accommodation, Guest House [www.pitagi.lv](http://www.pitagi.lv)

### **Tuesday 11th Sept.**

Dawn forest walk for mammals, near Pitagi

Excursion to the historical town Kuldiga

<http://www.kuldiga.lv/index.php?l=en&cat=0>

Met two chief foresters of local districts

A trip across most intensively managed plain for agriculture – Zemgale

Osprey site and protection issues in forest

Tervete Nature Park [www.tervetesparks.lv](http://www.tervetesparks.lv)

Accommodation in Manor House Guest House near Vilce

### **Wednesday 12th Sept.**

Forest replanting in Latvia. Visit to Kalsnavas Arboretum, Jaunkalsnava

Forest walk, Lubans forest

Accommodation, Guest House “Zvejnieki” - [www.zvejnieki.lv](http://www.zvejnieki.lv)

### **Thursday 13th Sept.**

Lake Lubans visit

Seminar on bog restoration and hunting regulation with Belarus delegation - Dr. U.Bergmanis

Teici Nature Reserve – management and site visit

Managements of the Lubans Wetland Complex

Accommodation, Riga, Avalon Hotel [www.hotelavalon.eu](http://www.hotelavalon.eu)

### **Friday 14th Sept.**

Meet with State Forest Service staff - presentations

Riga History Museum

Free time in Riga

Departure, Riga Airport.

### Appendix 3. Lists of mammals, birds, other vertebrates and plants noted

#### Mammals

##### Live sightings:

Roe Deer – several sightings of small numbers  
Elk – four individuals seen and one heard  
Red Fox – two individuals seen, Pitagi  
Pine Marten – one seen near Kamparkalms Tower  
(Mouse sp.) – one seen in Botanical Gardens, Riga

##### Signs seen:

Wild Boar – frequent signs of ground disturbance  
Otter – spraint in several places  
American mink – spraint under bridge, Kemeru National Park  
Mole – frequent signs  
Beech Marten - droppings inside roof of old manor house  
Badger – frequent signs and droppings  
Beaver – numerous sites viewed – see detailed report above  
Raccoon Dog – dead specimens seen by road  
Wolf – scats found in Slitere NP and Lubans forest  
Brown Hare – dead specimen on road  
Red Deer – signs in Slitere NP  
Eastern Hedgehog – dead specimens seen by road

#### Birds

Mute Swan	Paugurknābja gulbis	<i>Cygnus olor</i>
Whooper Swan	Ziemeļu gulbis	<i>Cygnus cygnus</i>
Mallard	Meža pīle	<i>Anas platyrhynchos platyrhynchos</i>
Common Scoter	Melnā pīle	<i>Melanitta nigra</i>
Black Grouse	Rubenis	<i>Tetrao tetrix tetrix</i>
Hazel Grouse	Mežirbe	<i>Bonasa bonasia bonasia</i>
Great Cormorant	Jūraskrauklis	<i>Phalacrocorax carbo sinensis</i>
Grey Heron	Zivju gārnis	<i>Ardea cinerea cinerea</i>
Great Egret	Lielais baltais gārnis	<i>Ardea alba alba</i>
White-tailed Eagle	Jūras ērglis	<i>Haliaeetus albicilla</i>
Western Marsh Harrier	Niedru līja	<i>Circus aeruginosus aeruginosus</i>
Eurasian Sparrowhawk	Zvirbuļu vanags	<i>Accipiter nisus nisus</i>
Northern Goshawk	Vistu vanags	<i>Accipiter gentilis gentilis</i>
Common Buzzard	Peļu klijāns	<i>Buteo buteo buteo</i>
Golden Eagle	Klinšu ērglis	<i>Aquila chrysaetos chrysaetos</i>
Common Moorhen	Ūdensvistiņa	<i>Gallinula chloropus chloropus</i>
Eurasian Coot	Laucis	<i>Fulica atra atra</i>
Common Crane	Dzērve	<i>Grus grus</i>
Northern Lapwing	Kīvīte	<i>Vanellus vanellus</i>
European Golden Plover	Dzeltenais tārtiņš	<i>Pluvialis apricaria apricaria</i>
Common Ringed Plover	Smilšu tārtiņš	<i>Charadrius hiaticula hiaticula</i>
Red Knot	Lielais šņibītis	<i>Calidris canutus canutus</i>
Dunlin	Parastais šņibītis	<i>Calidris alpina alpina</i>
Common Snipe	Mērkaziņa	<i>Gallinago gallinago gallinago</i>
Black-headed Gull	Lielais ķīris	<i>Chroicocephalus ridibundus</i>
(European) Herring Gull	Sudrabkaija	<i>Larus argentatus argentatus</i>
Great Black-backed Gull	Melnspārnu kaija	<i>Larus marinus</i>
Black Tern	Melnais zīriņš	<i>Chlidonias niger niger</i>
Common Tern	Upes zīriņš	<i>Sterna hirundo hirundo</i>
Sandwich Tern	Cekulzīriņš	<i>Thalasseus sandvicensis sandvicensis</i>
Common Pigeon	Mājas balodis	<i>Columba livia livia (domestica)</i>



