

Management and Conservation in the New Forest

'Live your life as if you will die tomorrow and look after our land as if you will do so for ever'. The differences between management and conservation blur if you start here. Time is the big similarity. Where do we sit now in the time line from the past into the future for everything living in the forest. Beginning with human ecology we can see how, in the millennia since the last Ice Age, the woodlands and heaths have been changed right up to the present day. First, the changes were driven by survival of individuals, then the state. Came then the land improvers, then the introducers, then the fixers, then the players; layer upon layer. So that managers today are challenged by having to decide conservation of what for whom. An affluent society is a threat to many forms of life partly because no corner is left untouched unlike in previous times with smaller populations. Plants, insects, fungi, reptiles, birds, ungulates will all be mentioned, as the burden on managers has exponentially increased. Habitat conservation is not enough in a largely manmade environment like the New Forest, nor should we only worry about rarities because applying the precautionary principle and only win-win solutions is not how nature works. What we do is part of the natural evolution of the place and who would be arrogant enough to predict where that process will lead.

Suggested Reading List

<http://www.forestry.gov.uk/forestry/INFD-7A3F82>

http://www.natura.org/sites_uk_newforest.html

The New Forest Woodlands: A Management History; Edited by Paul Goriup; 1999

Email post@naturebureau.co.uk ISBN 1 874357 14 5

The New Forest: History, Ecology & Conservation; by Colin R Tubbs; 2nd edition 2001

Published by New Forest Ninth Century Trust, New Forest Museum SO43 7NY

ISBN 09526120 6 2, ISBN 09526120 70

Flowers of the Forest : *Plants and people in the New Forest National Park;* by Clive Chatters;

2009. Published by WildGuides Ltd ISBN978 1 903657 19 5

Biodiversity in the New Forest: Edited by Adrian C Newton; 2010

Published by Pisces Publications www.naturebureau.co.uk ISBN 978 1 874357 42 1

Dawn, Dusk and Deer: by Arthur Cadman; 1966

First published by Country Life Limited

"Oyez, Oyez! All manner of persons who have any presentment to make or matter or thing to do at this Court of Verderers, let them come forward and they shall be heard. God save the Queen".

Talk

1 It is my intention to say something about the New Forest, the way it is managed; something about the conservation issues and then something about the problems and fundamental concepts facing land managers.

2 A picture from this time of year – sunlight through Douglas fir trees over bracken and moss

3 My version – ‘Look after your land like you will live forever but live as if you are going to die tomorrow’.

Foresters are unusual because they have to think in centuries not human life times or the two or three years politicians are addicted to.

4 When I talk about the Forest I will usually mean the New Forest.

The Forest has poor soils derived from alluvial deposits and those in shallow seas. It is known to be ‘flashy’ when it rains, that is, the ground does not absorb much of what falls before water starts to run off into bogs and streams and this leads to a risk of flooding in some villages and towns.

5 The Forest is squeezed between Southampton and Bournemouth in what is quite often called ‘the Solent City’. It is now incorporated in a National Park, but the Crown Lands of the New Forest are what most people still recognise as the New Forest.

The King’s New Forest was much bigger around 1079 when it was designated and extended into what is now the whole of Bournemouth and part of Southampton. This map shows the new National Park and inside that, the area known as the Preamble. That is the area in which livestock is allowed to freely roam. It is enclosed by fences and cattle grids on the roads.

6 The Crown lands of the New Forest cover slightly more than 100 square miles and make up about 47% of the National Park.

You heard about Epping Forest already. The New Forest is about ten times bigger and has a budget ten times smaller. It helps to be supported by the City of London rather than the National Government.

7 William I started a trend for Kings by designating a new Royal Forest. His successors did the same across the country from time to time. This was a way of making the King independent of the local Baron when his Court moved around the country.

It was one of many things to upset the Barons over the next 140 years. A lesser known inclusion on the Magna Carta in 1215 is a clause saying the King would desist from making more forest inclosures.

At the start of that document is the list of people it is addressed to and well below the Barons, the King's Foresters come just after his Sheriffs.

8 Parts of the Forest that have been pasture woodlands for millennia are known as the Ancient and Ornamental woods, like this, and are likely to be similar to those when the Norman Kings hunted their deer.

9 The 2001 FMD (Foot and Mouth Disease) outbreak demonstrated what managing the New Forest entails. This was the beginning of a major headache for New Forest managers.

