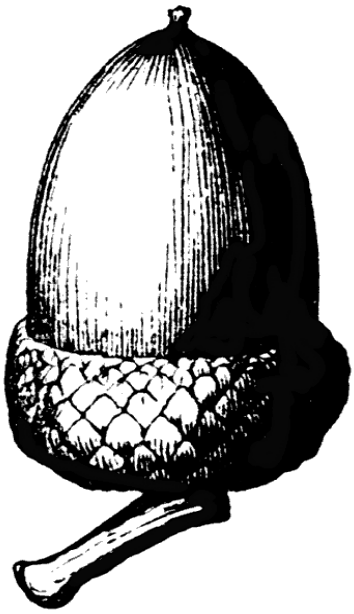
HERITAGE TREE NURSERY PROJECT

With Kerry Earth Education Project
Funded by The Heritage Council

PRIMARY SCHOOLS



TREE NURSERY PACK

Supported by Kerry County Council Heritage Office, KCC Environment Officer, Forest Service Officer and Ballyseedy Woods Action Group

An Chomhairle Oidhreachta
The Heritage Council

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About the Project

Welcome to the Nursery Schools 'Tree Nursery Pack' for teachers and students. This pack contains support material for schools who are involved with the Heritage Tree Nursery Schools Project.

In 2008, Kerry Earth Education Project received funding from The Heritage Council under the Local Heritage Scheme to do a Tree Nursery project with local schools/community groups using seed collected from Ballyseedy Woods, a local native mixed deciduous woodland. In 2009, funding was received from the Heritage Council to take the project into two more new schools and assist the previous groups in planting their trees back into Ballyseedy Woods and collecting more seed to continue their nursery. This year, 2010, the Heritage Council again granted funding for the project to be brought to **Sonairte** for them to take into local schools in Meath and Dublin.

The long-term idea behind the project is for children and adults involved to learn how easy and important it is to grow trees for future generations. This includes learning about basic botany, the variety of native trees in Ireland, the importance of native trees and hedges to our local environment and to the overall biodiversity of Ireland. The project also offers the opportunity to explore a nearby woodland and discover local heritage in the area. The project ties in with National Tree Day in October, National Tree Week in March, Heritage Week and Biodiversity Week in May.

Kerry Earth Education Project (KEEP) at Gortbrack Organic Farm is an environmental education company that works directly with schools, community groups and special needs groups in the development of sustainable ongoing organic garden and native habitat projects. KEEP has been providing practical environmental, organic and heritage education in County Kerry since 2000.

KEEP aims to give people in communities and students in schools the opportunity to develop a thorough knowledge of sustainable, organic and natural gardening, farming and living practices in both a practical and theoretical manner through the medium of environmental education.

We hope you enjoy the project and get a lot out of the tree pack, happy growing!

Setting up a Tree Nursery

Resource Sheet for Teachers

Step 1: Seed Collection

Organise a day trip to your local native woodland in the autumn (August onwards) and gather seeds with the children from healthy trees. Carry out a preliminary trip to assess the woodland for suitability and risk assessment. Bring leaf and seed ID sheets to identify the main trees and seeds. Discuss with the group why trees are important and why native trees are essential to Irelands biodiversity. Collect seed from the ground and from trees. Collect a few large bags of dead leaves from the woodland floor to use in the tree nursery. Take leaf and bark rubbings for a seed and leaf identification project with your class when you are back in school.

Step 2: Storing Seeds

Separate out each variety of seed and store in a container, box or bag (cloth, paper) with some autumn leaves from the woodland floor. Store the seeds carefully and keep moist until planting. Label the different types of seed, with their name, date of collection and location.

Step 3: Tree Nursery Bed

Build a small raised bed roughly 1m x 2m x 20cm in your school garden. Gather more fallen leaves to make your own leaf mould (leaf compost) or source leaf mould from elsewhere. Use leaf mould as top layer of bed (10-15cm), use well dug over soil as the underneath layer. The more leaf mould you have the better, you can start making your own by collecting leaves and putting them in tyres/containers with holes and letting them rot for at least a year. Plant seeds in rows according to type; seeds 3cm apart, rows 10cm apart, and cover with loose leaves on top to retain moisture. Make a rodent and bird proof screen for the top; use 5cm x 5cm wood for the frame and fine wire mesh (from a local hardware shop) tacked onto the frame and place on top of the bed, leaving no gaps. Alternatively use netting to cover the bed. Do not let the bed dry out.

