A Done Deal for Dundreggan!

As this newsletter goes to press, I'm delighted to report that Trees for Life has just clinched a deal to purchase the Dundreggan Estate in Glen Moriston! Thanks to a tremendous response from our members and supporters, and exceptionally generous donations from a few key people, we will shortly take title to most of the 10,000 acre (4,000 hectare) estate, together with an option to purchase the rest in January 2007.

This success represents a major breakthrough for our work to restore the Caledonian Forest, and is the culmination of 9 months of focussed effort by our staff, our board of directors and our land agent and solicitor. For me personally it is not just the outcome of a lot of hard work but, more importantly, it is the realisation of a vision that Trees for Life, and I in particular, have held for over 15 years - of having our own substantial area of land where we can restore the Caledonian Forest on a significant scale.

In 1995 we came very close to achieving that goal, when we raised all the money to meet the asking price for the Wester Guisachan Estate in Glen Affric, only to be outbid by another party. It's taken a long time to accomplish what we narrowly missed out on then, but as the saying goes, good things come to those who wait. Patience and persistence have definitely paid off, because Dundreggan offers a much greater opportunity for forest restoration than either Wester Guisachan or the other privately-owned estates in Glen Affric that were sold in the 1990s.

For me, our bid to purchase Dundreggan has been a real rollercoaster ride, full of twists and turns and emotional ups and downs, making it almost worthy of a television soap opera. However, I have always had the conviction in my heart that we would succeed, and all the support we have received from many, many people has been hugely affirmative.

One of the most satisfying and exciting aspects has been drawing on all of my experience, skills and contacts (in some cases going back 20 years) to bring together the many different contributions that are making the purchase possible. There have been numerous miracles along the way, with the right connections being made at a crucial moment, or someone stepping forward with just the funding we needed to help make the deal possible. It's been a remarkable learning experience for us all here, and has helped to move Trees for Life to a new level of effectiveness and operation.

The work of returning forest to much of Dundreggan will continue that process, as will our ongoing fundraising - we still need to find almost £350,000 for the second phase of the purchase. We'll have more news about both of those aspects in the next edition of *Caledonia Wild!*, but for the moment, on behalf of us all at Trees for Life, I'd like to give heartfelt thanks to everyone who has contributed to this achievement. Because of your support, we've done a deal for the purchase of Dundreggan, and a great deal for the future of the Caledonian Forest there. Thank you!

Alan Watson Featherstone

Left:
Juniper, pines and birch on Dundreggan in early March. The forest there has a brighter future now!

Below:
Alan with one of the old 'granny' pines on Dundreggan

In this Spring 06 issue: Parasites in the Forest - Bear folklore - Rainbows
Farewell from Malcolm Wield - Glittering wood-moss species profile supplement

Spring ...Season of Uncertainty and Promise

By Adam Powell

For a nice steady Taurean like myself this late winter/early spring scene can be a bit unsettling to say the least! I was just thinking we were through February (often the hardest month of the winter) so surely that's it, now we can get on with lengthening days, gradually rising temperatures, the succession of spring flowers from species iris and winter aconite to polyanthus and tulips, then WALLOP! in comes March like the proverbial lion and it seems as if we are suddenly in the clutches of the White Witch of Narnia!

Well, it does make for exciting times and I always liked the concept of being snowed in, marooned in a vast white desert, living on my wits and the contents of the freezer; not that it has really come to that more than a couple of times, I must say. Yes, uncertainty, unpredictability and seasonal u turns certainly add zest to life but give me good, steady progress anytime; let me know where I stand and where I'm going and my Taurean determination will come into its own. It would be very nice to think that the old adage will hold true and March, having come in like a lion, will go out like a lamb but, who knows, I think I will keep my long johns handy just in case!

More exciting times!

So spring, the season of uncertainty and promise, is not the only thing that keeps me guessing; plans and ideas have a way of unpredictably evolving in their own way at their own pace, which is usually a much longer time frame than I would prefer!

It is almost three years since we came up with the idea of re-establishing woodland cover around Allt Coire an t-Sneachda, the stream of the Snowy Corrie, on the flanks of Beinn Eun in the Glen Affric National Nature Reserve (NNR). What first caught our attention here was the unusually rich ground flora in the area with species such as wood cranesbill (*Geranium sylvaticum*) globe flower (*Trollius europaeus*) and alpine bistort (*Persicaria vivipara*). Standing on the hill side we could see the Coille Ruigh exclosure to the east, established in 1990, and the Meallan exclosure to the west, fenced in 1991. Out of sight over the hill to the south a third exclosure, Glac Daraich established in 1992, overlooks Loch Beinn a'Mheadhoin.

This part of the FCS plantation beside the Allt na Muic stream contains Scots pines, but most of the area consists of non-native trees.

The original concept, from 1990, was to create woodland restoration areas on all four sides of the hill, Beinn a'Mheadhoin, to provide strategically placed seed sources which would facilitate natural regeneration of trees right over the hill. For several reasons this fourth area could never be realised but here is the opportunity to bridge the gap, 16 years later!

Regular readers will recall that we ran an appeal in 2004 to help fund a deer fence at the stream of the Snowy Corrie and I was out at the end of February this year to witness the fencing materials being flown in by helicopter. Now, patience and persistence has paid off and the fence is under construction and will protect several young pine trees already growing on the site, with many more to come. We will do some planting here to supplement natural regeneration, bringing in species such as alder and hazel and enhancing the small aspen stand with stock from other nearby locations. There are also mature birch, rowan, willow, aspen and juniper on site and close by whose seed will engender a whole new generation of trees: hey presto! new woodland; thanks, we could not have done it without you!

Fencing materials being dropped off for the Snowy Corrie project in February.
Photo by Adam Powell.

SNOWY CORRIE PROJECT UPDATE

2003	Idea proposed to Forestry Commission Scotland
2004	Appeal in May raised over £5,000
2004	Vegetation surveys conducted in the autumn
2005	Fence line agreed with FCS and consultees
2006	Fencing materials flown to the site in February
2006	Fence under construction in April

NEW WOODLAND IN GLEN AFFRIC NNR

- **Sites surveyed**
- **Proposals presented to FCS**

And more!!

Last year we were told by Forestry Commission Scotland (FCS) that they have a commitment to expand native woodlands across the country and would like to increase significantly the native woodland cover in the Glen Affric NNR. Our ideas were invited so it was out with the maps, draw some lines round areas below the tree line, with ground conditions likely to be suitable, and then checking these out in the field.

I have yet to visit some of the further flung sites but have covered much of the ground to determine where this new woodland could be established and am seeing plenty of potential. New planting can take place where non-native plantations have been felled and on suitable sites where there is no nearby seed source for natural regeneration, or where species diversity has dwindled. Where there is a seed source, natural regeneration can be protected with fences to allow expansion of existing woodland. Some timber plantations have been stocked in part with local origin Scots pine and these areas can be thinned, with some small clear-fell patches for the introduction of other species, to naturalise the woodland.

Doire Mhor, the hillside facing Coille Ruigh, is one of the sites where we've proposed new native woodlands in Glen Affric. Doire Mhor means 'big wood' in Gaelic, but this lone birch is one of the few trees left there now.