We were aware that FMD had started early in February when it was recognised and reported in Essex. One of the four potential sources was pigs from Freshwater on the Isle of Wight. Animals from there would have crossed to Lymington and from there gone through the New Forest to the abattoir in Essex.

10 Pigs are the animal most worrisome for spreading FMD. And there were pigs out on the Forest. They were still out on the Forest by special licence after the pannage season. Mast or Pannage is one of the Rights of Common for the New Forest Commoners who live in properties to which this Right is registered.

11 A Right of Pasturage meant that at that time of year there would be around 2000 cattle, 3000 ponies and donkeys also out on the Forest along with a few sheep concentrated in one small part of the area. The number of cattle and ponies is higher in the spring and summer. A register of Commoning Rights was created around 1851. Properties registered rarely have all the possible rights.

12 Pigs

13 Cattle

14 And deer

15 Are susceptible to FMD

16 Ponies

17 And dogs can carry the disease and so pass it on to the pigs, cattle, sheep and deer.

18 And they do mix together on the Forest. Here we have ponies and deer grazing on the same area.

Note the naturally seeded oak growing out of the bramble patch – I will return to this phenomenon later.

19 In the first few days it became clear the source of FMD was in Northumberland so we could relax. But very soon we were told that the disease was somehow related to the trade in sheep and it had spread down to the Devon. It took some days for the MAFF Veterinary Service to establish what had happened and the fact that markets were a key to the way the disease was spread.

20 On that Sunday night reports of suspected FMD cases included one found in Chippenham Market relating to an animal thought to have come from Devon. This meant it had jumped from there over the markets at Frome and Salisbury. At this time there were suspect cases in Hampshire too. The New Forest Commoners who owned cattle sold them in these two markets? The issue for the New Forest was did we already have the disease.

21 It was not known how many dogs were visiting the Forest at that time of year.

22 Also the number of people going into the Forest was much reduced in February, although the annual figures were estimated to be 12 million local people and 8 million from elsewhere.

23 In addition to walking, running, cycling, driving and horse riding, there were people who came to camp, fish, fly model planes, use model boats. There were three golf courses, twelve cricket pitches, four rugby and football pitches, ten campsites, a number of allotments and 133 car parks on the Forest.

24 It was decided to close the Forest to the public. On the first day we blocked access to all the car parks with logs. Signs were put up to explain what was happening. Television, radio and local newspapers were told what was happening and what was wanted.

25 We asked that people should not get out of their vehicles inside the Forest boundary. No one should go for walks, ride and particularly they should only walk dogs on the tarmac roads. The message was keep out of the Forest so the disease would not be spread from it.

26 We closed all the underpasses on the A31, the A35, and the A337. These are the only fenced roads on the Forest. The idea was to split the livestock up into six different areas. The deer would continue to jump these boundaries. Most Commoners took their animals off the Forest into their holdings.

27 In the next three weeks the Keepers were told to catch four pigs that had gone missing or kill them if they couldn't be caught. They were also told to shoot only deer that looked sick and bring them in to get blood samples.

28 Around a hundred cattle still on the Forest had to be moved using the Police because a Movement Order had been made covering the whole Country. This was organised by the Clerk to the Court of Verderers.

This is the Verderers Hall where the Verderers Court sits. Up until the New Forest Act 1877 the Verderers were appointed by the Crown to protect the 'Vert'. After that year they became responsible for administering the Commoners Rights and the livestock on the Forest.

29 After 3 weeks it was clear that FMD did not exist in the New Forest so the emphasis turned to stopping it arriving with a lot of help from the MAFF Veterinary Service.

The shift in emphasis was important for two reasons.

First, many stock owners got into difficulties because they had too little land or feed and there were great costs and difficulties in moving or disposing of their animals. The Forest was wide open to abuse. One example was when we had to round up, kill and take blood samples from around 18 goats that had been dumped.

Another problem came from the policy of killing livestock on farms contiguous with an infected property. If the New Forest did get FMD then the number of contiguous properties was enormous.

30 A limited number of normal activities were started.

The Keepers were asked to keep a record of any wildlife changes and to ground nesting birds in particular.

But problems soon emerged. A limited number of fenced Inclosures were opened for people to walk in without dogs or with dogs on leads. This led to protests from the Commoners Defence Association, the Verderers and the NFU

and by May they threatened legal action to force us to completely exclude the public.