Step 4: Stratifying Seeds

Some seeds won't germinate for 18 months to 2 years; these tend to be the seeds inside berries. Remove flesh from seed by rubbing in a sieve in bucket of water, clean thoroughly and scarify (see glossary). Store in damp sand in a biscuit tin (with a few holes in the bottom) and keep in a cool place. Check regularly so it doesn't dry out. Check seeds from around the 12 month mark onwards, at first signs of germination, plant out as for step 3. Alternatively plant in the tree nursery bed and label.

Step 5: Maintenance

Check for germination in late Spring. Identify and remove weeds. Ensure the soil is damp.

Step 6: Transplanting

Autumn is the best time to transplant your young tree seedlings. One year old seedlings (should be about 45 - 60cm in height) can be transplanted to a bed (plant about 20cm apart) or into pots (use recycled milk and juice cartons, as these biodegrade into the ground when planting into final position). Keep the trees well watered and clear of weeds. You can do this by putting a layer of wet cardboard as a mulch around the base of each tree.

Tree Seed Treatment

Resource Sheet for Teachers

The table is a guide but it also possible to simply plant all your collected seeds in the tree nursery bed and hope for the best!

TREE	TIME	WHAT TO DO
Alder (alder cone)	Sept-Oct	Dry green catkin, shake out, stratify until March
Ash (ash key)	Aug-Oct	Plant immediately if green, stratify if brown
Beech (beech masts)	Sept-Oct	Plant immediately or stratify for 6 months
Birch (birch catkin)	Aug-Nov	Dry green catkin, shake out, store dry until March
Blackthorn (sloe)	November	Stratify, 18 months
Cherry (fruit)	July-Aug	Plant immediately or stratify for 6 months
Crab Apple (crabs)	Oct	Extract seed and plant immediately
Elder (berry)	Sept-Oct	Squash and plant immediately
Elm (Wych, key)	June	Plant immediately after collection
Hazel (hazelnut)	Sept-Oct	Plant immediately
Hawthorn (haw)	Sept-Dec	Stratify, 18 months
Holly (berry)	Nov-Feb	Stratify, 18 months
Hornbeam (key)	Sept-Oct	Collect from tree, plant immediately
Oak (acorn)	Sept-Oct	Plant immediately, both Pendunculate and Sessile
Rowan (berry)	Aug-Sept	Stratify, 6 months
Yew (berry)	Sept-Nov	Stratify, 18 months

Conservation value of native trees:

TREE	INSECTS SUPPORTED	CONSERVATION VALUE
Alder	90	Early flowering, seeds good for birds and red squirrels
Ash	41	Light shade so good for ground flora, seeds good for birds and small mammals
Birch	229	Light shade so good for ground flora, seeds good for birds and red squirrels, good for fungi
Blackthorn	109	Early flowering, good nesting cover, berries good for birds
Cherry		Early flowering good for insects, fruit excellent for birds
Crab Apple	93	Early flowering, fruit good for insects and birds
Elder	19	Berries good for insects and birds
Elm	83	Early flowers important for insects, seeds good for squirrels
Hazel	73	Rich ground and lichen flora, nuts important food for mammals and birds
Hawthorn	20	Early flowering good for insects, berried food for birds and insects
Holly	7	Berries important food for thrushes, food plant of the holly blue butterfly
Oak	284	Excellent for birds, mammals, insects and flora
Rowan	28	Good for insects, berries important bird food
Yew	4	Berries good food for birds

Tree Nursery Calendar

What to do & When

September to December:

Go on a trip to your local woodlands with your class. Collect seeds, nuts and berries from as many trees as possible (some years will be good for certain seeds this is why it is important to collect seeds every year to ensure plant diversity). With your class, divide the seeds up into their different types of seed, those for 'direct seeding' - acorns, hazel etc. And those for 'stratifying' - haws, holly berries etc.

Build a raised bed in your school grounds to plant the 'direct seeding' seeds in, or find an alternative system if you have no space to make beds. Stratify berries and seeds in a bucket, tin or pot and store somewhere dry and safe. Make signs for the nursery bed and keep a written record of what is planted where, as you will forget by the time spring comes around!

Gather leaves from the school grounds or children's gardens and make a leaf pile (in a compost heap, loose pile or black plastic bag), cover over and leave to make leaf mould for next years tree nursery project, it takes a year or two for leaves to break down fully and make mature leaf mould.