The very exciting thing about this is seeing the potential for linking up isolated fragments of woodland with the planting of a substantial number of native trees. Having continuous tree cover over a large area is synergy at its most dynamic: the whole which is created is so much greater than the sum of the parts. Differences in altitude, soil types, hydrology, aspect and exposure gives scope for intricate variations in habitat, attendant species diversity is vastly enhanced as organisms find their particular niche and the ecological benefits are increased exponentially.

Promise and potential aplenty!

The Allt na Muic Forest Corridor Project seeks to restore the link between the forests of Glen Affric and Glen Moriston and has several component parts. I reported on one of these in the last Caledonia Wild!: the deer fence on Wester Guisachan Estate which replaced 31 little stock fences installed to protect dwarf birch (Betula nana).

Another element that has been bubbling away for quite some time is the FCS plantation which extends to approximately 500 hectares (1,250 acres) and lies between the Balnacarn and Tomchrasky native woodland restoration projects, established under the FCS Woodland Grant Scheme (WGS) in Glen Moriston. This strategic position will allow for connecting the two WGS areas if the non-native trees in the plantation can be replaced with native species. Deer are in the plantation, as the timber trees have grown big enough to be safe from browsing and there has therefore been no need to repair the old fences. There are some deer there all year round but the trees provide valuable shelter for them in the winter and any changes to the plantation will have implications for deer management on the two neighbouring estates.

It is, therefore, very important that we give careful consideration to how we progress this plan with due consideration for the deer and the interests of the neighbours. We will adopt a phased approach, leaving some plantation areas temporarily unfenced for deer shelter, allowing a small number to remain within the area and opening up other nearby plantations for them. The non-native trees will be removed over a period of years, gradually being replaced by planted native species which will, in time, expand the area of native woodland significantly and bring the link that bit closer to the riparian woodland along the River Moriston.

Linking people

Trees for Life has recently acted in partnership with the Abriachan Forest Trust to establish a new stand of aspen trees in the extensive woodland overlooking Loch Ness. Creative interpretation on the site has been skilfully carved by a local artist and young people from Glenurquhart High School are involved in the planting of the aspen trees.

The Abriachan Forest Trust was set up in 1996 by the people of Abriachan, a scattered rural community of about 120 people set high above the shores of Loch Ness, half way between Inverness and Drumnadrochit. It was created as a vehicle for bringing into community ownership 534 hectares of planted forest and open hill being sold by the Forestry Commission. Today Abriachan Forest is the largest community-owned forest in Scotland, and consists

ALLT NA MUIC FOREST CORRIDOR PROJECT UPDATE

PHASE 1

1997 **31 small plots fenced for dwarf birch protection on Wester Guisachan Estate**

1998 **72 hectares fenced and planted on Balnacarn Estate**

1998 **20 hectares on Balnacarn fenced for dwarf birch recovery**

2000 **Appeal raised over £6,500**

2001 **12 hectares fenced and planted on Tomchrasky Estate**

2002 **5 hectares fenced for dwarf birch recovery on Dundreggan Estate**

PHASE 2

2005 **Appeal raised over £24,500**

2005 **Stock fences on Wester Guisachan replaced with 1,000 metres of deer fencing**

2005 **Management plan developed for naturalisation of FCS plantations in Glen Moriston**

Teenagers planting aspen trees at the Abriachan Forest in March, with Loch Ness visible in the distance.
PHOTO BY DAN PUPLETT.

of a mixture of planted commercial forest, some remnants of old pines and a substantial area of naturally regenerating open hill.

The wild forests in this area are a wonderful mix of species including oak, ash, Scots pine, birch, rowan, willow, alder, hazel, holly and aspen. The project is essentially long-term and, although some objectives will be achieved in the near future, the success of the project will depend on the close involvement of the younger generation who will be responsible for carrying the project forward.

This aspen project is part of the Highland Biodiversity Action Plan (BAP) Implementation Programme, financed by the European Union under the North and West Highland Leader Plus 2000-2006 Programmes, Scottish Natural Heritage and the Highland Council..

ASPEN PROJECT IN 2005-06

New aspen stands established in:

- **Glen Moriston**
- **Achnashellach Estate, Glen Carron**
- **Abriachan Community Forest, Loch Ness**

NEW EVIDENCE OF LYNX IN MEDIEVAL BRITAIN

By Dan Puplett

A recent study has brought important insights into the history of the Eurasian lynx in Britain. It was once thought that the lynx became extinct here over 4,000 years ago, as a result of natural climatic change. However, subsequent studies have brought the extinction date forward. Most recently, scientists have used radiocarbon dating to age lynx bones found in a cave in north Yorkshire. The youngest of these are thought to be from around 1,500 years ago, bringing the extinction date into medieval times. This is significant, as it strongly suggests that human factors such as hunting, deforestation and declining prey populations caused its extinction in Britain.

This new evidence has even been of interest to linguists. A 7th century lullaby in the ancient language, Cumbric, contains a list of animals killed by a hunter. There had been some uncertainty about the identity of one of the animals in the poem, and the lynx was generally dismissed as a candidate, as it was thought to have been long-extinct by the 7th century. But these findings make it much more feasible that the animal being referred to, *llewyn*, was in fact a lynx as some scholars had thought.

The lynx is the largest of northern Europe's two feline species (the other is the wild cat), but weighing around 20 kg it is harmless to humans. It is very much a woodland animal and its main prey is the roe deer, although young red deer, the introduced sika deer and foxes also feature in its diet.

Under the EU Habitats and Species Directive, member states including the UK are obliged to investigate the desirability of restoring native species that have been wiped out by humans. Successful re-introductions have already taken place in several parts of Europe, including France and Switzerland. With plenty of prey, and increasing habitat, there is a strong case for such an investigation in Scotland.

Reference:

*Hetherington, D. A., Lord, T. C. and Jacobi, R. M. (2005). New evidence for the occurrence of Eurasian lynx (*Lynx lynx*) in medieval Britain. Journal of Quaternary Science, Vol 21, 3-8. ISSN 0267-8179.*

The Forest Frontline

By Ian Bailey

A Coordinator's Winter Work

When I started this job, several of my friends asked what I'd be doing in the winter, when there aren't any Work Weeks. “Organising next year's,” was my reply. It's my job to make each season of Work Weeks better and more productive than the last. The quality of the volunteers' experience is really important to us and the feedback form that each volunteer is asked to fill in at the end of their Work Week is an important tool for us to see what's working and what isn't. Some of this information is practical - for example, it has spurred me on to find new accommodation for the Glen Moriston Work Weeks and to invest in some better-quality tools, particularly saws and loppers.

Other hard facts help us with our funding; information on how much money volunteers spend locally is important for the economic benefits that funders such as Scottish Natural Heritage (SNH) want to see from their support for the Work Weeks, support which is vitally important for us. Another piece of useful information is the age of our volunteers, which helps focus our advertising spend and informs thinking about how to draw in new volunteers. On last autumn's weeks, 75 volunteers were prepared to confess their age and the average was 39.