At the same time the local Tourist Association and a large Hotel Chain also threatened legal action to have the Forest reopened completely. Their argument was that tourism earned more for local people than all the pigs, cattle and sheep belonging to Commoners.

31 By June it became clear that wildlife really did benefit from having such severe reduction of intrusion by people and their dogs. Particularly, it was good for birds like the Snipe, Curlew and Lapwings, but also for the deer that did not move around as much as normal.

FMD Restrictions were reduced by August and the last case of FMD was reported in Cumbria in September.

32 From the above you will have some idea of the complexity of the way the Forest works and the interactions between interested parties. Even so I haven't mentioned groups like the Ramblers Association, RSPB, Wildlife Association, local and national Statutory Bodies etc, etc.

One of the best analogies is shown by this pretty picture of the nervous system in the ubiquitous Fruit fly, that students of my generation came to love in their genetics courses.

33 Now I want to say something about the history of the Forest; how did we get to be where we are. The place names show that the Forest was occupied quite widely, if sparsely, before the Normans came. There is one part where, it is thought, Jutes settled after the Romans departed.

34 The Domesday Record was the start of formal administration for the Forest. Kings and Princes died there, Queens were left there while their Kings went off to wars.

The Queen's House in Lyndhurst (called the King's House when we have a King) was started in the manor by Charles I. Although, because he got lost in his Forest, he missed the boat to France, with fatal consequences.

Wardens, appointed to protect the deer for the Crown, were allowed to build a house on their Bailiwicks and these grew into large mansions like the one at Rhinefield.

By the time of Queen Victoria, the Forest was a drain on the royal purse even though large parts had been given away in lieu of debts or sins (to the Church) or simply encroached. In a wider settlement the Queen handed the management of the Forest to the State. Later, and more formally, King George V assigned it to the Minister of Agriculture in a 1923 Act.

As a general observation the odd Williams, that is William I and III, were good for the Forest. We hope for something similar from William V. There is roughly one oak tree life between the odd Williams.

35 There have been several additions and changes to the Queen's House and it is now a Grade I listed building. Dates for when the changes were made can be seen from the down pipe hoppers.

36 This was a time of the Royal Society and one Fellow, John Evelyn, produced his 'Silva' delivered on October 15th 1662. In it he described many things about how to grow plantations of trees. From the Act of 1698 aimed at producing timber for the Navy through to an 1808 Act with the same purpose, the Forest was recognised as a place to deliberately grow trees in Inclosures.

37 The population of Britain went from 4 million to 10 million between these Acts. This became a time of land improvement for agricultural production by land owners. Rights of Common were being bought out as they were in Epping. There were the Clearances in Scotland. The Age of Steam brought growth of cities, travel and industrial production.

It was an accident of history that left the New Forest with Commoning and ancient woods.

By the 1877 Act, which is still on the statute book today, the population was over 30 million and rich tourists became visitors carried on the railway built through the Forest.

Two World Wars had a big impact and when the population was just short of 60 million a Motorway (M27) was built with Junction 1 right on the Forest edge. Traffic jams like this one in Lyndhurst occur every weekend from March to October each year now.

The average age of the local population is 51, demonstrating how many retired people there are. More than 30,000 live in or around the Forest. There is pressure on planners to allow larger and larger houses, some approaching the sizes of the old Lodges. But planning houses for ordinary workers is equally difficult so we now have reverse commuting.

38 Up until State intervention from the Norman times the Forest was utilised by people in ways that probably did not affect it too much; or did they? We

have pollen studies by Professor Keith Barber and colleagues at Southampton to thank for a record of what was growing there.

39 At some time after the climate warmed up plants and animals invaded Britain from the continent over rivers at the Strait of Dover. Rising sea levels caused by melting ice and sinking land opened the gap wider and limited the number of species that arrived.

40 Nonetheless by 6000 BP the Forest was mainly woodland with pines and broadleaved trees thriving.

41 Probably as result of people farming, shifting cultivation perhaps, vulnerable tree species started to decline. Limes were lost quite quickly. Almost certainly because they grew on the fertile soils favoured for growing crops and they fact they were relatively easy to fell using stone axes. Also the bark could be use for rope making. Others were reduced by grazing ungulates. You will have learned, from Keith Kirby, about the Vera hypothesis on a balance between grazing ungulates and oak woodland regeneration.