Spring:

Remove mesh when trees have started growing and are touching off mesh. Keep the bed as weed free as possible. Be careful not to weed the trees!

Spring to summer:

The beds should not need watering. If they do, collect rainwater in barrels from the guttering (a good water harvesting/conservation project!) and use that. Check the seeds in the biscuit tins and sand from time to time and make sure that it is still damp.

Autumn again:

Pot on or plant out the trees that are 45-60cm in height. Smaller trees or trees that do not have a home yet can be potted into recycled milk cartons (with holes in the bottom). Use a small amount of wet cardboard to make a few layers of mulch on the top of the soil as this will help keep weeds down in the pot which can compete with the young tree. The pot and cardboard are all biodegradable and can be planted into the ground directly (if there is a layer of plastic on the carton it will peel off easily).

Collect more seeds!!!

And so the cycle starts again – re-use your bed to plant more seeds and always add a layer of leaf mould to replicate the forest floor.

Native Woodlands, Biodiversity and Wildlife

Resource Sheet for Teachers

Native Trees are the oldest trees in Ireland; they came in after the last Ice Age, 12,000 years ago. Because of this they support our native flora and fauna specifically. The hawthorn tree supports 15 species of wildlife that can live only on the hawthorn tree. Oak and willow trees each support over 300 species of insect and wildlife. Ireland was once covered in trees, but through the various ages of ship building and industrial revolution the amount of native trees is now reduced to 2% of total land coverage.

The oldest trees are the oak, ash, yew, juniper, willow, holly, elm, birch, hazel and Scot's pine. There are 28 species of native trees in Ireland. During the Brehon Era in Ireland, the Brehon Laws and the original Irish alphabet (Ogham) were based on the native trees of Ireland. Trees and woods were considered sacred. People were penalised if they harmed any of the 'noble trees' of Ireland such as the oak, ash and yew. Penalties included the payment of two cows for cutting down an oak tree. Sycamore, beech, lime and horse chestnut are not native but were brought in by people over the years to Ireland. For instance, beech was brought to Ireland by the Normans, approximately 1000 years ago. They have become *naturalised* and are an important part of the Irish landscape.

Why are trees important?

- Trees provide oxygen for us to breathe; they are the lungs of the earth, and filter pollutants in the air. Trees produce more oxygen than any other single living organism.
- Trees absorb CO_2 (main cause of global warming) and convert it into wood, therefore trees are a 'carbon sink'. Every year Ireland's forests takes in **3.4 tonnes** of carbon from the atmosphere.
- Trees provide shelter/shade for animals and humans
- Trees are an important food source for both animals and humans; apples, plums, cherries, pears, damsons, sloes, hazel nuts and walnuts all grow in Ireland.
- In warmer climates tea, coffee, coconuts, oranges and lemons all come from trees.
- Forests protect soil against erosion, prevent flooding and store and recycle nutrients
- Trees provide firewood (heat)
- Timber for building houses (shelter/shade)
- Trees provide energy
- Trees provide furniture and fencing
- Trees and Woodlands are beautiful places to walk in, visit and look at
- Renewable resource – as long as we keep planting more trees they will keep providing us with all of the above

Why are native trees important?

- They feed native birds and wildlife
- For biodiversity; they provide a home for a huge variety of bugs, fungi, wildlife, plants and animals that help maintain a healthy environment specific to Ireland
- Native species feed native bugs and beasts

Glossary

Stratification: Is the process of storing seeds to copy natural conditions that a seed must go through before germination.

Scarify: Involves slitting or softening the outer coat of seeds in order to speed up germination. This can be done with sand paper, rubbing in a sieve etc.

Leaf Mould: is what forms when fallen leaves rot down on the woodland floor and turns into leaf compost.

Biodiversity: The variety of plants, animal species, other organisms and ecosystems within particular habitats.

Native: Originating, growing, or produced in a certain place or region; indigenous: a plant native only to Ireland.

Broadleaf: Trees with broad flat leaves rather than needle-like or scale-like leaves

Conifer: Trees with needles for leaves, or scale-leaved, chiefly evergreen

Evergreen: Trees that retain their leaves or needles throughout the year.