Some of the information we gather is very subjective, such as answers to questions like, “How inspiring was the week? How did you find the attunements and sharings?” We are explicit in our concern for the personal benefits that derive from participating in Work Weeks - it's the kind of outcome that's highly valuable, but difficult to measure. Most of our volunteers have a great time, although occasionally some don't. We're a small organisation and we really are happy to hear about your experiences! Your feedback counts!

Like everyone, I find it's good to get my hands dirty and remind myself what the practical side of Trees for Life's all about. Joining in with some of Dan's aspen project activities has been as good a reason as any to get into the glens for a day or two. In late November, with the day length shrinking alarmingly, Dan and I headed into Affric to check on the progress of some planted trees. It was the first really cold weather of the winter, with a scattering of snow and the bogs encrusted with ice. There just wasn't enough daylight and soon we were counting trees by head torch before staying the night at Plodda!

The next day we set off to do some new aspen planting in an exclosure on the Achnashellach Estate on the south shore of Loch Dughaill in Glen Carron, almost opposite Achnashellach station. The glen looked astonishing with a thick layer of hoar frost on top of snow that had previously fallen. We took the van as far as we could, then walked along the braided course of the River Carron; where the river broadens, banks of stones divide it into a pattern of channels running over shoals of gravel. We disturbed a huge bird - dirty brown with a white tail, it could only be a sea eagle, no doubt exploiting the scavenging opportunities provided by the shallow water.

The excitement of seeing the eagle definitely helped us up to the planting sites on the dauntingly steep and rather slippery hillside, not easy to negotiate with a spade, a bag of trees and a big flask of tea. Seeing the little aspens liberated into the wild was a great feeling - as was enjoying the great view of the Achnashellach hills in the failing light. A harvesting machine was still busy in the plantation on the opposite hillside as we made our way back to the van. Yellow torchlight would have seemed intrusive amidst this landscape of silver, blue and black but just as it seemed we might need some light to find the van, there were our footprints in the frost and snow to lead us back. A great winter day at the office to tell my friends about!

Ian planting an aspen on the Achnashellach Estate.
Photo by Dan Puplett

By Dan Puplett

Aspen Project Update

Aspen trees on Dundreggan

Since last summer, the Aspen Project has focussed mainly on Glen Moriston. We have found several new stands on the Dundreggan Estate, a number of which are on south-facing crags, a type of site where they frequently occur. Why are so many of the stands found in such locations? There are a number of theories, and the south-facing part seems straightforward - the extra sun makes a considerable difference to growth rate and health. Even so, further north, in Strathconon, many are found on north-facing slopes. It has been suggested that rocky slopes provides better drainage but we have also found them in fairly low-lying, wet sites.

The best explanation is that aspen are something of a delicacy to deer, and so are especially vulnerable to overgrazing. Rocky slopes and gullies are less accessible to deer, enabling stands of this tree to survive in isolation when more exposed stands in the vicinity may have long since perished.

We are also planning to create a large area of aspen on Dundreggan, as larger stands generally support a greater diversity of associated species. For example, the full community of deadwood-dependent aspen insects needs a minimum area of around 4.5 hectares of aspen, which can be interspersed with other trees. It will be interesting in the long term to see how a woodland of this kind might develop, and what species of fungi, insects, lichens etc will colonise it. This spring we have been collecting a lot of aspen roots from the area, which will be grown on at Plodda Lodge, for planting out next year.

Last autumn we erected and planted some more small aspen fences down by the River Moriston. These were on a slow, winding stretch of the river that at some point in the future would make ideal habitat for the European beaver, which we hope will one day be restored to Scotland. Beavers have a strong preference for aspen as a winter food source, and by boosting the aspen population near the river, the area should become even better potential beaver habitat.

Further north, in Glen Carron, Ian Bailey and I planted 60 aspens to enhance a private Woodland Grant Scheme, while in Glen Affric, I have been surveying all the aspen stands we have planted, to see how well they are doing. The majority of the trees have survived, but there have been some losses. From these, we can get a clearer picture of what kinds of sites are best to plant in. Although we haven't yet had a scientific study into this (any offers welcome!), our initial observations suggest that the sunnier sites are much more successful. In addition, it appears that trees in areas of bracken are prone to being swamped. However, those that do get away grow exceptionally well, probably because of the better soils which the presence of the bracken signifies. By knocking the bracken back at these sites for a few years, it is likely that the aspen in these areas will really thrive.

Each spring aspen roots are collected - here by a participant in our Aspen Propagation Seminar in 2004 - for propagation at Plodda Lodge.

Dundreggan Estate purchase update

By Alan Watson Featherstone

Under the agreement we've signed to purchase Dundreggan we are paying £1.3 million to take title to most of the estate in late April/early May. We then have an option to acquire the rest of the estate in January next year for a further payment of £350,000. Thanks to all the support we've received, we have enough funding for the first stage of the purchase, and also have a pledge of £5,000 for the second phase.

The appeal we ran with our last newsletter, for the purchase of the Estate, was our most ambitious ever, and it has been very successful in bringing in £42,315 to date from our members and supporters. We're especially grateful to the Founders, who have given £200 or more each, and the Champions, who have donated £500 or more each. Further support totalling £11,180 has come as a result of inserting our fundraising leaflet in magazines such as The Ecologist, Reforesting Scotland and Permaculture.

Birches and junipers on Dundreggan on a sunny day in March

We're very grateful for the wonderful donations we've received from so many people, and especially for the exceptional generosity of a few key individuals. Every contribution, no matter its size, has helped us reach our target for the first part of the purchase!

Now, we're preparing for the new step of becoming landowners of a substantial tract of land, and all the responsibilities that entails. We've begun the process of planning how we'll go about restoring the forest on Dundreggan, and this spring we've been collecting aspen roots, willow cuttings and Scots pine seed for propagating trees to be planted out on the estate. In the autumn we'll be doing further seed collections, and we will also be running some volunteer Work Weeks at Dundreggan - details of these will be posted on our web site in due course.

We're also planning a press conference to publicly announce the purchase and catalyse fundraising for phase 2, and a special celebratory event at Dundreggan itself. All the project Champions are warmly invited to attend the celebration, and we'll be sending out information about that in the coming weeks.

The next edition of *Caledonia Wild!* will include an extensive feature about Dundreggan and our plans for the restoration of the forest there. In the meantime, we'd like to express our sincere thanks to everyone who has made a donation towards the purchase - thank you so much!

Champions List:

(Donations of £500 or more each)

AJ & JJ Martindale Foundation
Alison Ryan
Alistair Findlater/Tycom
Andrew Tree
Andrew Barrs
Andy Rees
Angus & Isobel McBay
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Founders List:

(Donations of £200 or more each)

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Roger Doig
Rose Adams & Family
Sara Meaker
Sheila Bell
Shelley Latham
Tree Spirit
Victoria Woods

Ecological Features of

PARAS

By Dan

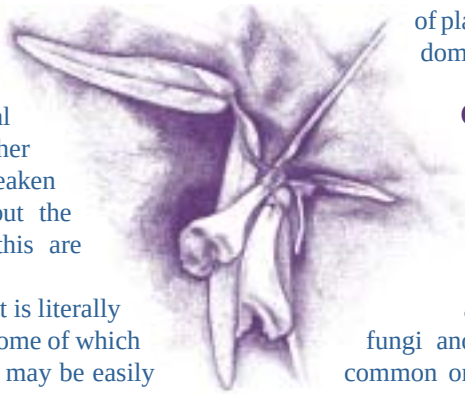
Right: *The aspen bracket fungus (*Phellinus tremulae*) on an aspen tree on Dundreggan.*

Food, in whatever form, is essential for the survival of living things. Millions of years of evolution have resulted in a myriad of strategies for obtaining food, and these different interactions are part of the glue that binds ecosystems together.