Common Wood Pigeon	Lauku balodis	<i>Columba palumbus palumbus</i>
Eurasian Collared Dove	Gredzenūbele	<i>Streptopelia decaocto decaocto</i>
Common Cuckoo	Dzeguze	<i>Cuculus canorus canorus</i>
Eurasian Pygmy Owl	Apodziņš	<i>Glaucidium passerinum passerinum</i>
Tawny Owl	Meža pūce	<i>Strix aluco aluco</i>
Lesser Spotted Woodpecker	Mazais dzenis	<i>Dendrocopos minor minor</i>
Great Spotted Woodpecker	Dižraibais dzenis	<i>Dendrocopos major major</i>
Black Woodpecker	Melnā dzilna	<i>Dryocopus martius martius</i>
Eurasian Jay	Sīlis	<i>Garrulus glandarius glandarius</i>
Eurasian Magpie	Žagata	<i>Pica pica pica</i>
Spotted Nutcracker	Riekstrozis	<i>Nucifraga caryocatactes</i>
Western Jackdaw	Kovārnis	<i>Corvus monedula monedula</i>
Rook	Krauķis	<i>Corvus frugilegus frugilegus</i>
Hooded Crow	Pelēkā vārna	<i>Corvus cornix cornix</i>
Northern Raven	Krauklis	<i>Corvus corax corax</i>
Barn Swallow	Bezdelīga	<i>Hirundo rustica rustica</i>
Marsh Tit	Purva zīlīte	<i>Poecile palustris palustris</i>
Willow Tit	Pelēkā zīlīte	<i>Poecile montanus borealis</i>
Coal Tit	Meža zīlīte	<i>Periparus ater ater</i>
European Crested Tit	Cekulzīlīte	<i>Lophophanes cristatus cristatus</i>
Great Tit	Lielā zīlīte	<i>Parus major major</i>
Eurasian Blue Tit	Zilzīlīte	<i>Cyanistes caeruleus caeruleus</i>
Long-tailed Tit	-Rietumu garastīte	<i>-A. c. europaeus</i>
Eurasian Nuthatch	Dzilnītis	<i>Sitta europaea europaea</i>
Eurasian Treecreeper	Mizložņa	<i>Certhia familiaris familiaris</i>
Eurasian Wren	Paceplītis	<i>Troglodytes troglodytes troglodytes</i>
Common Goldcrest	Zeltgalvītis	<i>Regulus regulus regulus</i>
Willow Warbler	Vītītis	<i>Phylloscopus trochilus acredula</i>
Common Chiffchaff	Čuņčiņš	<i>Phylloscopus collybita abietinus</i>
European Robin	Sarkanrīklīte	<i>Erithacus rubecula rubecula</i>
Black Redstart	Melnais erickiņš	<i>Phoenicurus ochruros gibraltariensis</i>
Northern Wheatear	Akmeņčakstīte	<i>Oenanthe oenanthe oenanthe</i>
Whinchat	Lukstu čakstīte	<i>Saxicola rubetra</i>
Common Blackbird	Melnais meža strazds	<i>Turdus merula merula</i>
Fieldfare	Pelēkais strazds	<i>Turdus pilaris</i>
Redwing	Plukšķis	<i>Turdus iliacus iliacus</i>
Song Thrush	Dziedātājstrazds	<i>Turdus philomelos philomelos</i>
Mistle Thrush	Sila strazds	<i>Turdus viscivorus viscivorus</i>
Common Starling	Mājas strazds	<i>Sturnus vulgaris vulgaris</i>
Duncock	Peļkājīte	<i>Prunella modularis modularis</i>
White Wagtail	Baltā cielava	<i>Motacilla alba alba</i>
Meadow Pipit	Pļavu čipste	<i>Anthus pratensis pratensis</i>
Tree Pipit	Koku čipste	<i>Anthus trivialis trivialis</i>
Yellowhammer	Dzeltenā stērste	<i>Emberiza citrinella citrinella</i>
Common Reed Bunting	Niedru stērste	<i>Emberiza schoeniclus schoeniclus</i>
Common Chaffinch	Žubīte	<i>Fringilla coelebs coelebs</i>
European Greenfinch	Zaļžubīte	<i>Chloris chloris chloris</i>
Red Crossbill	Eglu krustknābis	<i>Loxia curvirostra curvirostra</i>
Eurasian Siskin	Ķivulis	<i>Spinus spinus</i>
European Goldfinch	Dadzītis	<i>Carduelis carduelis carduelis</i>
Common Linnet	Kaņepītis	<i>Carduelis cannabina cannabina</i>
Eurasian Bullfinch	Svilpis	<i>Pyrrhula pyrrhula pyrrhula</i>
House Sparrow	Mājas zvirbulis	<i>Passer domesticus domesticus</i>
Eurasian Tree Sparrow	Lauku zvirbulis	<i>Passer montanus montanus</i>

