ANCIENT TREE FORUM

STUDY TOUR OF ROMANIA (DOBROGEA, THE DANUBE DELTA AND CARPATHIAN MOUNTAINS)

22ND OCTOBER TO 1st NOVEMBER 2003.

A c.500 year old beech pollard – Carpathian Mountains.

TOUR REPORT BY ANDREW LAW.

A	**B**
C	**D**
E	**F**

A – the UK rare bracket fungus - *Ganaderma lucidum* – Luncavita Forest, Dobrogea
B – rational fishing on the Danube Delta
C- muddy volcanoes.
D- Sunset over Lake Obretinu, Danube Delta
E- Mongolian race ponies, Danube Delta.
F- Traditional house with reed roof and wood carving – Laeta village, Danube Delta.

Summary.

The Ancient Tree Forum visited three regions of Romania, Dobrogea, Danube Delta and Carpathian Mountains between 22nd October and 1st November 2003. Site visits were made to over thirty flood-plain woodland, wood-pasture, steppe, deciduous and resinous forests from sea-level to 1450metres asl.

A wide-variety of ancient trees of different species and forms were observed during the tour and based upon this limited experience of the country, the ancient tree resource is likely to be very important. The possible origins, management and future of the trees were encountered are discussed.

Patterns and changes in land-use as a result of social and economic factors are documented as are their possible future effects on ancient trees.

The phyto-sociology of the study sites was recorded and references are made to this in the main text where this is relevant to ancient trees.

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Acknowledgements.

The author would like to thank CCW for supporting this trip and especially Dr Malcolm Smith, Dr David Parker and Ray Woods.

The participants would like to thank our guides, Dr Mihai Petrescu, Daniel Petrescu, Florin Palade and the other staff at Ibis and Honeyguide for an excellent trip. Their hospitality, humour, quality of service and attention to our every need (including incessant demands for tea!) were much appreciated. We would also like to thank Fred Currie for developing the idea for the tour. The author would like to thank Roy Finch for the use of some digital images.

Introduction

The Ancient Tree Forum (ATF) visited three regions of Romania; Dolbrogea, the Danube Delta and Carpathian Mountains between the 22nd October and 1st November 2003.

The study tour was part of an on-going effort by the ATF to learn more about ancient trees in other European countries. Past visits have included Sweden, Spain, Germany and France. In many European countries ancient trees are still being actively managed and traditional land-use practices, such as wood-pasture, remain part of the social fabric. By understanding these activities we can gain valuable insights that help us to understand and care for ancient trees in Britain. A second reason for visiting Europe is to be able to put the British resource in its proper context and to use such information to campaign for better protection and more sympathetic management of ancient trees and their associated wildlife wherever they occur.

A specific aim of this tour was also to learn about the complex phyto-sociological aspects of forest eco-systems in Romania and how these are affected by climate, altitude, geology, soils and land-use.

Participants

(L-R) Roy Finch, Andy Law, Tom Perkins, Eva Casson-du Mont, Florin Palade, Muriel Currie, Ted Green, Jill Butler, Fred Currie, Mihai Petrescu, Jonathon Spencer, Bill Cathcart, Kevin Frediani

Romania – The Environment.

- Romania has one biosphere reserve (Danube Delta), 13 National Parks and more than 500 protected areas.
- Romania is at the junction of bio-geographic zones, this is reflected in the diversity of trees and shrubs (67 species including 7 species of oak and 4 species of ash).
- 3,800 species of plant can be found. Of these nearly 500 are vulnerable, endangered
- or extinct.
- 27% of Romania is forested amounting to 6,368,000 ha.
- Of the total forest area 69% are deciduous woods with oak, beech, lime and hornbeam being major species.
- 58.5% of forest is in mountainous areas, 32.7% in hills and 8.8% on the plains.
- The Carpathian Mountains are home to 60% of Europe's bears, 40% of its wolves and 35% of its lynx.
- 90% of the woodland in Romania is natural and most is state owned. Planted areas are mainly limited to the outskirts of towns and cities. We saw plantations of black walnut, white poplar and false acacia
- More than 700 villages were destroyed during the communist times to make way for agri-industrial projects, many of these have caused pollution problems, especially heavy metal contamination.

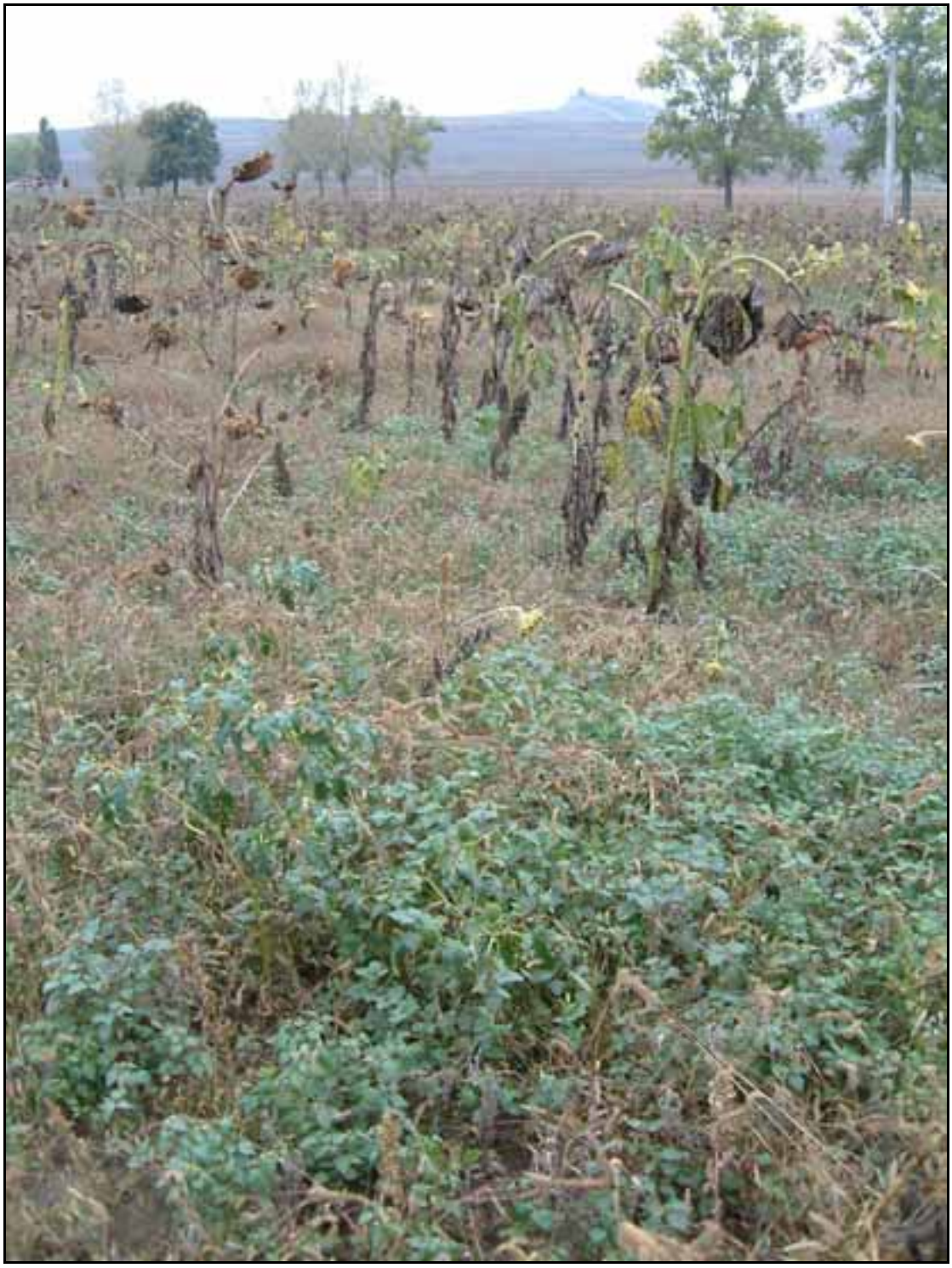
*Source: www.romania embassy.dk/Romania/mediu.hmtl***.**