Some feeding strategies are more familiar: carnivores are animals (and plants) that eat other animals, while herbivores feed on plants. Then there are the different kinds of symbiotic relationship which involve more close and complex interactions. Mutualistic relationships are a partnership: each of the life-forms involved benefits the other in a 'win-win' situation. Bees pollinating flowers are an example. (Slightly confusingly, we commonly use the word 'symbiotic' to mean just 'mutualistic'). Commensalism is when one organism 'hitches a ride' on another, or uses it as a home, but causes no obvious harm. An example would be mosses living on the bark of a tree. Now enter the bizarre world of parasitism.

A parasite is a living thing that gets food from another organism, harming, but not killing it. Its feeding habits are known as parasitism. More than half of the Earth's species are parasites while virtually every species may play the host.

Parasites come in many shapes and sizes, and include viruses and bacteria, various worms, plants, fungi, insects, and even birds and mammals. They have a huge effect on living things and their populations, and are a major cause of disease in humans and other organisms. As we will see below, taking essential nutrients from another organism can cause it to weaken and affect its fertility, but the wider consequences of this are sometimes unexpected.



Common cow-wheat

The Caledonian Forest is literally crawling with parasites - some of which are invisible, while others may be easily seen - or felt! There are some fascinating examples of more well-studied species that can help us glimpse their role in our native forest ecosystems.

Below: *The cauliflower fungus (*Sparassis crispa*) is a parasite which grows on the roots of Scots pines.*

Fungi

Fungi are virtually everywhere, and many species are parasitic. Some of the more obvious ones are those found in trees, and form a variety of 'bracket' fungal bodies. A good example is the aspen bracket fungus (*Phellinus tremulae*). Unlike most parasites, a lot of the bracket fungi kill their host tree. But these fungi indirectly benefit other species by creating the dead wood habitat (see *Caledonia Wild!* Spring 2003) required by rare invertebrates such as the aspen hoverfly (*Hammerschmidtia ferruginea*).

Parasitic plants

Even some plants have a darker, parasitic side. Common cow-wheat (*Melampyrum pratense*) is semi-parasitic on the roots of a number of plants including blaeberry (*Vaccinium myrtillus*), while lousewort (*Pedicularis sylvatica*) and yellow rattle (*Rhinanthus minor*) are found on grasses. Parasitic plants can increase the diversity of plant species in an area by keeping more dominant species in check.

Galls

Galls on a plant are a sign that a parasite has been at work. These abnormal growths are a response to certain parasites invading the plant's tissues. There are many gall-inducing parasites: fungi and gall wasps are among the more common ones. A wasp, for instance, causes a plant to produce a gall in order to create a source of food and shelter in which its larvae can develop. The plant suffers wasted energy and nutrients that go into the extra growth.

Some galls, such as oak apples (caused by the wasp *Biorhiza pallida*), can support communities of other insects which in turn can be food for birds. Look into the canopy of a birch trees (*Betula spp.*) and you may see dense bunches of twigs which look a lot like birds' nests. These are the result of infection by the parasitic witches' broom fungus (*Taphrina betulina*).

F THE CALEDONIAN FOREST

SITISM

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Bloodsuckers

Blood is a rich source of nutrients, and there are a number of bloodsucking, or haematophagous, invertebrates. Certain species of ticks (*Ixodes ricinus*) and midges (*Culicoides impunctatus*) are among the most feared parasites in Scotland! The females of these species use their piercing mouthparts to feed on the blood of warm-blooded animals. They do this to get the protein they need to nourish the eggs they are carrying.

It may be a small comfort when being bitten by midges to know that the larvae of certain species of red mite are themselves parasites on adult midges. This illustrates clearly that being a parasite doesn't make you immune from parasitism: most parasites have their own parasites to deal with!

Invaders, usurpers and thieves

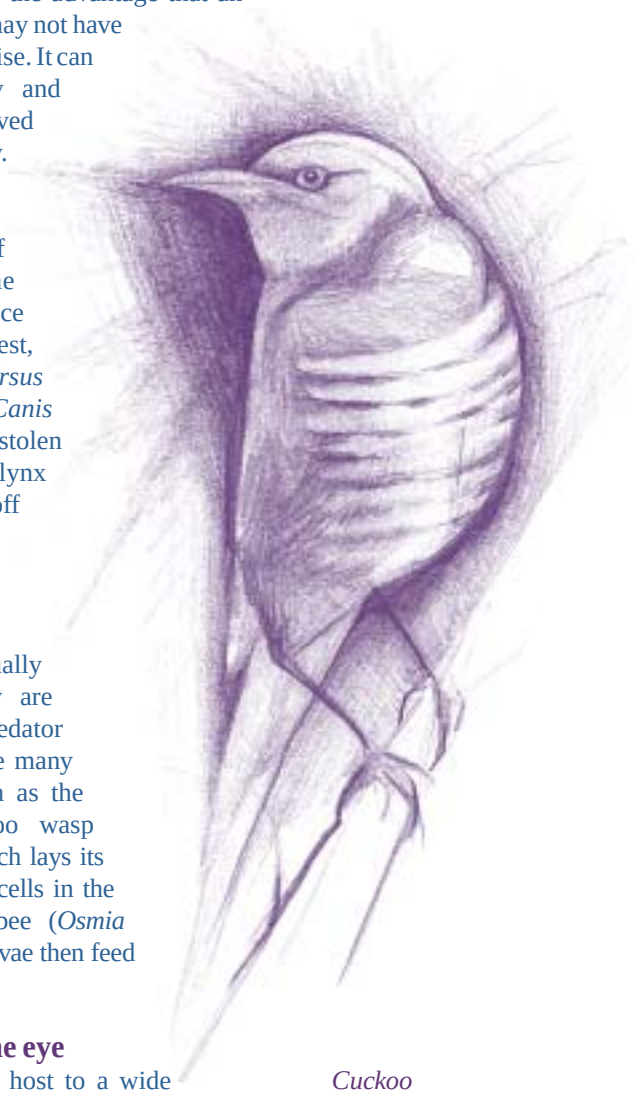
Parasitism doesn't always involve feeding directly from a host: some species take advantage of a host's food or resources. The cuckoo (*Cuculus canorus*) is well-known for its habit of laying its eggs in the nests of smaller birds, a strategy known as brood parasitism. Meadow pipits (*Anthus pratensis*) and dunnocks (*Prunella modularis*) are among the most regular victims of this ruse.

Remarkably, individual strains of cuckoo specialise in parasitising a particular species of bird. They lay an egg of a colour that matches the eggs of their host, thus disguising it. The young cuckoo then grows much larger than its unfortunate hosts. It also pushes the young of the host out of the nest.

