

EBKA Charity Number: 1031419

# Romford Division



# **Dates for the Diary**

**Committee Meeting:** Tuesday 27th September 2022, 730pm. Maybe via Zoom or in person.

Next Meeting: Thursday 1st September, 20:00

**Topic:** Hive Insulation **Venue:** Zoom

Speaker: Derek Mitchell

# Honey Bees collecting water from the edge of a pond, Photo: Pat Allen



#### **AUGUST Beekeeping Notes**

I hope your bees are surviving this hot weather. Will it continue through August? Make sure they have water available at all times.

August is a good month to do a dedicated disease inspection. Shake the bees off each frame and inspect the brood very carefully. If you go to the Bee Health Day you will see how to do this and know what to look for. If anything does not look right, contact your mentor, or one of our Disease Liaison Officers (Jim McNeill, Paul Wiltshire) for a second opinion. Do **not** leave it!

This is also a good month to combine colonies if you have too many to overwinter. Remember, both colonies must be healthy. Move them close together before you start. Decide which queen you will keep and remove the other one. Read up on the procedure before you begin.

Remove your honey crop by the end of the month, but do not take all the honey. Plan your varroa treatment if you are using any. At the end of the month assess the stores and get ready to give them their winter feed. You will need to bring the stores up to about 25kgs for winter. A standard brood comb can hold 2.5kg.

Don't forget, the floor insert must be in while feeding, treating, or monitoring, otherwise out.

#### Pat Allen

#### Courses

**Bee Health Day:** EBKA has arranged a Bee Health Day for **11th August**. You received an email message about it which may have gone into your junk mail box - please check it out. Sue Richardson also sent a message. Though this is short notice it is a good opportunity for the **Beginner Beekeepers especially** to get first-hand information about bee diseases and how to deal with them. Spaces are limited so, If you have not already booked your place, please get on and do it straightaway. We cannot give you this information locally as special licenses are required for the Bee Inspectors to carry comb with live disease.

#### Pat Allen

# Romford Honey Show.

Hopefully you are all enjoying a good beekeeping season. Its time to think about exhibiting in this years show, why not give it a try? It's a great experience and you may even win a cup or two! Schedules will appear in next months newsletter. There will be something for everyone, even those without any honey.

Saturday 15th October

Ascension Church, Collier Row. RM5 2BA

### Angela Mander



#### Mating biology of honeybees, Jim Vivian-Griffiths (Master Beekeeper)

Jim lives in Monmouth and has his hives on 2 acres of land. He and his wife are both Master Beekeepers and work together on their beekeeping hobby.

He posed two questions - "why do honeybees put themselves at risk?" and "why do the queens fly alone?" which is much more dangerous for her. The answer is she mates while still flying and by doing this it is more likely that she will mate with drones that are not from her own hive, thereby avoiding interbreeding.

For the worker and the queen the cell starts off the same, the egg is fertilised in both cases. Larvae is identical to begin with then the worker is fed 140 times on a changing diet, but the queen is fed ten times as much in 12 days.

Drone development requires pollen in the hive to feed them, they start going out in about 36 days and must be flying before you try to raise a queen.

Jim spoke about observations made over time;

Early observations were made by Aristotle, (384-322 BC) who wrote the History of Animals and observed the bees closely. He thought the queen was a male and was called a King.

Virgil (70-19 BC) thought that bees were chaste and did not mate to reproduce, but collected their young in their mouths from leaves and sweet herbs.

Luis Mendez de Torres (16<sup>th</sup> Century) recorded that the queen lays all the eggs, whether they become queens, workers or drones. He still did not realise the queen was female, and still thought that the queen did not mate, but he did believe in clipping the queen's wings to prevent swarming.

Charles Butler (1560-1647) wrote the first book in English about Beekeeping, this was in 1609. His book remained a guide to beekeepers for 250 years. He stated that the colony was governed by a queen and not a King Bee.

Janscha (1775) noticed that the queen returned from mating with sperm in her sting chamber. But thought it was acting as a mating plug.

Francis Huber (1792) was a Swiss naturalist and discovered the queens had to fly from the hive to produce workers.