42 Remember this view? I have added pictures showing an oak seedling out running the brambles in this year's growing season.

43 Oak prefers to start in competition with grasses. The acorn is big enough to survive a bit of nibbling by ponies. But it is the brambles and thorns that reduce the grazing pressure on oak seedlings and permit them to gain height. Quoting one old Forester, 'Oak is alright, it is a real fighter'.

44 Along the maritime lands bordering the Atlantic from Portugal to Norway heaths were created, extended and sustained by people burning vegetation. Burning favoured ericaceous species, like *Calluna vulgaris*, which possess a very strong competitive allelopathic advantage over other species including grasses. Burning also reduced the ability of pines and birches to regenerate.

45 The Forest started to see small industrial activities in places now showing archaeological evidence of potteries and charcoal making. The latter was last practiced as major exercise during the Napoleonic wars to make gunpowder. One image of this natural Forest is that of the amoeba. Tree seedlings start in get away from the grazers and browsers to form thickets and then mature trees. They finally become moribund falling to the ground to be host to myriads of bacteria, fungi, mosses, arthropods etc. Grasses take over. But somewhere else we have all the earlier phases.

46 The Romans brought the Fallow deer to join the Red and Roe already here, we are told. Since then Sika deer came with the Prince of Wales in the 1890s who gave this present from the Emperor of Japan to the his equerry, Lord Montague of Beaulieu, to look after. And who brought in the Munjac? Now we must try to manage the numbers of each in relation to their preferred woodland habitats. Except, that is, the Munjac, which should be shot on sight always.

47 The numbers of deer on the Forest are estimated to be 2,200-2,500 Fallow, 400 Roe, 100 Red and 100 Sika. The cull each year should be around 800 Fallow, around 120 Roe and a few Red and Sika. We know that the Red and Sika have hybridised elsewhere in Britain. So the policy in the Forest is to shoot all Sika north of the railway line and all Red to its south.

48 The rabbits came with the Normans but by the 17th Century some Keepers had become Warreners. They were using the Inclosures as warrens. The Inclosures were surrounded by a ditch and brush fence. The effect was that few trees were established and the records showed a spike in grass pollens.

49 The beech trees were introduced by Foresters into oak woods to restrict side branches growth. The Grey squirrels that came to the Forest in the 1940s - 50s quickly learned to damage the bark on trees especially the beech. On that species damage at the stem base and in the branches introduced rotting fungi, especially the *Ganoderma sp.* The effect comes decades later when large trees have their tops blown out or the whole tree is collapses with only a rim of live wood at the bottom.

Mink have been controlled by Keepers for a long time but ten years ago some misguided people release thousands from a nearby mink farm. There was an immediate effect on our streams especially the sea trout coming in to lay eggs in those with gravel beds. Fortunately, a lot were quickly trapped, probably because they did not know how to find food. Many were caught in shops and kitchens!

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51 There is always a desire in people to keep things as they were; particularly old people. I am not an old person yet!

When people settle in the Forest they want it to look like it did when they bought their property. In my experience, it takes more than five years for them to accept this is a working Forest and nature is also changing it all the time.

53 This is *Rhododendron ponticum* advancing into a mature wood causing the Roe and Fallow deer skirting by to browse one small tree to keep it at one metre high and to thrash and kill another. Much treasure has been spent removing *Rhododendron* from the Forest. Now, we have *Phytophthora ramorum*. I am sure Joan Webber told you all about this disease and how it has shifted from the *Quercus* spp of western America to our shores. It has been found on *Rhododendron* in the Forest and it has devastated larch trees on a neighbouring Estate.

Classed as a disease serious steps, and more treasure, will be expended to prevent more damage to timber crops; but maybe it is a blessing for this kind of forest.

In the picture is the branch of another introduction. *Prunus cerasus*, the laurel, was planted round large houses ostensibly to reduce small insects like midges that would favour the protection of crinolines. It contains some cyanide compounds I am told. Now it has advanced into the Forest in various places.

54 The Forestry Commission, as the largest landowner in GB, became a focus for the various statutory and non-statutory conservation bodies. In theory it was expected to earn enough from selling timber and other services to pay for the various measures considered necessary.