One of the wood ant species, the slave-making ant (*Formica sanguinea*) is a social parasite. After entering the nest of smaller ant species such as *Formica fusca*, the queen slave-maker kills the host queen and 'enslaves' the hatching workers to care for her own offspring.

Food theft, or kleptoparasitism, is when an animal gets its food by stealing prey killed by another animal. Food theft has the advantage that an animal can eat prey it may not have been able to kill otherwise. It can also save the energy and potential danger involved in tackling the prey. Members of the crow family often use this strategy, as do birds of prey. Among the mammals that were once in the Caledonian Forest, the brown bear (*Ursus arctos*) and the wolf (*Canis lupus*) would also have stolen kills. Wolves can drive lynx (*Lynx lynx*) or raptors off a kill, and bears are able to see off any other predator!

Parasitoids are parasites that eventually kill their host. They are somewhere between predator and parasite. There are many parasitoid wasps, such as the ruby-tailed, or cuckoo wasp (*Chrysura hirsuta*) which lays its eggs within the brood cells in the nests of the mason bee (*Osmia uncinata*). The wasp larvae then feed on the bee larvae.



Cuckoo

More than meets the eye

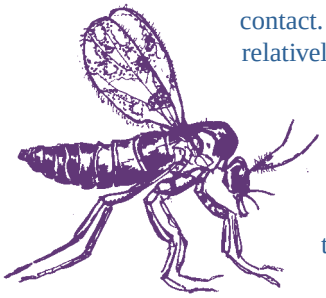
One animal may be a host to a wide range of parasites. As is also the case with mutualistic relationships (see *Caledonia Wild!* Winter 2005), when we see an individual animal, we are actually looking at a whole community of life-forms. For example, red deer (*Cervus elaphus*) parasites have been fairly well-studied, and the deer serves as a good illustration of the range of parasites that can inhabit one animal.

Among the internal or endoparasites are liver flukes (*Fasciola hepatica*), a variety of worms, and microscopic gut parasites. External or ectoparasites include ticks, deer keds (*Lipoptena cervi*) and the larvae of the nasal botfly (*Cephenemyia auribarbis*).

Transmission

From viruses to ticks, parasites have a wide range of strategies for spreading from host to host. Lice, for example, usually transfer when two hosts make

Above left:
Gall growth caused by the witches broom fungus on a silver birch tree in Glen Affric.



*The notorious Highland biting midge (*Culicoides impunctatus*) is the parasite most commonly encountered in the Caledonian Forest.* ILLUSTRATION BY CARAGH MCAULEY.

contact. Fleas crawl and leap for relatively long distances while ticks crawl to the top of a piece of vegetation, such as a bracken stem, and wait for a passing host to brush by. Rusts and mildews are transmitted by spores, and some parasitic fungi spread when plants' roots make contact.

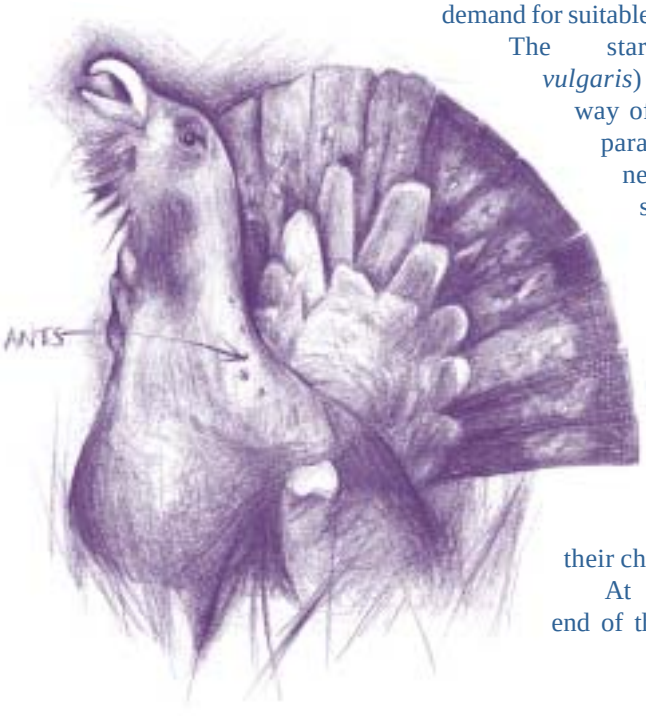
Midges locate their hosts by detecting chemical signals, particularly carbon dioxide, in their hosts' breath. *Borrelia burgdorferi*, the bacterium responsible for Lyme disease, lives in the gut of some ticks, and can be passed into another organism when the tick bites a host for a meal of blood. This is an example of how a parasite can use another parasite as a vector: a means of travelling between, and infecting, new hosts.

Defences against parasites

A host will usually try to repel or remove parasites where possible, and there are a multitude of ways in which this can be achieved. Mammals groom, and birds preen, activities which, among other functions, remove unwelcome guests such as ticks. Red deer use mud wallows to help get rid of ectoparasites such as deer keds, and ticks. A number of birds, including the capercaillie (*Tetrao urogallus*) rid themselves of ectoparasites by 'anting'. This is when a bird allows ants to crawl through its feathers. The ants spray their defensive formic acid, which helps to kill the bird's parasites.

Another defence is through avoidance. Fleas parasitise a wide range of warm-blooded animals. Certain species of flea infest the nests of crested tits (*Parus cristatus*). This forces the birds to change nesting sites every year, increasing the demand for suitable sites.

Cock capercaillie with ants



The starling (*Sturnus vulgaris*) has an intriguing way of coping with the parasites that prey on nestlings. The male starling collects aromatic plants to weave into the nest. The aromatic oils in the plants boost the young birds' resistance to parasites and increase their chances of survival.

At the microscopic end of the scale, some of the most dangerous parasites - viruses and bacteria - are fought directly by the host's immune system.

The influence of parasites

Parasites have a powerful and complex influence on the populations of living things in the forest ecosystem. They play a key role in regulating extreme swings in populations. By reducing fertility they also prevent certain species from becoming too plentiful, thus giving other organisms a chance to thrive.

Male chaffinch in Glen Affric.

The tendency for ecosystems to naturally evolve towards diversity is illustrated by the fact that monocultures created by humans (such as fields of wheat, or conifer plantations) are often prone to parasitic disease, and it takes a great deal of input to keep parasites at bay. Diverse ecosystems are much less vulnerable to devastating epidemics. The presence of parasites, over time, promotes biodiversity.

Breeding chaffinches (*Fringilla coelebs*) illustrate the effect parasites have on natural selection. The fewer parasites a male has, the brighter the pigments in his feathers. Why does this matter? Brighter coloured males are more attractive to females, so his genes for fitness and immunity are passed on to the next generation. This shows that parasites can actually improve the long-term health of a population.

Parasitism also influences the movements of animals. Midges, in particular, force red deer onto higher ground (as well as keeping tourists at bay!), and this has an effect on grazing patterns.

Parasites rarely have the same public appeal as more glamorous species. But while by definition parasitism harms individual organisms, in a larger context these fascinating interactions play an indispensable role in promoting health and diversity in the forest.