In the 1940's and 1950's American scientists found out about colour phenotypes (individual traits) being different on worker bees.

The honeybee Queen mates with multiple drones, which makes them more resistant to disease and increases the chances of the colony having a long life, it also avoids interbreeding which can result in a fifty percent drop in fertility.

The virgin queen will come out of the cell and fight the old queen if she is still in the hive, the virgin queen can sting and kill the old queen. She fights off any royal sisters who are emerging at the same time, she will sting them all as they try to free themselves from the cell. When a rival emerges the fight begins, the winner is the queen who grabs the base of the bee with her mandibles and stings. It is a very quick fight.

The queen needs to mate with 12-15 drones, if the queen has not mated enough the worker bees send the queen back out to mate again. The queen goes to the Drone Congregation Area to be mated where the drones start chasing the queen as soon as she arrives. This is an enormous subject and Jim gave us an interesting insight into mating biology of the honeybee.

# Jilly Speakman-Bell

#### **National Honey Monitoring Scheme (NHMS)**

As keen beekeepers I'm sure that you are familiar with the National Honey Monitoring Scheme?

# https://honey-monitoring.ac.uk/

If you haven't heard of the scheme this is their mission statement:

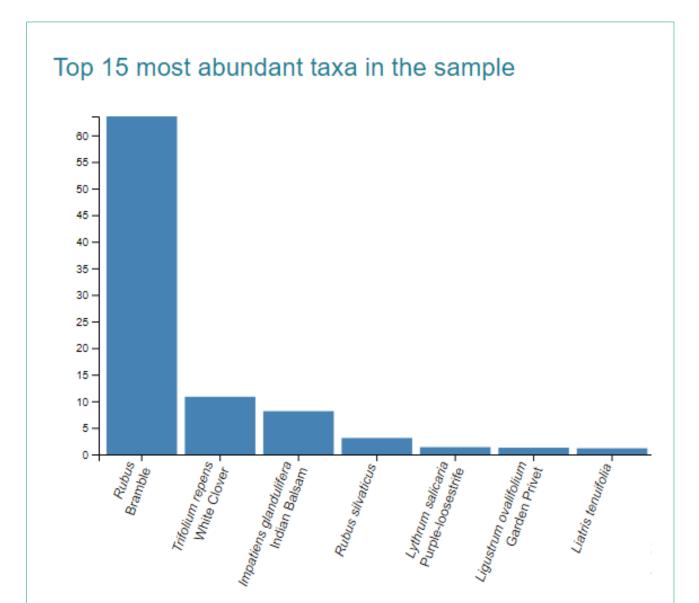
With the help of beekeepers we would like to collect honey samples from across the UK and continue to do this for many years. These samples will analysed using advanced DNA barcoding techniques to identify the species of plant pollen present. This will tell us what bees are feeding on in different parts of the country and at different times of year. This information will help us identify possible threats to the floral resources of pollinating insects.

I've been sending in samples of my honey from my Apiary in Wickford for the last 3 years, but hadn't been selected for DNA analysis, until now. Just last week I received the breakdown of the honey that I sent in for 2021, the results are absolutely fascinating, and quite a revelation! The report itself requires some translation from "Botanist/Scientist" to English, I'll include the notes here but you may want to skip the next two paragraphs

We provide an estimate of relative abundance of each species (or higher taxonomic levels) present in a honey sample, based on the quantity of DNA fragments present. Although the ordering of plant species by this measure is likely to be representative of honey composition, molecular technique are not directly equivalent to traditional microscopy based upon melissopalynology. Estimates of relative abundance from molecular techniques are not directly equivalent to traditional pollen counts. No pollen coefficient values have been applied and therefore these data cannot be used for honey verification purposes.

Plant identification using DNA barcoding of honey samples is reliant upon sequencing a small, specific area of DNA. These are then compared to a large database of reference sequences to identify the likely plant species present. Accurate identification to a very fine taxonomic level is not always possible, particularly for some groups (E.g. Brassicas).

I know, its enough to bring on a headache! The NHMS provide a graph showing the "top 15 most abundant taxa". Bramble was incredibly high in my samples, then a step down to white clover and Indian (Himalayan) Balsam, everything else seemed to be almost at a trace level, the graph on the next page shows part of the graph.