Travel east from Bucharest to Tulcea County.

Baragan plain – gathering of cattle from communal land for the night.

We travelled through the Baragan plain, a large flat area of farmland with loess ridges. There were isolated (but often large) woodlands close to towns and villages but otherwise the landscape was largely treeless, with the exception of roadside avenues of white poplar. We observed :-

- Very fertile soils (chernozems) derived from volcanic, fluvial or former woodland. Strip farming of maize, cereals, peppers, tobacco, vines, cabbages, sunflowers etc. Occasional fish ponds. Most agriculture is organic due to the cost of fertiliser, pesticides etc.
- Common land with mixed, shepherded flocks and herds of cattle, pigs, sheep, geese and goats. Since the fall of Communism, the area of common land is decreasing as land is reclaimed by the people, divided up or sold.
- Ribbon development and urban sprawl were common at the edges of towns and cities.
- A roadside economy – i.e. produce for sale outside houses.
- Many horses and carts, traditional management e.g., horse ploughing and scything of meadows. Tractors more common near large towns. New adverts for pesticides.
- Management of trees by shredding was common.



Fallow fields with sunflowers, goosefoot, fat hen and thorn-apple were common. Flocks of calendula lark, corn bunting, goldfinch, yellowhammer and tree sparrow were seen although most birdlife migrates south to avoid the cold winters.

Telita Crossroads.

Wood-pasture– note the cuts on the tree and branches on the ground for use as leaf fodder and then fire kindling. Footholds were frequently cut into the lower trunks.

This was a gently sloping wood-pasture at 150m asl with many tree species - wild pear (*Pyrus pyraster*), Cornelian cherry (*Cornus mas*), Bulgarian pear (*Pyrus bulgarica*), silver lime (*Tilia pubescens*), *Quercus penduncifolia*, field maple (*Acer campestre*), White oak (*Quercus pubescens*), mistletoe (*Lorantheus europeaus*), hawthorn (*Crategus pentagyna*) and Italian oak (*Quercus virgiliana*).

The area is communal land grazed all year round by sheep and goats by local people under agreement with the village mayor. The agreements do not specify stocking rates. We observed that many of the trees had been pruned, presumably for leaf fodder. Tree stumps were also noted and there was no tree regeneration. The ground flora was rich in places but signs of over-grazing were evident, such as an abundance of the unpalatable *Artemisia austriaca*

Lorantheus europeaus (left) – deciduous mistletoe on oak.

Luncavita Forest, Macin Mountains, Dobrogea.

This was a large forest, parts of which were recently been afforded protection as a nature reserve. The reserve has two parts, a strictly protected core area where no forestry or grazing are allowed and a buffer zone where low key continuous cover forestry is permitted.

Luncavita contains the largest lime forest in Europe. The forest also displays a variety of other woodland communities, some of which are endemic to Dobrogrea. In particular, the altitudinal transition from beech and hornbeam forest to lime is well displayed. The forest has a rich fungi flora and a diverse mammal fauna that includes jackal, wild boar, roe and red deer.

We observed how oak is out-competed by lime and hornbeam which are much quicker in occupying gaps. This emphasised the importance of nursing oak, which has a high attendant biodiversity value.

Clavariadelphus fistulosus – a rare fungus in the UK.

An ancient Silver Lime (*Tilia tormentosa*) stool, 110cm dbh.

Another massive silver-lime coppice stool (Babadag Forest).

Luncavita Forest, Dogrobea – a 10,000 ha+ protected area

Beech and hornbeam forest communities on lower slopes.

Silver lime dominates the top slopes and oak is scarce.

Luncavita Forest, Dogrobea – a 10,000 ha+ protected area

A bee trailer – there are over 450,000 bee keepers in Romania, second only to Argentina. Lime flower honey is being collected above.

Popular types of honey (in order of highest price) are lime flower, acacia flower, multiflora, watermint and brassica/multiflora.

Greu Area, Macin Mountains, Dobrogea.

We visited an area of wood-pasture and spoke with the shepherd. We were informed that the land belonged to the local village commune but was also within the National Park. The graziers therefore needed consent to remove or cut trees from the forestry department.

The grassland used to be ploughed in communist times but this practice has stopped. The shepherd buys in food for his sheep which stay on the site all year round. There was evidence of branches being trimmed by saw for lime flowers (fodder), ring barking and trees having been felled, the shepherd denied any knowledge of such activities which constitute offences unless permission is given.

Pollarding/pruning of a lime. Note the presence of a few larger trees within a patch of much younger (c150 yr old) trees.

Dobrogea Gorges/Cheile Dobrogei

A stunning landscape of limestone gorges protected for their endemic steppe vegetation. We were shown woodlands of white oak, flowering ash, Italian oak and eastern hornbeam confined to islands where the climate was ameliorated (ie, deeper soils, north facing).