55 The areas covered by these designations include virtually all the Crown lands of the New Forest.

56 I have already described the many ways people use the Forest in their leisure time.

It is a long standing policy that Government Departments like the Forestry Commission shall not carry out commercial activities that can be done by the private sector. So the organisation does not have sawmills or pulp and paper mills. However, in the New Forest they have some campsites that grew out of the need to contain camping to a few designated places. They are now more commercial with better services than at the start, but not as much as they could be. The better sites are outside the boundary and privately run. In total only about one third of the Forest costs are met from timber and camping income.

57 This map shows the extent of woodlands in the Forest in 1789 – the famous Driver's map.

58 The Ancient and Ornamental woodlands occupy about 15% of the total area.

59 A study of the ages of trees in the A&O woods shows that only 1% started to grow after 1850; the largest proportion started in the 18th Century. One reason for this is that grazing pressure was intensified after the Verderers switched from being concerned with the 'Vert' and started to administer the Commoning Rights. This was intensified when the Court was enlarged by an Act of 1949 to include five Verderers elected by the Commoners. The result has been a lobby to keep the numbers of ponies and cattle at a more constant high level when previously the numbers rose and fell with economic circumstances.

The last periods of natural regeneration occurred during the two World Wars when the Forest was occupied by troops. The Normandy Oak, shown encircled by a Chestnut fence was selected from a naturally seeded tree from 1939-45. Most of the trees in the area are birch coming to maturity now.

60 The simplest breakdown of land use is shown here. In addition to the A&O woodlands there are Inclosures for growing trees, heathlands and lawns. The lawns are wet or dry grasslands where the vegetation is maintained like a lawn by grazing ponies. It is the lawns that people like to use most. Using a Geographical Information System there are around 200 data bases showing the locations of such things as badger sets, rare plants, rare fungi, rare habitats in addition to things like streams, forest roads, paths, bridges and overhead lines. These data bases provide a way of estimating environmental risks when planning work on the Forest. They also provide a way of planning for the future, particularly for the Inclosures.

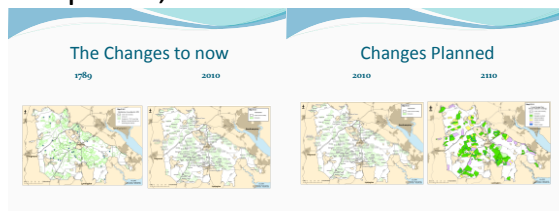
On the Beaulieu Heath in the south of the Forest you can clearly see the outline of runways made in WWII. The concrete has long since been lifted up but the effect of the calcium input can be seen where the runways were. It can also be seen on forest roads built from rubble from bomb sites in Southampton. Beaulieu was one of three large bomber airfields on the Forest and there were another nine Fighter bases on or beside the Forest by D Day. In the north of the Forest was a bombing range on which they built a concrete building to mimic the submarine pens at Brest in order to test the massive bombs they would need. There are relatively few people around today who can remember what it was like on D-2 when the Forest hid thousands of vehicles and troops.

61 The 1877 Act requires that only 20,000 acres can be in Inclosures and of that area only 16,000 acres can be fenced to exclude Commoner's animals. In effect the Rights of Common are suspended for these areas. The Inclosures without fences are said to be 'thrown open'. They are in fact a form of pasture woodland. But this is not a pasture woodland that arose naturally as in the A&O.

In addition to the soils we also have information on the locations of plant communities in the Inclosures. This map clearly shows the real problem for the Forest Inclosures caused by bracken.

62 In addition to the soils we also have information on the locations of plant communities in the Inclosures. This map clearly shows the real problem for the Forest Inclosures caused by bracken.

63 Looking forward 100 years the plan is to reduce the amount of managed woodlands by turning parts back to heathlands, parts to near natural woodland and parts to near natural pasture woodlands. In addition there will be more attention to riverside woodlands by allowing, where there is minimal risk to the public, natural dams to occur.



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65 You can still see the runways on this habitats map for the Open Forest. Here they show up as dry grassland inside a dry heath area. There are also a number of small rectangular dry grassland areas inside dry heaths. These were areas dressed with lime during WWII to improve grazing.

Heather and Gorse areas are burned on a ten year rotation. Also, every year young birch and pine trees, that started to grow on the heathlands, have to be cut down or pulled up. The GIS map showing where these things have been done is too detailed, because nothing more than 2.5 ha is burnt in one place each year.