If you'd asked me what I thought was in my honey I wouldn't have even thought to say bramble?? The results are also interesting as it shows what we already know, "weeds" are incredibly important to bees. As I keep my bees not far from the Town I was also surprised to find that there were only 47 taxa (plants) detected, I would've expected much more, but I have a theory on the results. The collection process is to fill two test tubes with both honey and wax (see photo on the next page). You are supposed to collect from your oldest and newest honey. We all recall that 2021 was an awful year for Beekeeping, I suspect that the oldest sample wasn't from spring but rather mid summer as I was feeding the colonies well into May, and in moving super frames around I may have picked two frames from the same time of year. Some of the plants aren't a surprise, I grow borage in my garden for the bees, and my neighbours have a monster eucalyptus tree. Within half a mile of me is Europe's largest memorial park, and I regularly help to remove rubbish and the invasive Himalayan balsam from the river banks that run through it (see photo on next page).

A full breakdown of the 47 detected plants is on page 6. If you are considering signing up there's something really important I haven't yet mentioned, its completely free!

#### Graeme Ellis





# **Honey Jars**

Many of you will have previously ordered your honey jars through Jean Smye, and will be aware that she has stepped down from running the bulk order, with Sue Simpson taking on the challenge! Having previously helped with the sorting I can tell you that it was back breaking work in often intense heat. This years order wasn't quite as big as normal, but from talking to Sue we think that was a combination of people stock piling and a poor honey yield in 2021. I'm pleased to report that the pick up from Canewdon was quick and easy. The jars are from the same supplier, Freeman and Harding so are of good quality.