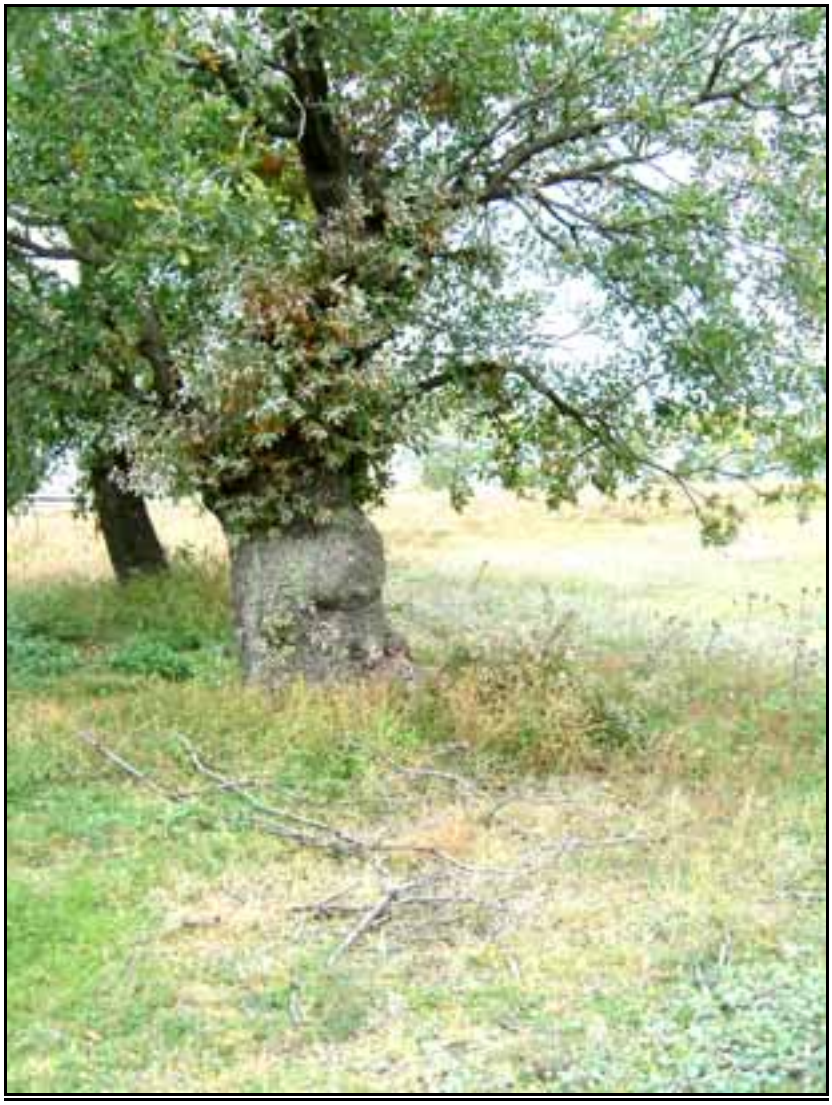
We observed hornbeam invading steppe grassland by being protected by thorn, pruning of trees for leaf fodder, the suckering of oak (rarely seen in UK), felling of trees for firewood and ring barking.

Dobrogea Gorges - coral reef limestone with overlying green shists. Note the “island” forest types (background) and invading thorn (foreground).

Suckering White oak (*Quercus pubescens*)

Golovar Wood-pasture

A wood-pasture with eastern hornbeam, white oak, Italian oak probably derived from the forest. The older oaks were associated with features such as boundary banks and tracks.



Older oaks such as these were found by tracks and boundary banks, notice that this tree has been cut recently for leaf fodder (branch wood on ground) and that new growth has been colonised by American mildew fungus.

The Danube Delta

- The Danube crosses 10 countries and drains 8% of Europe.
- The Delta is in the driest area of Romania, without the delta the area would be semi-desert.
- The Delta was included as a Biosphere reserve in 1990, the reserve extends to 5,800 km2. There are 18 strictly protected areas that vary from 50 ha to 21,410 ha, these are largely non-intervention (although some traditional net fishing and reed harvesting takes place). Outside of these zones are areas where reeds are cut by machine (for export) and some fish farming takes place.
- 100,000 Frogs are exported to France and Italy for human consumption every year. Leech farming for the pharmaceutical industry is also becoming established.
- The delta is especially important for wetland birds including 60% of the world population of pygmy cormorant and 50% of the world population of red breasted goose (80,000 geese). Other important bird species include Bittern, Dalmation and Pied Pelican.
- 20% of the Delta was drained by the Communists for agriculture and tree planting programmes were initiated at places such as Laeta forest. Subsequent increases in soil salinity and the semi-desert climate have meant that most of these projects have failed.
- Restoration of drained areas or the breaching of fish ponds is underway, such areas quickly recover their wetland value (typically 2-3 years).
- 35 rangers patrol the Delta and 3m euros have been allocated over five years from the World Bank for its protection.
- The Danube Delta has the largest unbroken reed bed in the world (c200,000ha).
- The Delta is extending by 40 metres a year but increased sedimentation compounded by the past construction of navigation channels is accelerating the natural hydroseral succession and some lakes are becoming shallower by 1m per annum.

Maluic, Danube Delta

Maluic

A dry ridge grazed by horses and cattle with many ancient crack and white willow trees. Also present were strip plantations of white poplar. The ancient trees appeared to be largely un-managed and several were splitting and re-growing. The willow trees were high in biodiversity value and supported a number of fungi and invertebrate species as well as greater-spotted, middle-spotted, lesser spotted, black and grey-headed woodpeckers. Honey is made from watermint (*Mentha aquatica*) in the autumn.

Maluic – ancient white and crack willow trees. This is a widespread riparian woodland community in the delta.

Maluic – an ancient crack willow that has split and regrown

Ancient white willow – note the aerial roots – in the eastern delta the water level range is up to 1m. 2003 was a dry year and many roots were exposed.

Laeta Forest

A fascinating expanse of undulating sandy ridges (old sea shores) and dune forest. The forest is restricted to the hollows where ground water and organic matter collect. The forest area is largely constrained by the climate which on the ridges is too dry for tree growth and by grazing animals.

Laeta is viewed in Romania as being a virgin forest, partly because (from a geological perspective) the area has been formed relatively recently and also because of the presence of old canopy trees and other biological indicators of long continuity. The forest certainly has an undisturbed appearance, the locality is remote (although there has been a village at nearby Laeta for 500 years) and the surrounding soils are very unsuitable for agriculture.

The oak tree in the left foreground was 1.6m dbh and dated to around 470 years.

We observed how oak (*Quercus pedunculiflora*) and Silver lime (*Tilia tormentose*), which are species that can tolerate drier conditions, were found on the edges of the forest. Flowering ash (*Fraxinus pallise*) was found in the centre of the hollows as it is more shade-tolerant and requires a deeper, wetter soil.