Changing climate is a real problem. We like to burn before the ground nesting birds start building their nests. But we also have to wait for the winter rains to stop. The gap between these two can be as little as two weeks now. Forecasts for 2050 suggest there will be even more rain in the winter and the temperatures will be higher. Maybe there will be no gap then.

66 It seems to me the largest conservation still goes toward making lists.

67 Dartford Warblers are an indicator species for the heathlands, especially where there is gorse. In the last five decades the Forest became one of the last refuges for them in England before their numbers expanded again.

This year it is the finches we might worry about because there is a disease normally infecting pigeons that seems to be wiping them out. Where I live the number of Greenfinches has gone from lots to none in about 18 months.

68 Our Keepers are involved in many ways such as replacing Honey buzzard chicks in their nests and ringing birds in the Forest. What is clear is that we now have more raptors than these Sparrowhawks. The epitome of a raptor, the Goshawk, is getting to be common. This might also explain the reduction in small birds.

69 I picked these two because they came out five days ago where I just couldn't miss them. It would be pointless to list all the species in the New Forest Mycologica prepared by local mycologists. My current culinary favourites are the Horn of Plenty and the Wood Cauliflower; I haven't been poisoned yet.

What fascinates foresters are the mycorrhiza. We know what a battlefield there is under our feet. And its even worse in the tropical rain forests. This is one of the win/win successes of nature. Fungal spores are so small. They are carried on the wind, on the feathers of migrating birds or the clothes of tourists from round the world. From whence do they come?

One species on the list is *Pisolithus tinctorius*. I first came across this species when I was working in Jamaica trying to research methods for establishing tropical pines. Professor Donald Marx in South Carolina was good enough to send me some cultivars of this species for use in our tree nurseries. How did this species come to be in one of the Inclosures? Could it have been carried by a visitor to the campsite in the same Inclosure?

The Fly Agaric caps show signs that they are being eaten by something. We understand there are a large number of insects and arthropods feeding on fructifications. That is the reason why I instigated a prosecution case against a German lady who was taking fungi to use in her restaurant. Although she knew the species, the people who collected for her did not. They hoovered up anything that looked like a fungus so they could be sorted later. This was analogous of the net fishing practices we so decry.

70 *Gaultheria shallon* comes from NW America. It is an ericaceous species with rhizomes and leathery leaves that defy most herbicides. We made one attempt to remove it by enclosing young pigs on top of an area dominated by the

'weed'. Rooting by the pigs did reduce the amount of rhizomes significantly but not 100%.

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72 Individuals in the Group specialised in different habitats. One collected from old sparrowhawk nests, another collected from active hornet and wasp nests. It was an interesting exercise for everybody.

73 As a manager you groan when you see the initials 'RDB'. It means don't touch, even if you don't know what looks like or where it might be.

74 I was too mean to pay Roger Key for a photograph but I didn't think the pictures showed enough to make any of you recognise it should you happen upon sphagnum in the New Forest one day.

75 Clearly this little chap isn't as big as it appears here- its about 3mm I think. What interested me was that this RDB species is commonly found from Austria and Hungary to the Caucasus where it always rare on the ground. The picture comes from Turkey. Only one specimen was found in the Survey and this was only the second found in Britain. If you were me, would you get worked up about the presence or absence of this particular species?

76 This is the White-Spotted Rose beetle. It is a dung beetle found from Latvia down to Turkey. It is a pest in Hungary where they have tested pheromones to control it. The last specimen found in GB, before one was found in the New Forest, was located in Camden in 1998. Michael Salmon suggests it should now be considered a native. Like many immigrants in Camden perhaps.

77 This is evidence of another insect, a small wasp, that is commonly found in SE Europe. When the egg is laid in the developing oak fruit, a change in the culpule is induced and in this, the larva grows. There is some interest in what happens because it appears the insect introduces a set of genes to the fruit to make it grow differently. Genetic manipulation is a hot topic I am told.

The galls were first observed in GB the 1950s. It is now known that the wasp needs access to *Q. cerris*, the Turkey oak and its life cycle alternates between this and *Q. robur*.

Now here is a question – do we stop felling introduced Turkey oaks to keep this wasp that arrived naturally like the beetles on our RDB list?