Mythology and Folklore of the Bear

By Dan Puplett

Bear folklore is widespread, especially in the far northern hemisphere. It is not surprising that this awesome beast was one of the first animals to be revered by our ancestors. From as far back as the Palaeolithic (around 50,000 years ago) there is evidence of a bear cult in which the bear was seen as lord of the animals, a god, and even the ancestor of humans. Various species of bear played a central role in many shamanic practices of the north, and brown bears were part of our native forests as recently as the 10th century, when hunting and habitat loss drove them to extinction.

The Celts venerated the bear goddess, Artio - like a mother bear she was a fiercely protective influence. The bear god Artaois is closely linked to the warrior-king, Arthur; with his legendary strength and fighting prowess, Arthur's name and emblem both represent this animal. Celtic families would often have their own animal totem, a tradition that is still evident in the family name McMahon, which means 'son(s) of the bear'.

Viking warriors were famous for working themselves into an insane battle frenzy (it has been suggested that the psychotropic fly agaric mushroom was sometimes used). They invoked the bear spirit, at times even donning a bear skin, to imbue them with superhuman strength and fury. These were the Berserkers, their name being derived from a Norse word meaning 'bear shirt'.

In Greek legend, Zeus fell in love with the huntress Callisto, and she bore him a son named Arcas. In a fit of jealous rage, Zeus's wife turned Callisto into a bear. Time passed, and one day Arcas was out hunting. How was he to know that the bear he was stalking was his own mother?! On seeing that Callisto's life was in danger, Zeus whisked her up into the night sky out of harm's way. She can still be seen in the constellation Ursa Major, the Great Bear. (In another version, Arcas is also sent skywards, and becomes the adjacent Ursa Minor, the Little Bear.) The Big Dipper, or Plough, is one of the more familiar groups of stars within this constellation. Interestingly, the Druidic name for this group was Arthur's Plough, and the constellation was also seen as a bear in Native American and Hebrew tradition.

In Native American folklore there are many tales about bears. It is highly respected as the 'keeper of dreams', and 'the keeper of medicine', and is one of the most powerful totems. (Bears hibernate, giving them associations with the world of dreams.)

Human fascination with this animal has not always worked in the bear's favour. The bear appears in the names of many English pubs, and this is thought to be a hangover from the days bear-baiting - medieval 'entertainment' which involved tying a bear to a post and setting dogs on it. The Caledonian bear was said to be so fierce that it was favoured by the Romans who used them in their amphitheatres, for similar purposes. In 1902, U.S. President Theodore ('Teddy') Roosevelt was on a hunting trip along the Mississippi, but showed mercy to an old bear he could have easily taken as a trophy. The story of this act spread quickly, and the Teddy Bear was born.

Bears still make an appearance in recent literature. Beorn in Tolkien's The Hobbit was a man who could take the shape of a bear, echoing ancient shamanic practices. And who could forget wise old Baloo, the teacher of the wolf cubs from Kipling's Jungle Book, Paddington Bear (think marmalade sandwiches and hard stares), or Winnie the Pooh? More recently, Benjamin Hoff's Tao of Pooh used this unassuming bear to illustrate the Taoist principles of modesty, simplicity, and intuitive, practical wisdom. In Phillip Pullman's Northern Lights, the young heroine, Lyra, befriends a fierce and loyal polar bear king named Iorek Byrnison, helping him to regain his throne.

Scots pines and bracken on the north shore of Loch Affric. This is one of the areas fenced for natural regeneration during Malcolm's tenure as District Manager.

Most of the forest restoration work Trees for Life has carried out so far has been in Glen Affric and on other Forestry Commission sites within the Commission's Fort Augustus Forest District. Central to the success of that work has been the excellent working partnership we've developed with Malcolm Wield, the District Manager since 1993. As he prepares now for a new role in the Commission, we asked Malcolm to write about what has been achieved during the past 13 years.

Moving On

By Malcolm Wield

Malcolm Wield. PHOTO BY ASHLEY WOODHOUSE.

In February, Kenneth and I from the Fort August Forest District held one of our regular liaison meetings with Trees for Life. On the Agenda was a whole list of items where we share a common interest. So much in fact, that we became quite excited at the potential of some of the ideas that materialised within our discussion.

However, I couldn't help reflecting that this would be my final District liaison meeting with Trees for Life. And, amazingly, virtually 13 years to the day since the very first meeting I attended at Findhorn back in 1993! To me, it doesn't seem like I have been the Forest District Manager for very long at all, but it is time to move on now. Time for reflection too. Has much actually been achieved during these 13 years?

In 1993, native woodland restoration within the Forestry Commission (FC) had been around for many years, but had just taken a whole quantum leap forward, following the World and European Summits on Biodiversity in Rio and Helsinki. The launch of 'The Native Pinewood Initiative' in 1992 had set ambitious targets for restoring native pinewoods by doubling their extent within 10 years.

This was a precursor to the Pinewood Habitat Action Plan, the very first UK Habitat Action Plan for woodlands, which gave a firm mandate for wholesale environmental restoration of one of the most depleted habitats in the UK. This was not expected to be without cost, yet the publication "A Future for Forest Enterprise Native Pinewoods" bravely said "The financial returns may be small. The environmental... returns will be priceless".

Pretty soon, we had brought together under one cover all the previous different management plans for Glen Affric, 7 or 8 in total. Along the way, we had spoken to just about everyone we could think of and key to the entire discussion and consultation process was our relationship with Trees for Life, which had existed since at least 1989.

We found that despite such a solid environmental message, not everyone with an association with Glen Affric was comfortable with the rate of change our plans might represent, especially the removal of planted non-native trees such as Sitka spruce and lodgepole pine. Part of our task was to allow genuine fears to be exorcised and we found that demonstration through putting into practice what we had talked about was our most persuasive argument. Gradually the environmental importance of saving a unique and endangered habitat type and the quiet seriousness with which we approached our task seemed to win through.

With the help of major funding from the European LIFE programme and the Millennium Forest for Scotland Trust, we were able to take out a total of 1,834 hectares of these heavily-shading non-native species. Those that remain today occupy a lower priority category in less critical places, but are still undesirable and will, over time, be removed entirely.

Fencing caused similar dilemmas. Why on earth would we be putting up new fences in some places and be taking them down by the mile in others? To ask for consideration for birds like capercaillie and black grouse seemed such poor justification for all the effort and expense. And yet, hard work has now eliminated virtually all fences inside woodland areas, lower deer numbers have produced deer with robust, healthy body weights and perimeter fences remain our prime safeguard against mass movement of more deer in to the woods from neighbouring ground. It is a source of optimism for everyone concerned that black grouse populations in Glen Affric seem to be bucking the national trend and are now increasing in numbers.

All the time this revolution in restoration activity was happening, our relationship with Trees for Life matured and developed. Every year we have hosted Volunteer Work Weeks and Trees for Life have planted new trees in areas where the seed source has been completely wiped out.

Aspen propagation has been successfully established in the TFL nursery and the enhancement in Affric of this species in particular is a most welcome one. We have carried out many ecological surveys of a whole range of habitats and species, including monitoring the recovery of the woodlands themselves after restoration work.