We were shown a locally famous oak pollard called “old otto”. This was probably once an open-grown oak pollard but now sits within younger woodland either indicating that the forests were much more open, or that this was once an edge tree and the forest has since expanded.

Tracks of wild boar - how much do large mammals move acorns around ?

Laeta forest – note the well-developed structure, age of canopy trees and extensive cover of climbing plants such as hop (*Humulus lupulus*), greek vine (*Periploca greaca*) and travellers joy (*Clematis vitalba*), these are considered to be indicative of low disturbance.

Old “Otto” – an oak pollard. This tree was in need of releasing from competition.

Bucegi National Park (Busteni Area)

Rasnov – paraul Rece – vast, open hillside woods of hornbeam, sessile oak and beech.

Piatra Craiului National Park

This is a 14,800 ha park established in 1999, of which 60% is forested. It consists of a 25km limestone ridge with the highest peak some 2,278 m. It is famous for its large mammal fauna, especially wolf, bear and lynx. 40% of the park is privately owned by villages or individuals. There is 60% unemployment in many of the towns and villages, those with jobs travel to the industrial city of Brasov for work.

The main forest types in the valleys are hornbeam and beech which give way with increasing altitude to beech-fir, then spruce and finally to the shrub-like *Pinus mugo*. We walked up through such a sequence of forest types to the altitudinal limit of forest cover. The forests here had been little exploited because access is poor and villages are some distance away.

On the way up we observed stands of riparian alder (*Alnus incana*) by the streamsides which also contained ancient small-leaved lime and wych elm trees. Some of these trees appeared to be snow pollards, ie, early snow falls when the trees were still in leaf causing loss of limbs followed by regrowth.

We saw "old growth" fir and spruce stands which also contained old sycamore and birch trees. Fallen and standing dead trees were only occasional but were found to be rich in fungi; one fallen trunk had nine species of fungi including *Xylaria hypoxylon, Coriolus versicolor, Stereum rugosum, S. hirsutum, Ganaderma applenatum* and *Mycena* (garlic scented) spp. Tree lungwort (*Lobari*a spp) was also found on an old sycamore. The rich fungi flora, size of the trees and presence of lichens such as *Lobaria* did indicate a long continuity of woodland cover. It was noticeable that there was no evidence of sycamore regeneration.

an ancient pollard either lime or elm in a riparian alder zone.

In the valleys we saw several trees that had been pollarded and saw terraces contructed to grow oats for horses. There were flocks and herds of sheep and cattle but not many goats. A transhumance system still operates whereby a shepherd is paid to move the sheep flocks of up to 200 sheep by foot to Dobrogrea for over-wintering, a distance of some 500km. A donkey is often used to carry the shepherd and supplies. The sheep lamb in Dobrogea and are then returned to the mountains in the spring when many livestock sales take place. Cattle are off-wintered in the villages.

Snow pollarding of beech ?

Birch pollards in the valleys of Piatra Craiului National Park.

hornbeam pollard in the valleys of Piatra Craiului National Park.

Harman Forest

This was a lowland even-aged pedunculate oak forest, very reminiscent of an English oak woods with Quercus robur, ash (*Fraxinus excelsior*), alder (*Alnus glutinosa*) and hazel (*Corylus avellana*) but also with continental species such as Mezereum (*Daphne mezereum*), (native) ground elder (*Aegopodium podagraria*) and dewberry (*Rubus caesius*). We observed several groups of standing dead oak trees and the frequent removal of lower branches. We also found a dead tree with the UK RDB fungus *Phalinus robustus* that had been blazed for removal.

The UK rare *Phellinus robustus* – this tree had been blazed for removal as firewood.

Bucegi National Park (Busteni Area)

Here, we observed the transition of forest types with altitude from:-

Deciduous forest – Beech and hornbeam to
Resinous forest – Fir, Norway spruce and larch to
Sub alpine forest layer – Pinus mugo.

Extraction of timber by horses, the usual method of extraction, was also observed.

Rasnov – paraul Rece.

A large area of open hornbeam, beech and oak woodland and orchards. We found three large beech pollards within open woodland and it is likely that these were once on the edge of woodland that has since expanded. The trees were probably last pollarded around 50 years ago and were thought to be in the region of 450-500 years old. There was strong evidence that woodland cover is expanding with thorny scrub nursing birch, oak and hornbeam trees. Recent felling by chainsaws and the removal of large limbs was also noted.

Ancient beech pollards.

Woodland expansion at Rasnov – paraul Rece, Transylvania.

lowland ash – oak woodland at Pucheni mari.

Conclusions.

Romania is a fascinating country to visit in many ways. The vast scale of the plains, wetlands, steppe, forests and mountains and largely traditional land-use are in direct contrast to Britain. Further differences include the often confusingly rich diversity of tree and plant communities, a large mammal fauna and the profound influence of the continental climate.

We found whole landscapes dominated by ancient trees in places such as the Danube Delta, where ancient white willow and black poplar trees form extensive grazed riparian woodlands. Elsewhere, we found ancient trees in the open hillside woods and orchards that extend for miles in the foothills of the Carpathian Mountains. We also observed "old growth or virgin" forest eco-systems in the Piatra Craiului National Park and Laeta Forest and found ancient lime coppice stools in Luncavita and Babadag Forests.

In many localities, we saw how thorny scrub protects trees from grazing leading to the expansion of woodland. The influence of the continental climate, large mammals (such as wild boar) and thin soils in promoting or keeping this process in check was debated.

The link between people and trees was still very strong in the areas that we visited. A significant proportion of the rural population still rely on wood for heating, cooking and for everyday items (eg, brooms, hay ricks, fences, carts, roofs etc). Although evidence of formal pollarding of trees, as we perceive it in the west, was limited, the adhoc pruning of branches and shredding of trees was widely observed. The active management of such trees is likely to decline as domestic oil and gas and household products become more widely available.

local use of branch wood for fence posts and sheds – Laeta village.

Traditional wood-pasture systems were relatively widespread, particularly if orchards are included. They had usually been derived from the forest in the not too distant past (c 150-200yrs). At many sites older trees existed within a matrix of even-aged younger trees, the older trees were usually associated with physical features on the ground (eg, banks, tracks etc) or the former forest edge. The practice of cutting branches with an axe or hand-saw for leaf fodder or lime flowers was widely observed. More worrying was the lack of regeneration and instances of ring barking and whole-tree felling in wood-pastures, highlighting the reliance on firewood and also possibly suggesting that the pastureland is increasingly being perceived as being more valuable than the trees. Conversely, the abandonment of grazing on hillside pastures, reduction in communal grazing lands and the disappearance of traditional off-wintering practices (transhumance) all pose a threat to open-grown trees, as well as other wildlife habitats.