## Reptiles/amphibians

Common Frog - frequent

Newt sp. – Lubans forest

Grass Snake – in lake at Vilce

## Some plants noted

St John's wort  
Red clover  
Zigzag clover  
Hare's foot clover  
Cowslip  
Greater celandine  
Silverweed  
Cow parsley  
Chicory  
Ox eye daisy  
Bladder campion  
Mugwort  
Wormwood  
Meadowsweet  
Dark Mullein  
Meadow vetchling  
Yarrow  
Field scabious  
Clustered bellflower  
Tufted vetch  
Herb Paris  
Cowberry  
May lily  
Peach leaved bellflower  
Nettle leaved bellflower  
Goldenrod  
Blaeberry  
Hedge woundwort  
Wild strawberry  
Solomon's seal  
Wood Sorrel  
Lily of the valley  
Hepatica  
Hop  
Ling  
Rosebay willowherb  
Reed  
Reedmace  
Bog bean  
Flowering rush  
Bog blaeberry  
Cranberry  
Labrador tea  
Bog arum  
Bog Rosemary  
Marsh Helleborine  
Early marsh orchid  
Hoary alyssum  
Leatherleaf  
Rannoch Rush

Asinszales  
Plavas abolins  
Zirgu abolins  
Matainai abolins  
Gailbiksite  
Liela strutene  
Maura retejs  
Meza sunburkskis  
Cigorini  
Parasta pipene  
Parasta plaukskene  
Parasta vibotne  
Vermele  
Parasta vigrieze  
Parastais devinviruspeks  
Plavas dedstina  
Parastais pelaskis  
Tiruma peterene  
Kamolaina pulstenite  
Vanagu vikis  
Cuskoga  
Bruklene  
Divlapu zagatina  
Diza pulkstenite  
  
Dzeltena zeltgalvite  
Mellene  
Meza sarmene  
Meza zemene  
Daudzziedu mugerene  
Meza zakskabene  
Parasta kreimene jeb maijpukite  
Zila vizbulite  
Parastais apinis  
Sila virsis  
Saurlapu ugunspuke  
Parasta niedre  
Platlapu vilkvalite  
Trejlapu puplaksis  
Cemurainais pukumeldrs  
Zilene  
Purva dzervene  
Purva vaivarins  
Purva cukausis

*Hypericum perforatum*  
*Trifolium pratense*  
*Trifolium medium*  
*Trifolium arvense*  
*Primula veris*  
*Chelidonium majus*  
*Potentilla anserina*  
*Anthriscus sylvestris*  
*Cichorium intybus*  
*Leucanthemum vulgare*  
*Silene vulgaris*  
*Artemisia vulgaris*  
*Artemisia absinthium*<sup>1</sup>  
*Filipendula ulmaria*  
*Verbascum Thapsus*  
*Lathyrus pratensis*  
*Achillea millefolium*  
*Knautia arvensis*  
*Campanula glomerata*  
*Vicia cracca*  
*Paris quadrifolia*<sup>2</sup>  
*Vaccinium vitis-idaea*<sup>3</sup>  
*Maianthemum bifolium*<sup>4</sup>  
*Campanula persicifolia*  
*Campanula trachelium*  
*Solidago virgaurea*  
*Vaccinium myrtillus*  
*Stachys sylvatica*  
*Fragaria vesca*  
*Polygonatum multiflorum*  
*Oxalis acetosella*  
*Convallaria majus*  
*Hepatoca nobilis*  
*Humulus lupulus*  
*Calluna vulgaris*  
*Chamaenerion angustifolium*  
*Phragmites australis*  
*Typha latifolia*  
*Menyanthes trifoliata*  
*Butomus umbellatus*  
*Vaccinium uliginosum*<sup>5</sup>  
*Oxycoccus palustris*<sup>5</sup>  
*Ledum palustre*<sup>5</sup>  
*Calla palustris*<sup>5</sup>  
*Andromeda polifolia*<sup>5</sup>  
*Epipactis palustris*<sup>5</sup>  
*Dactylorhiza incarnata*<sup>5</sup>  
*Berteroa incana*<sup>5</sup>  
*Chamaedaphne calyculata*<sup>5</sup>  
*Scheuchzeria palustris*<sup>6</sup>

*Notes on some plants:*

- 1 Wormwood was included to add fragrance to birch twigs used in sauna massage
- 2 An indicator of calcareous soils, rare in Scotland
- 3 The fruits were widely eaten in sauces and desserts
- 4 Very rare in the UK, occurs in England, occurs on dry acid soils
- 5 All these species were found at Teici bog
- 6 Also at Teici bog, this species only occurs on Rannoch Moor in the UK and occurs in pools and hollows of ancient undisturbed *Sphagnum* bogs.



Rannoch rush and red  
*Sphagnum* moss



Bog Rosemary