We have extended this collaborative effort to other places too and TFL have been active in FC native woodlands in Glen Moriston, at Achnashellach, at Grudie and at Kinloch on Skye. Over the years we have had a few VIP visits, but none more enjoyable than that of Muriel Gray to plant the half-millionth Trees for Life tree in Glen Affric last year - a fantastic achievement.

Of all the years, 2001 sticks out as being special. By

then the sister glens of Cannich, Cougie and Guisachan had been incorporated into the same management as Affric. We had also developed a deep liaison with the local community, who were part of the local management group together with Scottish Natural Heritage (SNH). SNH had steadfastly supported our restoration proposals from the outset and in 2001 they gave the 14,536 hectare extended area the accolade of National Nature Reserve, with Approved Body status being given to the FC for its management. This is quite a result and one that we continue to value very highly.

One or two stories have struck me personally as particularly human, and even have a suggestion of amusement in their mild misfortune. Like the sheepishly apologetic phone call from a friend who confessed that their vehicle stuck inside the Reserve at the weekend had more to do with amorous intentions than scientific research! Or the brave driver of the minibus that attempted the ford at Athnamulloch only to find Highland burns are sometimes very much deeper than they were the last time they drove through, when the tyres barely got wet!

Other events have been more poignant, like Finlay MacRae (who carried out the first restoration work in Affric in the 1960s) playing a distant, haunting lament on the bagpipes whilst the sad family of Robert Steven scattered his ashes at the beloved spot his father, Professor Harry Steven (author of the classic textbook, 'The Native Pinewoods of Scotland'), had shown him many years before.

Visitors have enjoyed Affric on a daily basis all the time I have been here and it is right and proper that they should continue to. Yet the spectre of an overwhelming influx of mass tourists has never materialised. Why? Well, even today, Affric remains a little bit remote and off the beaten track and this works very well in its favour in terms of visitor pressure. Visitor numbers peaked a number of years ago at almost 70,000, before returning to a more 'normal' 42,000 per year.

It remains a priority for us to provide a high quality experience for visitors, while giving them every help to avoid spoiling what they have come to see and feel. So, we are continuing to explore ways of keeping signs of our visitor provision to the minimum. For example, this year will see the replacement of the 'summer only' toilets with a year round, environmental composting unit.

There is a also a clear social desire to address climate change through support for more trees and woodlands. In 2006, we will see the open ground within the Reserve surveyed to establish any further woodland potential, all proposed within our management plan. We already plan to go ahead to plant ground in Coire an Sneachda (the Snowy Corrie), probably in next year's planting season. Maybe it is Déjà vu but I'm sure I remember discussing the prospects for this area in that first Trees for Life meeting in 1993!

So, altogether, quite a contrast from the starting point. A lot has been achieved, yet there is much still to play for. These days, everyone is much more informed over the key issues and progress is much more assured.

It has been my privilege to work in such a place as Glen Affric. It has been a similar privilege to meet the people who I have got to know whilst engaged in what can only be described as a very enjoyable labour of love. I wish my successor, Steve Smith, all the very best. I am sure that Steve will enthusiastically embrace the FC's flagship site and take its recovery through to a still higher plane.

And to Trees for Life, I would both congratulate you for a job well done so far and wish you all the greatest success for the future. I am sure you will continue to go from strength to strength and I look forward to seeing the native woods in the restoration area flourish as a result. It has been a pleasure working with you all. Good luck!

Left:
Scots pines in fog at Coille Ruigh na Cuileige, the site of our first fencing project with the Forestry Commission in Glen Affric.

Below:
Malcolm with Alan Watson Featherstone in Glen Affric, at the time of the planting of our quarter-millionth tree there, in June 1999.
PHOTO BY JENNIE MARTIN.

Helping the Forest Flourish in 2006

By Mandeigh Wells

2006 has certainly got off to a flying start, and I find myself inspired daily by the passion and dedication of the Trees for Life staff and the goodwill of all who support our vision!

Tree-mendous support from Standard Life!

Above:
Planting the first of Standard Life's trees in Glen Affric. Left to right: Malcolm Wield of Forestry Commission Scotland, Andrew Marshall-Roberts of Standard Life, and Alan Watson Featherstone.
PHOTO BY GRAHAM FLACK.

Last year, Standard Life's Treemail promotion was launched as part of their demutualisation process. With offices worldwide and a strong commitment to social responsibility, we're very excited to be working with Standard Life and grateful for their support. The Treemail scheme to buy trees for email addresses reached its 100,000 target and that meant a fantastic donation of £100,000 to Trees for Life - our biggest single company donation to date.

We definitely couldn't let this pass without celebration and invited the head of corporate responsibility, Andrew Marshall-Roberts, up to Glen Affric to see our work in action and to plant the first of Standard Life's 100,000 trees in honour of their customers. A visit to the Glen in early January ensured that the weather threw everything at us, with horizontal sleet, gale force winds and a track that resembled an ice rink. We did make it to the planting site though and even managed to get a few photos! We would like to extend our heartfelt thanks to Standard Life and to Andrew Marshall-Roberts who took time out of his very busy schedule to plant the first tree.

Right:
Andrew Marshall-Roberts of Standard Life presenting Alan Watson Featherstone with the cheque for £100,000, in front of a photograph of Glen Affric in autumn.
PHOTO BY MANDEIGH WELLS.

More company partnerships

Standard Life's promotion has really boosted the profile of Trees for Life, with several companies getting in touch to find out how they can work in partnership with us, including Standard Life's sister company, Standard Life Bank who are running a similar 'trees for emails' scheme. BizzEnergy, the largest independent supplier of eco -friendly electricity to businesses in the UK has also come on board with Trees for Life. This year they are partnering with us to plant trees as an incentive for their customers to switch to their green energy tariff. In March, Nina Andrews, BizzEnergy's sales compliance officer, visited the Meallan exclosure in Glen Affric to view the results of our work first hand and see how our donations are turned into real results.

Not all companies have offered to plant trees for their customers though. Boehringer Ingelheim was voted 19th in The Sunday Times '100 Best Companies to Work For in 2005'. To celebrate they chose to plant a tree for each of their 1,000 staff members. We're very happy that they chose to make the Caledonian Forest a part of their celebration.

We're pleased to welcome Book Seller Supplies (www.booksfortrees.com) who are working in a new partnership with TFL. They're making a regular donation based on their sales of books and packaging supplies. They're already involved in recycling second hand books and by planting trees they are helping the environment twice over.

Dan Puplett with Nina Andrews of BizzEnergy during her visit to Glen Affric in March. PHOTO BY MANDEIGH WELLS.

There's a variety of interesting a creative ways that companies and Trees for Life can work together. Today's consumers are very concerned about corporate social and environmental responsibility and we are keen to acknowledge such companies' efforts too. Partnering Trees for Life will boost your company's eco-credentials and working out a scheme that suits your needs is something we are very happy to do. It's a win-win situation with the biggest benefit going to the Caledonian Forest. If your company or workplace is inspired to become a partner of Trees for Life, let's talk! Call me on 01309 691292.