The number of trees (of large girth) in the forest areas was relatively small, suggesting a long-continuity of closed canopy conditions and exploitation. Similarly, the amount of fallen decaying wood was often surprisingly scarce for such apparently natural forests, and this was probably due to removal for firewood. In some of the floodplain woods there were significant numbers of standing dead or dying oak trees (attributed to drought and changing ground water conditions) and these trees were frequently blazed for removal suggesting that a traditional forestry-led management regime prevails. The lowland forests were of particular interest as they have been largely lost from the rest of Europe. Although much reduced, significant areas still exist in Romania, having been kept for their hunting or amenity value.

Group discussion – Babadag Forest**.**

We were concerned by the increased usage of chainsaws in some of the forests, which is allowing bigger timber to be removed, possibly more frequently, and the felling of roadside tree avenues on grounds of safety. The utilisation of the forests for timber is likely to increase in the run-up to and after Romania enters the market economy (predicted to be 2007) as hard currency in the form of exports will be an economic priority. As a requirement of entry to the EU, some of the most important habitats are being protected as National Parks or nature reserves, but enforcement is poor and funds for conservation management are scarce.

Endemic and Red List plants of Romania.






A	**B**
C	**D**
E	**F**

A – *Dianthus nardiformis*
B – *Campanula romanica*
C – *Alyssum saxatile*
D - *Crocus pallasii*
E – *Cheilanthes marantae*
F – *Asparagus verticillatus*

APPENDIX 1 – PHYTOSOCIOLOGY.

23.10.03 - Day 1 (stop1). Telita Crossroad

Degraded wooded-steppe layer.

Viola suavis – Quercetum pedunculiflorae

Quercus pedunculiflora, Crategus pentagyna, Pyrus pyraster
Cornus mas, Fragaria viridis, Acer campestre

Galio dasypodi – Quercetum pubescentis

Quercus pubescens, Quercus virgiliana, Pyrus pyraster, Pyrus bulgarica, Loranthus europeaus

Botriochloetum iscitaemi (Steppe meadow with Botriochloa ischaemi)

Botriochloa ischaemi, Berteroa incana, Trifolium pratense, Verbascum palomoides, Artemisia austriaca, Festuca valesiaca,Potentilla argentea, Carduus nutans, Xeranthemum annum

Day 1 (Stop 2) Luncavita Forest

Carpino – Fagetum subassociation Tilietosum.
Dobrogean Hornbeam – Beech Forest with Carex pilosa

Fagus sylvatica, Carpinus betulus, Stachys sylvatica, Brachypodium sylvaticum, Carex pilosa, Acer platanoides, Ulmus laevis, Ulmus glabra (Montana),Geum urbanum, Glechoma hederacea, Asarum europaeum,Mercurialis perennis, Hedera helix

Fraxinus orni – Quercetum Oalechampii
(Sessile oakwood with flowering ash)

Fraxinus ornus, Fraxinus coriariifolia,Quercus petraea,Sorbus torminalis,Cornus mas

Tilio tomentosae – Carpinetum betuli
(Dobrogean mixed oakwood with hornbeam)

Tilia tormentosa, Carpinus betulus,Sorbus torminalis,Cerasus avium,Acer platanoides

Day 1 (Stop 3) - Greu Area

Fraxino orni – Quercetum oalechampii

Fraxinus ornus, Quercus petraea,Carpinus orientalis,Geum urbanum

Achilleo coarctatae – Quercetum pubescentis

(White oakwood with Achillea coarctata)

Quercus pubescens,Achillea coarctata,Fraxinus ornus,Caprinus orientalis,
Alyssum saxatile,,Allysum murale, Cerasus mahaleb

Sedo – Polytrichetum pilifera

(Pontic – Balkanic saxicolous vegetation)

Sedum hillebrandtii, Polytrichum piliferum, Campanula romanica, Cheilanthes marantae Dianthus nardiformis, Stachys angustifolia, Sempervivum ruthenicum,Acer tartaricum, Centaurea kanitziana,Asplenium trichomanes

Botriochloetum ischaemisobas. Dobrogean

Dobrogean secondary steppe meadow with Botriochloa ischaemum

Stipa capillata, Convulvulus cantabricum

Gymnospermio – celtetum (Celtis glabrata wood)

Cerasus mahaleb,Fraxinus ornus,Anthriscus cerefolium,Alyssum murale

Fragaria viridis – Polyquercetum
Oakwood with 3 oak species – degraded form – overgrazed

Quercus pedunculiflora,Q. petraea,Q pubescens,Carpinus orientalis,Tilia tormentosa,Tilia platyphyllos,Xanthium spinossum,Urtica dioica

Day 2 Stop 1 Hagieni Forest Nature Reserve (Salmation Limestone)

Paeonio peregrinae –Carpinetum orientalis

(Oakwood with Carpinus orientalis and Fraxinus ornus)

Carpinus orientalis,Fraxinus ornus,Asparagus verticillatus,Euonymus europaea Teucrium chamaedris,Berberis vulgaris

Stipoucrainicae – Festucetum valesiaca and Stipa ukrainica

Festuca valesiaca,Botriochloa ischaemum,Crocus pallasii

Salvia ringens, Salvia aethiopis, Centaurea orientalis, Achillea clypeolata, Campanula sibirica, Stipa capillata, Dianthus pallens

Paliuretum spinae – Christi

(Thorn of Christ scrubland)

Paliorus spina–christii, Jasmium fruticans

Cytisus leucotrichus scrubland

Cytisus leucotrichus

Day 2 last stop -Cheile Dobrogei

Galio dasypodi – Quercetum pubescentis (White oak forest with smoke tree)

Quercus pubescens, Q. virgiliana, Crategus mongyna

Endemic steppe grassland – Agropyron brandzae, Thymus zygioides.

Paeonio peregrinae-Carpetum orientalis

Quercus pubescen, Carpinus orientalis, Fraxinus ornus, Crategus monogyna, Asparagus verticillatum, Berberis vulgaris

Botriochloetum ischaemi – Dobrogicum

Botriochloa ischaemum,Rosa spinosissima,Artemisia austriaca,Crocus pallasi

Pruno –Crataegetum (hawthorn scrubland)

Crataegus monogyna,Asparagus veticillatus

Agropyron brandzae – Thymetum zygioidii (Rocky steppe with T.zygioides)

Agropyron brandzae,Botriochloa ischaemum

Day 3 (Stop 1) Enisala Fortress

Sedum - Polytrichum piliferi (rock vegetation)

Sedum sartorianum ssp hillebrandtii, Dianthus nardiformis, Asplenium ruta-muraria, Paronychia cephalotes, Euphorbia myrginites, Campanula romanica, Arenaria rigida, Asperula tenella.