Deciduous: Trees that drop their leaves in winter

Other plants/wildlife found on walks in the wood:

Fungi – on trees and woodland floor e.g. bracket fungi and puff balls

Sub story plants e.g. wild garlic (bulbs start to sprout in Autumn), wood rush, herb robert, lords and ladies (red berries)

Insects, spiders and their paraphernalia e.g. Oak apples and Oak galls (made by gall wasps), earwigs, woodlice

Mammals and evidence of their actions e.g. badger snuffle holes, droppings, footprints

Our Native Trees and their Seeds

Acorns – Oak - Dair
Hazelnuts – Hazel -Coll
Ash keys – Ash - Fuinseóg
Haw berries – Hawthorn – Sceach gheal
Crab Apples – Crab Apple – Crann fia-úll
Alder cones – Alder - Fearnóg
Holly Berries – Holly - Cuileann
Yew Berries – Yew - Lúr
Rose Hips – Dog rose/wild rose - Feirdhris
Birch catkins – Silver Birch - Beith gheal
Rowan Berries – Rowan - Caorthann
Elderberries – Elder - Tromán
Sloes – Blackthorn - Draighean

Naturalised Trees and their Seeds

Beech Masts - Beech Tree
Helicopters - Sycamore Tree
Conkers - Horse Chestnut tree
Lime seed - Lime
Maple keys - Field Maple
Hornbeam catkins - Hornbeam

Fun Facts about Trees

The tallest native tree in Ireland is a 40 m tall Ash tree near Clonmel, Co. Tipperary.

The oldest tree in Ireland is thought to be a yew tree in Co. Wexford which is over 1,000 years old. The Brian Boru oak in Co. Clare is also said to be over 1,000 years old.

The tree with the largest girth is an exotic tree, a Monterey cypress, commonly known as Macrocarpa. This tree is in Killyleigh, Co. Down and is over 12 metres in diameter

Trees produce more oxygen than any other single living organism

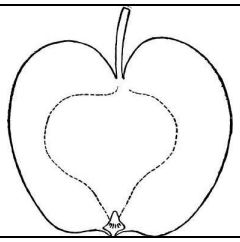
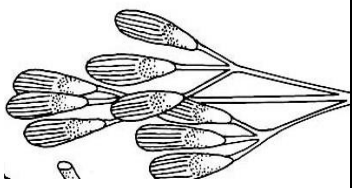
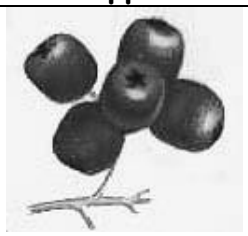
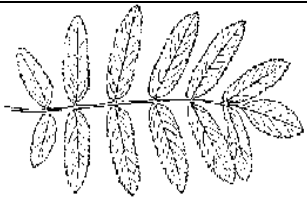
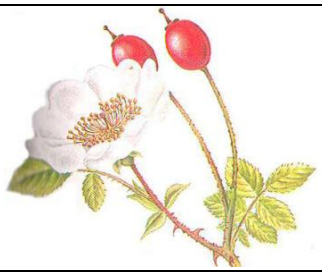
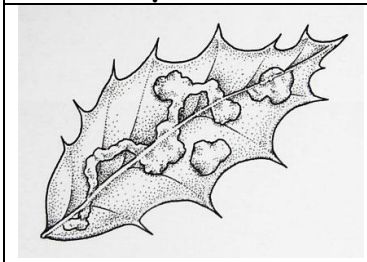
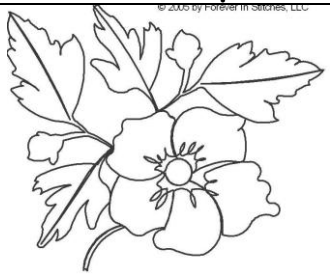
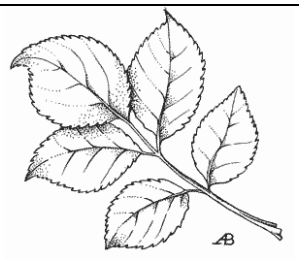
Counties in Ireland are names after native trees: Derry – Doire (Oak), Antrim – Aon Trim (Elder), Kildare – Cill Dara (Church of the Oaks), Mayo – Maigh Eo (Plain of the Yews)