78 In dry summers the surface peats on the mires will irreversibly dry out. That changes the way the peat is laid down being as much influenced by ground water as by surface water. That makes the nutrient regime an enhanced one compared to raised bogs.

79 There are a number of species adapted to having their watery environment dry out completely. The little Fairy shrimp is one found in the Forest. The wider problem for them was that these places that were wet in winter but dry in summer were thought to be easy to drain so that trees would grow better. At Costicles pond this process was reversed by blocking the drain and clearing trees back from its edge.

The history of drainage in the Forest is difficult to admit. When the railway was built the Verderers received a large sum of money from the Company and used it to carry out tile draining on what was considered better land. It is my contention that when it was discovered improvement was not forthcoming, the Verderers, all owners of neighbouring Estates, decided they did not want the commoning rights bought out so they could acquire part of the land. They decided instead to promote Rights of Common for properties on their Estates and increase the rents charged while they hunted on the Forest and sat on the Verderers Court.

The next episode of draining was by the Forestry Commission. This organisation had learned of its benefits in the uplands. From the 1940s until the 1980s they straightened streams and put in miles of open drains. In 2002 it was agreed with the Environment Agency and Natural England to put back the meanders. Also a programme to block drains in the mires with heather bales in order to raise the water tables there was initiated. Objections came from those who saw the grazing for ponies was going to get worse But the reduction in flashy run off was expected to reduce the risk of flooding.

80 The Sand lizard is our rarity but we have relatively few species in GB.

81 To get people used to them we have a Reptilary where people and particularly children can see them particularly on sunny days.

82 From time the Keepers will carry out a survey to see what is out on the heathlands. The only objections come from riders or walkers who try to tidy up the Forest by removing the corrugated iron sheets placed at locations on a randomised grid.

83 This Babastrelle bat is of particular interest although the other commoner species are studied from time to time.

84 Here is a Bechstein bat doing its best to smile.

These studies are important because they make it possible to have the best possible data base before planning a forest operation.

85 I hope by now you realise I cannot possibly know everything about all this.

86 In the New Forest we really don't have to worry about the birds.

Back in 1997 a Montagu Harrier nested on the north of the Forest. It cost the better part of £25,000 to protect that nest. Local twitchers were very keen to stand guard but it took more than enthusiasm to ensure one chick fledged from the nest.

Why not worry. We should have asked the RSPB to contribute more. It is an extremely rich organisation by comparison with the Forestry Commission and with all the others supporting one or other group of species.

Nor do we need to worry about Badgers or the deer. Yes, it is the furry and feathery that have the U Selling P.

87 Overall there would be more niche habitats. But these outcomes would depend on whether the ponies and cattle numbers are kept in check, but more important whether people are kept in check.

88 Some fairly novel solutions will be needed. It appears that existence value is very low in comparison with observation value. Existence value is that of knowing a species exists and is protected and it compares with spending money to go and see it, where it exists. This means, as leisure time and affluence rise, so more and more want to go and see. But that will destroy everything if taken too far; the Galapagos Islands for example. Perhaps we need to bring back the wolves and bears.

89 In 1997 a good number of Cicadas emerged in a small area of birch in the Forest. There was great excitement. Many experts came to say what should be done. A programme of tree felling and vegetation control work was started on the best advice. Everyone waited to see if more Cicadas emerged the following year ...and the following year and the following year. Now we wonder what cycle they were on; but time is passing.

Rigid execution of the Precautionary Principle is impossible. The obvious is just that. But we cannot know everything that matters. What is required is something like we apply for work. That is following the Best available technique not entailing excessive cost, BATNEEC; or the Hippocratic one of if not doing some good to avoid doing harm.

90 Large numbers of one species makes them vulnerable to catastrophic attacks by another species. That is what most research in Agriculture is focused on avoiding.

My contention is that when species are circulated round the world as they are now, we would be safer to have as many species as possible. Each new introduction threatens what is there already. The environment is changed by the introduction and that is the biggest driver for evolution.

In Jamaica I was made aware of a tree species with three specimens recorded as introduced in 1785 from Asia. By 1980 it spread naturally to the top of the Blue Mountain Ridge where the rainfall was over 5m per year and down about sea level on dry limestone rock where the rainfall was only 60mm per year. The flowering seasons now were different in the two places. I would rate that as a step in the evolution of two tree species; in less than 200 years. For a tree that seems awfully fast.

91 The End