Agropyro Brandzae – Thymetum zygioidi

Thymus zygioides, Euphorbia myrsinites, Stipa capillata,

Day 3 (Stop 2) Golovar Wooded Steppe

Paeonio Peregrinae- Carpinetum orietalis (Degraded form)

Carpinus orientalis, Q. pubescens, Q virgiliana

Botriochloetum ischaemi

B. ischaemum, Carthamus lanatus, Artemisia austriaca, Achillea setacea

Day 3 (Stop 3) Lake Razim Shores

Celtis glabrata plant community

C.glabratus, Paliurus spina-cristi, Asparagus verticillatus

Stipetum capillatae – sub assoc. Dobrogicum

Stipa capillata, Festuca valesiaca

Agropyro Brandzae – Thymetum

Thymys zygioidea, Agropyron brandzae, Sedum hillebrandtii

Koelerio lobates – Artemisietum lerchianae
(semi –desert steppe with Artemisia lerchiana

Artemisia lerchiana, Sedum maximum.

Agropyretum pectiniformae

(Semi-desert stepper with grasses)

Agropyron cristatum, Festuca valesiaca, Botriochloa ischaemum, Marrubium vulgare

Paeonio Peregrinae – Carpinetum orientalis

Carpinus orientalis, Anthryscus cerefolium, Cornus mas,

Stipo uchrainicae – Festucetum valesiacae

Festuca valesiaca, Asparagus ponticus, Stipa capillata, Convolvulus cantabrica

Day 3 (Stop 4) Babadag Forest

Wooded-steppe layer

Galio dasypodi – Quercetum pubescentis (White oakwood with smoke bush)

Q.pubescens, G.dasypodum, Cotinus, Ligustrum vulgare, Euonymus .

Viola suavia – Quercetum pedunculiflorae (Pedunculiflora oakwodd with Acer tartaricum)

Q. pedunculiflora, Acer tartaricm, Viburnum lantana, Clematis vitalba, Cornus mas, Acer campestre, Tilia tormentosa, Carpinus orientalis.

Quercus pedunculoflora/Acer tartaricum woodland

Submediterranean Forest Layer

Paenio Peregrinae –Carpinetum orientalis

C.orientalis, Quercus pubescens, Fraxinus ornus, Cornus mas, Virburnum lantana

Relictary layer of Xeromesophyllous – Subthermomorphyllous forests

Carici – Quercetum farnetto (Hungarian Oak Forest)

Quercus frainetto,,Sorbus domestica,Q. dalechampii,Fraxinus ornus,Cotinus coggygria,Cornus mas,Carpinus orientalis,Tilia tormentosa

Balkanic Mesophyllous – Forest Layer

Querco Pendunculiflorae – Tilietum tomentosae (Dobrogan Silver lime tree forest with Q.pedunculiflora.

Q. pedunculiflora, Tilia tormentosa, Carpinus betulus, Fraxinus excelsior, Cornus mas, Acer campestre, Acer tartaricum,

Nectaroscordo – Tilietum tormentosae (Mixed sessile oak forest with oriental hornbeam.

Tilia tormentosa, Quercus petraea, Nectaroscordum siculum ssp bulgaricum,Acer platanoides, Acer campestre, Caprinus orientalis, Cornus mas, Geum urbanum

Tilio tomentosae – Carpinetum betuli (mixed oakwood with hornbeam)

Tilia tormentosa, Carpinus betulus, Acer campestre, Q.petraea, Fraxinus excelsior.

Day 4 - Danube Delta

Stop 1 Maluic

Salicetum albae (Riparian white willow forest)

Salix alba, Typha angustifolia, Solanum nigrum, Solanum dulcumara, Mentha aquatica, Rubus caesius, Senecio paludosus.

Trifolio fragifero – Cynodontetum

Cynodon dactylon, Trifolium fragiferum, Mentha aquatica,

Calamagrostio –Tamaricetum ramosissimae (Tamarisc scrubland)

Tamarix ramosissima

Typhetum angustifoliae

(Reedmace Plant Community)

Typha angustifolia

Scirpo – Phragmitetum (reedbeds)

Phragmites australis.

Day 4 (Stop 2 Obretin Lake)

Salicetum albae

Salix alba, Bidens tripartata, Rubus caesius, Salix cinerea, Mentha aquatica, Fraxinus americana, Amorpha fruticosa, Solanum dulcamara, Xanthietum italici

Xanthium italicum, Gnaphalium luteoalbum, Rumex palustris, Salix alba.

Day 5 (Magearu Channel)

Scirpo – Phragmitetum (fixed reed beds)

P.australis, Scirpus lacustris, Salix cinerea, Calystegia sepium, Typha angustifolia.

Typhetum angustifoliae (fine-leaved reedmace beds)

T.angustifolia, Scirpus lacustris.

Typhetum latifoliae (reedmace beds).

Typha latifolia, Phragmites australis,

Salicetum albae (riparian white willow forest)

Salix alba, S.cinerea, Iris pseudocorus, Phragmites australis, Salvinia natans.

Nymphaetum albae (White water lily floating vegetation)

Nymphaea alba, Trapa natans.

Myriophilo verticillati – Nupharetum luteae (Yellow water lily floating vegetation)

Nuphar luteum, N.alba, N.peltata and Hippurus vulgaris,

Calamagrosti –Salicetum cinereae (Grey Willow Shrubs)

Salix cinerea, Phtagmites australis, Typha latifolia.

Thelypteridi – Phragmitetum (Floating reed beds)

Thelypteris palustris,Phragmites australis,Berula erecta, Cyperus flavescens, Solanum dulcamara, Urtica dioica, Amorpha fruticosa, Stachys palustris, Rumex hydrolapathum, Lycopus europaeus.

Day 5 Letea Forest

Salicornietum – Europaeae (salmarsh with glasswort)

Salicornia europaea, Aster tripolium, Halimione pedunculata.

Juncetum acuti-maritimi (Juncus plant community)

Juncus acutus, Juncus maritimus, Cynodon dactylon.

Scabioso uchranicae – Ceratetum colchicae (semi-desert vegetation with Carex colchica)

Carex colchica, Scabiosa uchranica, Ephedra distachya, Elymus sabulosus, Euphorbia seguieriana,

Asparago pseudoscaberi – Quercetum pedunculoflorae (subassoc. Typicum subassoc. Fraxinetosum pallisae)

Quercus pedunculiflora, Asparagus pseudoscaber, Tilia tormentosa, Galium dasypodum, Periploca graeca, Convalaria majalis, Clematis vitalba, Prunus spinosa, Malus sylvestris, Pyrus pyraster, Quercus robur, Fraxinus pallisae, Humulus lupulus, Vitis sylvestris, Rubus

caesius, Cornus sanguinea, Populus alba, Populus tremula, Viburnum opulus, Crategous monogyna.