Weaving a new web

Richard Albutt has single-handedly developed and managed the Trees for Life website for three years now and he's done a fantastic job. Our website features very highly in the rankings of the main search engines. But sadly, Richard has decided it's time for him to retire as our Webmaster. Taking over the reins will be Trees for Life member, Helen Bennett. So a big thank you to Richard for all his hard work and to Helen for taking up the challenge!

The Trees for Life website is currently being redesigned and there have been a number of new pages added to the site. There's now information on Leaving a Legacy as well as the new Memorial Grove Pages. These are set up in a similar way to the Wedding Groves and enable people to 'group funds' that provide a lasting memorial woodland.

Although none of us particularly want to spend time thinking about when we may no longer be here, leaving a Legacy to Trees for Life is a way of ensuring that the forest is taken care of for future generations. It also means that we

The redesigned Home Page on our web site.

are able to make plans for future projects knowing that the funding will be available. For more information on leaving a legacy to Trees for Life please see our new pages www.treesforlife.org.uk/legacy.htm or contact me on 01309 691292. Please consider leaving a legacy to Trees for Life and if you have already included us in your will please let us know. Thank you!

Wedding groves go down a Tree-t

Since our on-line Wedding Pages started last summer, 8 couples have taken Trees for Life to their hearts and opted for Trees instead of toasters as wedding gifts! Being natural romantics we are always delighted to hear from couples who are about to tie the knot and who want to make the Caledonian Forest a part of their wedding plans. A wedding grove is a long lasting gift and setting up a wedding page couldn't be easier, just email or phone us with the bride's and groom's names, the date of the big day, a contact telephone and address and of course a great colour photo of the happy couple. Then we'll do the rest. Your page will be on our web site within 10 days and your friends and family will be able to donate directly to your very own grove via our secure ordering facility.

Caledonian Challenge: 54 miles in 24 hours and 15,000 trees!

The State Street Caledonian Challenge is Scotland's top endurance fundraising event with around 1,500 participants. This year to celebrate their 10th Birthday, the Caledonian Challenge have joined with Trees for Life to plant 10 trees for each participant who raises over £500 in sponsorship. That's a fantastic 15,000 new trees for the forest! See www.caledonianchallenge.com for details of how to take part.

Regular Donations turn pounds into trees!

Just as trees need a regular supply of nutrients and water to grow, so too does Trees for Life need a steady flow of energy in the form of donations, to put our vision into practice. We're often asked by our supporters how they can make a regular donation so I'm enclosing a monthly donor form for you. All you have to do is fill out the direct debit details and send the form to us at the Freepost address.

Save the trees on DVD!

Our new DVD - why not order one today?

It's here! The Trees for Life 'Regenerating the Caledonian Forest' video is now available on DVD (PAL format). As a special offer, the DVD is available for the bargain price of £8.50 including postage, if you order quoting the code CWDVD. Usual price £10.00 + postage! Phone the office to order, Tel: 01309 691292

Wishes do come true

In the Winter 2005 edition of *Caledonia Wild!* we asked for walkie-talkies for use on our Work Weeks and we were delighted to receive a set from Pauline Young. Thanks Pauline!

Here's what's on our wish list now:

- A Subaru Forester or similar vehicle with a tow bar for Plodda Lodge.
- 2 x Garmin GPS Units, model 12XL, or equivalent 12 channel units.
- A licensed copy of Adobe Photoshop 7 (Mac and PC)
- Sponsorship for our next species profiles. These cost around £300 each to produce, and the next ones will be on the black slug, eared willow and wild boar.

If you can help by donating any of the above items or contributing to their purchase, please give us a call or you can make a general donation via our secure server online.

New Life Members

A huge thanks to: Andrea Barratt, Martin Hampton, Ben Cotton, Eileen Palmer, John Elliot, Karen Scrafton and Amber Nuttall all of whom have taken out life membership since November 2005.

Special Thanks & Appreciation

We are very grateful to the following Trusts, Foundations, organisations and individuals who have generously made substantial donations to us since November 2005:
Frognal Trust, Millichope Foundation, Hugh Fraser Foundation, Mitchell Trust, Manifold Trust, Robertson Trust, Tay Charitable Trust, Cheruby Trust, Raphael Trust, J. & J. R. Wilson Trust, Alan Evans Memorial Trust, Findhorn Foundation, Scottish Natural Heritage, Forestry Commission Scotland, Forum for the Future/Iain Watt, Masterfoods, The Caledonian Challenge, Standard Life, Standard Life Bank, Johnson Recycling, Natural Collection, Boehringer Ingelheim, the Order of Bards, Ovates and Druids, Shonagh Musgrave, Rob Pedley and Gerald Bradley.

Dundreggan Founders and Champions

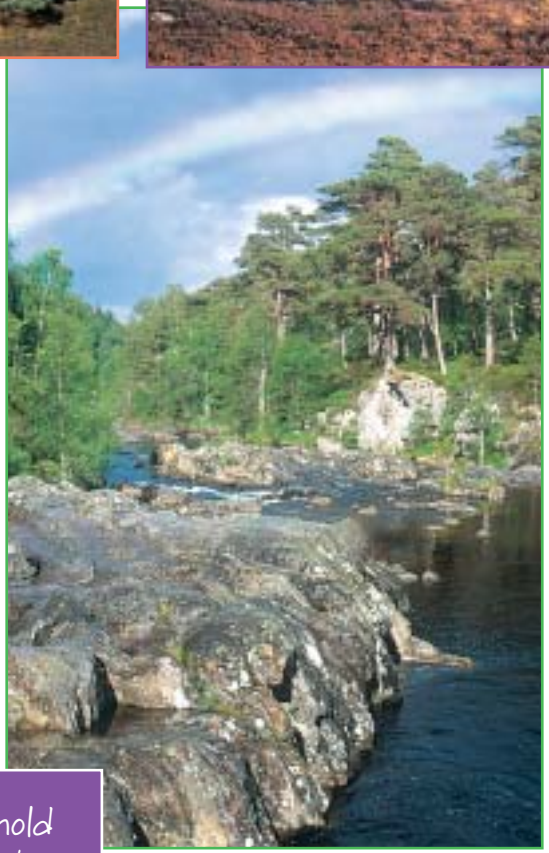
The appeal to buy Dundreggan Estate has been our most ambitious to date. Once again we have been touched by the support given to us and would like to say a heartfelt thanks to everyone who has donated so far.

Rainbows in the Forest

With its changeable weather, the Caledonian Forest often has 'rainbow days', when these prismatic arcs appear in the sky again and again, due to the interplay of sun and rain.

*Rainbow over Scots pines (*Pinus sylvestris*) and birches in autumn in Glen Affric.*

Double rainbow over the Caledonian Forest on the south shore of Loch Beinn a'Mheadhoin in Glen Affric.



Rainbow beside a Scots pine in autumn, in Glen Strathfarrar National Nature Reserve.

Rainbow over Scots pines at Coille Ruigh na Cuileige in Glen Affric.

Rainbow over the Caledonian Forest and the Affric River, near Dog Falls in Glen Affric.

"My heart leaps when I behold
A rainbow in the sky."
William Wordsworth

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TREES FOR LIFE