Uses for Trees

- ✓ **Ash**- Used for making Hurley's for centuries
- ✓ **Willow** – Used for making cricket bats, baskets, living fences
- ✓ **Alder** – Shields, clogs, bridges, old milk churns
- ✓ **Hazel** – Hurdles, gates, fences and wattle for building
- ✓ **Oak, Ash, Scot's Pine** –Their timber is used for furniture making and building purposes
- ✓ **Blackthorn** - Known as Shillelaghs,very strong wood, used long ago as weapons
- ✓ **Cherry, Apple, Pear, Plum** – Fruit supply
- ✓ **Pine** – Good for firewood and building (water resistant)
- ✓ **Sycamore** – Wooden spoons and other wooden kitchen utensils
- ✓ **Beech** – Excellent for furniture making
- ✓ **Larch** – Boat building
- ✓ **Spruce & Maple** – Used to make violins
- ✓ Many species of trees from tropical climates are imported for use in Ireland e.g mahogany, ebony

Native Seeds and Berries

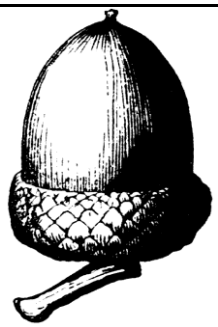
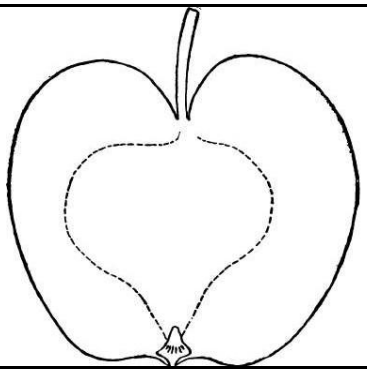
- Teachers Information Sheet -

			
Acorn	**Beech Nut**	**Hawthorn Berry**	**Crab Apple**
Oak Leaf	**Beech Leaf**	**Hawthorn Tree**	**Crab Apple Leaf**
			
Hazel Nut	**Alder Cone**	**Ash Key**	**Rowan Berries**
			
Hazel Leaf	**Alder Leaf**	**Ash Leaf**	**Rowan Leaf**
			
Holly berries	**Rose Hip**	**Elder berries**	**Sloes**
			
Holly leaf	**Dog/Wild Rose**	**Elder Leaf**	**Blackthorn**

Native Tree Leaves and Seeds Identification Sheet

- Children's Worksheet –

Which seed matches with which leaf?...draw an arrow to join the right leaf with the right seed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	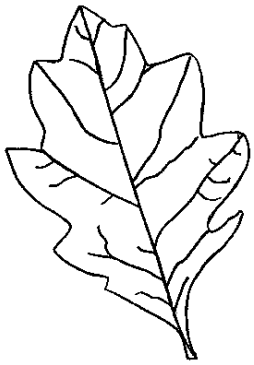	
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		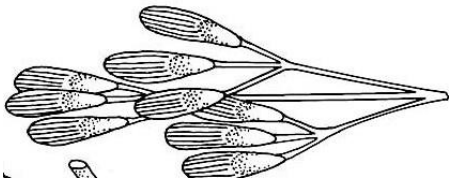
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My Visit to the Woods

- Children's Worksheet -

Native Tree Nursery Project	
Your Schools' Name:	
Your Name:	
Why are trees important?	
1.	
2.	
Why are native trees important?	
1.	
2.	

Name 3 native trees you saw today:

SEEDSAVING

Gather seed from 3 different native trees, record its name, draw a picture of its seed and its leaf.		
Name of tree:	Name of tree:	Name of tree:
Name of seed:	Name of seed:	Name of seed:
Draw picture of seed:	Draw picture of seed:	Draw picture of seed:
Draw picture of leaf:	Draw picture of leaf:	Draw picture of leaf:

Useful Resources

Websites:

- ✓ www.gortbrackorganicfarm.com – check out our website for more information about the project
- ✓ www.heritagecouncil.ie – information about the Heritage in Schools Scheme and local heritage in your area
- ✓ www.treecouncil.ie – have great resources such as publications and posters
- ✓ www.nativewoodtrust.ie
- ✓ www.woodlandsofireland.com
- ✓ www.crann.ie
- ✓ www.coillte.ie
- ✓ www.celtnet.org, CELT have information on the raised bed technique

Books:

- ✓ 'The Year Round Organic School Garden', Kerry Earth Education and Irish Seed Savers Association, a guide to using your school grounds as a living classroom (www.gortbrackorganicfarm.com)
- ✓ 'Our Trees – a guide to growing Ireland's Native Trees in Celebration of a New Millennium', this is an excellent source of information (available from the Tree Council of Ireland (www.treecouncil.ie)
- ✓ 'Science in the School Grounds', by Gill Thomas, from Learning Through Landscapes, ISBN, 1-85741-085-8