Salicetum rose (Salix rosmarinifolia shrubs)

Salix rosmarinifoliae, Populus alba.

Calamagrosti – Taramaricetum ramosissimae.

Tamarix ramosissima, Cynodon dactylon

Day 6 (Stop 1) Stipoc - drained delta

Phragmitetum humulis (low salted soils reed beds)

Phragmites australis var humilis, Aster tripolium.

Scirpo – Phragmitetum

P. australis, Echinochloa crus-galli, Polygonum hydropiper, Bidens tripartata.

Trapetum natantis (water chestnut floating vegetation)

Trapa natans, Salvinia natans

Salicetum albae

Salix alba, Salix cinerea.

Day 7 Muddy Volcanoes, Submediterranean forest layer.

Nitraria scholberi, Halimione verrucosa, Limonium gmelinii

Galio dasypodi – Quercetum pubescentis (with lilac)

Quercus pubescens, Asparagus verticillatus, Fraxinus ornus, Syringa vulgaris, Rhamnus cathartica, Pyrus pyraster, Crategous monogyna, Quercus pedunculiflora.

Tilietum tomentosae

Tilia tormentosa

Stipetum - capillatae

Botriochloa ischaemum, Stipa capillata, Festuca valesiaca.

Deciduous forest layer (beech forests sublayer)

Carpino –Fagetum (Hornbeam – Beech forest)

Fagus sylvatica, Carpinus betulus, Quercus petraea, Populus tremula, Populus alba, Betula pendula, Acer campestre, Cornus sanguinea, Fraxinus excelsior, Fraxinus ornus.

Stelario nemori – Alnetum glutinosae (Alder riparian forest)

Alnus glutinosa, Salix alba, Populus alba, P.tremula

Day 8 Piatra Craiului National Park

Carpino –Fagetum (Hornbeam – Beech Forest)

Carpinus betulus, Fagus sylvatica, Cystopteris fragilis, Poa nemoralis, Euphorbia amygdatoides, Alnus incana, Tilia cordata, Fragaria vesca, Brachypodium sylvaticum, Corylus avellana, Acer platanoides, Betula pendula.

Telexio speciosae – Alnetum incanae (Riparian alder forest)

Alnus incana, Ulmus glabra, Symphytum cordatum.

Pulmonario – Fagetum (Fir-Beech Forest with Pulmonaria rubra)

Fagus sylvatica, Abies alba, Oxalis acetosella, Tilia cordata, Acer pseudoplatanus, Dryopteris filix mas.

Resinous forest layer

Leucanthemo –waldsteinii piceetum (Spruce forest with Leucanthemum waldsteinii)

Soldanella hungaria, Oxalis acetosella, Fragaria vesca, Salix caprea, Betula pendula.

Day 8 (stop 2) Harman Forest

Deciduous forest layers

Carici brizoides _Quercetum roboris (Pedunculate oak forest with Carex brizoides)

Quercus robur, Fraxinus excelsior, Daphne mezereum, Rubus caesius, Alnus glutinosa, Acer campestre, Corylus avellana, Brachypodium sylvaticum, Cornus sanguinea, Viburnum opulus, Aegopodium podagraria, Euonymous europaea.

Day 8 (stop 3) Lempes Hill- Harman (– wood with pigs)

Querco –Robori – Carpinetum (oak –hornbeam forest)

Quercus robur, Carpinus betulus, Sambucus nigra, Pinus sylvestris, Ceresus avium, Tilia cordata, Fraxinus excelsior

Day 9 (stop 1) Rasnov-Paraul Rece

Carpino – Fagetum

Carpinus betulus, Fagus sylvatica, Quercus petraea, Mercurialis perennis, Rubus hirtus, Fragaria vesca, Pulmonaria rubra, Deschampsia caespitosa, Betula pendula

Grasslands – *Crategous monogyna, Crocus banaticus*

Day 9 (stop 2) Bucegi National Park (Busteni Area)

Deciduous forest layer

– Pulmonario rubrae Abieto-Fagetum
- **Symphyto-Fagetum.**

Resinous forest layers

- Hieracio roturidati Piceetum
- Saxifrago cuneifoliae – Laricetum

Sub – alpine layer

Rhododendro myrtifolii – Pinetum mugi

Alpine layer

Stellario nemori, Alnetum glutinosae.

Cota – Resinous layers

Saxifrago cuneifoliae – Laricetum

Larix decidua spp carpatica, Saxifraga cuneifolia, Salix caprea, Polypodium vulgare, Picea abies

Alpine Grasslands – *Festuca ovina, Carex curvula, Gentiana pneumonanthe*.

Hieracio rotundati –Piceetum (spruce forests)

Picea abies, Larix decidua, Hieracium rotundatum, Asplenium viride, Saxifraga cuneifolia.

Day 10 (stop on way to airport) Puchenii mari

Fraxino pallisae – angustifoliae quercetum

Fraxinus pallisae, F.angustifolia, Q. pedunculiflora, Populus alba, Acer tartaricum, A, campestre, Sambucus nigra, Cornus sanguinea.

Tilio tormentosa – Carpinetum – Betuli

Tilia tomentosoa, Q.robur, Carpinus betulus,

APPENDIX 2 – BIRD LIST

Black-necked grebe	Great crested grebe
Little grebe	Dalmation pelican
White pelican	Little egret
Night heron	Purple heron

Pintail
Shoveler
Teal
White-tailed eagle
Imperial eagle
Goshawk
Buzzard
Long-legged buzzard
Marsh harrier
Greylag goose
Grey heron
Garganey
Pygmy Cormorant
Wren
Robin
Mallard
Black redstart
Song thrush
Fieldfare
Chiffchaff
Blue tit
Sombre tit
Peduntulose tit
Nutcracker
Nuthatch
Goldcrest
Gadwall
Wigeon
Ferruginous duck
Spotted eagle
Short-toed eagle
Merlin
Honey Buzzard
Rough-legged buzzard
Hen harrier
Mute swan
Great White egret
Cormorant
White wagtail
Dunnock
Redstart
Pochard
Stonechat
Mistle thrush
Blackbird
Great tit
Marsh tit
Bearded tit
Crested tit
Magpie
Firecrest

Fungi identified in Romania October 2003

Species	RDL Brit	RDL IUCN /Euro	Cortecuisse/ B and K	Habitat	Dobrogea	Danube	Carpathians
			other				
Gill Fungi							
Agrocybe aegerita			F-R	On dead poplar and willows		1	
Amanita citrina			CC-Sc	BL and coniferous woods	1	1	1
Amanita phalloides			CC-Sc	Mixed deciduous woods mainly with oak	1	1	
Armillaria mellea sp			C-F	Stumps of BL and conifer	1	1	1
Clitocybe clavipes							
Clitocybe geotropa			F-R	BL woods	1		
Clitopilus prunulus			C-Sc	Grass in open MB or MC woods	1		
Coprinus comatus			CC-F	Grass by roadsids lawns,rubbish heaps			1
Coprinus picaceus			Sc-R	Beech woods on alkaline soils	1		
Cortinarius cyanitis				BL woods			
Crepidotus applanatus							
Crepidotus mollis			CC-F	BL trees			
Cystoderma amianthinum			Occasional	In grass and moss			
Flammulina velutipes				Dying BL trees esp elm			1
Hebeloma crustulineforme ?			F-R	Mixed woodland			
Hygrophorus lindtenri							
Hypholoma fasciculare			CC-Sc	Stumps of BL leafs and conifers			
Hypholoma sublateritium				Stumps of BL trees			1
Laccaria amethystea			CC-Sc	BL and conifer woods esp beech			1
Lacrymaria velutina			CC-Sc	Ubiquitious, tufted fallow land, woods, pathsides	1		
Lactarius subdulcis			C-Sc	BL woods esp with beech	1		
Lentinus tigrinus			CC-Sc	mainly on willows	1		
Lepiota sp							
Lepiota procera			C-Sc	Open woods and pastures			
Lepiota ventriosospora							
Leucoagaricus leucothites							
Marasmius alliaceus			F-R	Beech woods	1		
Marasmius oreades				In grass	1		
Marasmius rotula			C-F	Dead twigs and roots	1		
Melanoleuca decembris							
Melanoleuca melaleuca			F-Sc	Woods and pastures	1		
Mycena polygramma			C-Sc	Twigs and buried wood	1		
Mycena pura			CC-Sc	Beech litter	1		
Oudemansiella mucida			CC-Sc	Standing and fallen dead beech			1
Oudemansiella radicata			CC-Sc	Woods near woody debris on roots esp beech	1		
Panellus stipticus			CC-Sc	Wood under BL trees	1		
Panellus serotinus			Occasional	On dead wood of BL trees			1
Pholiota alnicola				On wood of BL trees		1	
Pholiota aurivellus			Sc	Wood of BL trees esp Beech and willow		1	
Pholiota destruens	R		F-R	Tufted on dead or dying poplar		1	
Pholiota squarrosa							
Pleurotus ostreatus			CC-Sc	Stumps or fallen trunks of BL trees	1		

Species	RDL	RDL	Cortecuisse/	Habitat	Dobrogea	Danube	Carpathians
				esp beech			
Psathyrella lacrymabunda				Grassy places	1		
Pseudoclitocybe cyathiformis			F-R	woods and copses	1		
Schizophyllum commune			CC	On dead of BL trees	1		
Stropharia aeruginosa			CC-Sc	Woods, heaths and pastures, wood pasture	1		
Stropharia coronilla				lawns and pastures			
Volvariella speciosa				Compost heaps and well manured ground	1		
Boleti							
Boletus erythropus			C-Sc	Woods			1
Suillius granulatus			CC-Sc	With pine	1		
Suillius luteus			C-Sc	With pine	1		
Aphyllophorales							
Abortiporus biennis			F-R	On dead wood and roots of BL trees		1	
Bjerkandera adusta			Common	Dead wood of BL trees	1		
Cerrena unicolor			Occasional	On wood of BL trees			1
Clavariadelphus fistulosus				On twigs and wood of BL trees	1		
Coriolopsis gallica	R	EU-C		On BL trees especially ash and beech	1		
Coriolus hirsutus			Rare	On dead wood of BL and conifer	1		
Daedaleopsis confragosa				On BL trees esp willow	1		
Fistulina hepatica				On living or dead wood of oak and sweet chestnut	1	1	1
Fomes fomentarius			Common	On dead wood	1	1	1
Fominotopsis pinicolor				on dead wood	1		
Ganoderma adspersum			Rare	On dead wood of BL and conifers	1		
Ganoderma applanatum			Frequent	On dead wood of BL trees	1		1
Ganoderma lucidum			Rare	On roots of BL trees	1	1	
Ganoderma resinacium		EU-C	Rare	On oak	1	1	
Gleophyllum odoratum			Common	On spruce dead wood			
Hapalopilus nidulans				Dead wood BL trees	1		
Inonotus hispidus		EU-C, IUCN-E	Occasional	Usually on ash	1		
Ishnoderma benzoinum			Rare	On dead conifer wood			1
Laetiporus sulphureus			Common	On BL trees esp oak and sweet chestnut	1		
Lenzites betulina				On BL trees			1
Meruliopsis corium			Frequent	On dead wood and twigs of BL trees	1		
Phellinus igniarius			Occasional	On BL trees esp willow		1	
Phellinus laevigatus			Rare	On dead birch	1		
Phellinus ribis			Rare	On living trees of spindle,hawthorn also on current	1		
Phellinus robustus				On oak	1		1
Phellinus torulosus	R	IUCN-E		On living BL trees	1		
Phellinus tremulae		EU-D	Rare	On Populus tremula		1	
Pycnoporus cinnarbarinus		IUCN-E	F-R	On BL trees			1
Stereum hirsutum				On dead wood of BL trees	1		
Stereum subtomentosum			Frequent	On dead wood of BL trees	1		
Trametes versicolor			Common	On dead wood of BL trees	1		
Trichaptum abietinum				On conifer wood	1		

Species	RDL	RDL	Cortecuisse/	Habitat	Dobrogea	Danube	Carpathians
Heterobasidiomycetes							
Auricularia auricula-judae			Frequent	BL trees esp elder	1		
Calocera cornea			Common	Twigs and branches of BL trees			1
Ascomycetes							
Aleuria aurantia			CC-F	On ground in woods	1		
Daldinia concentrica			Common	On dead wood esp ash and beech			1
Rytisma acerinum			Common	On leaves of Acer Pseudoplatanus	1		
Xylaria hypoxylon			Common	On dead wood of BL trees	1		
Gasteromycetes							
Geastrum spp	Ex	EU-B, IUCN-E					
Phallus hadriani			R	Coastal sands	1		
Pisolithus arrhizus		EU-C	C-R	warm sandy soil		1	
Totals					40	15	19
Total species recorded = 95							