# Graeme Ellis

# **Romford Division Contacts:**

Secretary: Sue Richardson

01708 381900 / 07971 957333. susanmrichardson7@gmail.com

**Chairman: Paul Wiltshire** 

01277 375454 / 07870 258192. paul.g.wiltshire@btinternet.com

**Divisional Voting Member/Trustee: Jim McNeill** 01708 765898/ 07743 310143. jimandliz44@aol.co.uk

#### Websites:

https://ebka.org

https://romfordbeekeepers.org

# National Honey Scheme, Full breakdown of the 47 plants detected in my honey,

Rubus Bramble Trifolium repens White Clover Impatiens glandulifera Indian Balsam Rubus silvaticus Lythrum salicaria Purple-loosestrife Ligustrum ovalifolium Garden Privet Liatris tenuifolia Veronica stenophylla Borago officinalis Borage Oxalis articulata Pink-sorrel Veronica albicans Ceanothus oliganthus Hairy ceanothus Brassica rapa Turnip Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Red Clover Helenium autumnale Sneezeweed Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Autumn Hawkbit Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Arizona cypress Eucalyptus Melliotus Brassica oleracea Cabbage Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Berberis Fuchsia Veronica Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium clilatum American Willowherb Myosotis sylvatica Wood Forget-me-not Luma apliculata Allium appeloprasum Wild Leek	Species scientific name	Common name
Trifolium repens White Clover Impatiens glandulifera Indian Balsam Rubus silvaticus Lythrum salicaria Purple-loosestrife Ligustrum ovalifolium Garden Privet Liatris tenuifolia Veronica stenophylla Borago officinalis Dorago officinalis Pink-sorrel Veronica albicans Ceanothus oliganthus Hairy ceanothus Brassica rapa Turnip Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Red Clover Helenium autumnale Sneezeweed Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Berberis Picrose Speedwell Origanum vulgare Wild Marjoram Picrose Picrose Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexackia Wood Forget-me-not Luma apiculata Marican Myrtle Spilotium Myrtle		
Impatiens glandulifera Rubus silvaticus Lythrum salicaria Ligustrum ovalifolium Liatris tenuifolia Veronica stenophylla Borago officinalis Oxalis articulata Veronica albicans Ceanothus oliganthus Brassica rapa Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Brid's-Foot-Trefoil Trifolium pratense Helenium autumnale Arigonage apniculata Rotago aga arizonica Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Magnoliopsida Jacobaea erucifolia Mysostis sylvatica Myconage oxaliculas Cablean Myrtle Myosotis sylvatica Morale Mariosestrife Carden Privet Garden Privet Garde	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Rubus silvaticus Lythrum salicaria Lythrum salicaria Ligustrum ovalifolium Lidatris tenuifolia Veronica stenophylla Borago officinalis Borage Oxalis articulata Veronica albicans Ceanothus oliganthus Brassica rapa Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Red Clover Helenium autumnale Rapsberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Bellis perennis Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Myosotis sylvatica Myosotis sylvatica Myorene Myosotis sylvatica Myerolica Myorene Myortle Myortle	•	
Lythrum salicaria Purple-loosestrife Ligustrum ovalifolium Garden Privet Liatris tenuifolia Veronica stenophylla Borage Oxalis articulata Pink-sorrel Veronica albicans Ceanothus oliganthus Hairy ceanothus Brassica rapa Turnip Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Red Clover Helenium autumnale Sneezeweed Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Autumn Hawkbit Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melliotus Brassica oleracea Cabbage Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Daisy Berberis Fuchsia Veronica Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		Indian Balsam
Ligustrum ovalifolium Liatris tenuifolia Veronica stenophylla Borago officinalis Oxalis articulata Veronica albicans Ceanothus oliganthus Brassica rapa Humulus lupulus Hop Galega officinalis Coat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hesperocyparis arizonica Eucalyptus Melliotus Brassica oleracea Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Beresia Bellis perennis Daisy Beresia Magnoliopsida Mallium sphaerocephalon Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Myone Myntle Myosotis sylvatica Myone Myntle Myone Myntle Myntle Mellotus Meliotum Rosa odorata Magnoliopsida Dicotyledons Moderore, not Modero		Purnle-loosestrife
Liatris tenuifolia  Veronica stenophylla  Borago officinalis  Oxalis articulata  Pink-sorrel  Veronica albicans  Ceanothus oliganthus  Brassica rapa  Turnip  Humulus lupulus  Galega officinalis  Coat's-rue  Lotus  Bird's-Foot-Trefoil  Trifolium pratense  Helenium autumnale  Red Clover  Helenium autumnale  Allium senescens  Rapistrum rugosum  Bristly Oxtongue  Hydrangea paniculata  Crepis capillaris  Meillotus  Brassica oleracea  Ligustrum lucidum  Rosa odorata  Bellis perennis  Berberis  Fuchsia  Veronica  Origanum vulgare  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Allium senican Willowherb  Myosotis sylvatica  Lurnip  Hairy ceanothus  Borage  Orage  Turnip  Hairy ceanothus  Borage  Turnip  Hairy ceanothus  Borage  Turnip  Hairy ceanothus  Birist's-Foot-Trefoil  Trene  Red Clover  Head Clover  Head Clover  Hade Clover  Haeye Clover  Haeye Clover  Haeyened  Fasspberry  Hautumn Hawkbit  Pricris echioides  Bristly Oxtongue  Bristly Oxtongue  Bristly Oxtongue  Arizona cypress  Eucalyptus  Meillotus  Bristly Oxtongue  Arizona cypress  Eucalyptus  Meillotus  Brassica oleracea  Cabbage  Ligustrum lucidum  Tree Privet  Rosa odorata  Bellis perennis  Daisy  Berberis  Fuchsia  Veronica  Origanum vulgare  Wild Marjoram  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Dicotyledons  Jacobaea erucifolia  Hoary Ragwort  Allium sphaerocephalon  Round-headed Leek  Helenium  Epilobium ciliatum  American Willowherb  Myosotis sylvatica  Luma apiculata  Chilean Myrtle		
Veronica stenophylla Borago officinalis Borage Oxalis articulata Pink-sorrel Veronica albicans Ceanothus oliganthus Brassica rapa Turnip Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Pricris echioides Hydrangea paniculata Crepis capillaris Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Melioun Myrtle Myosotis sylvatica Ligustrum lyciclan Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Ligustrum lyciclan Myosotis sylvatica Myosotis sylvatica Moatothus Mainiy ceanothus Boracy Geanothus Boracy Furnip Hairy ceanothus Boracy Furnip Hairy ceanothus Barage Canothus Barage Autumn Hawkist Poot-Trefoil Turnip Hamy ceanothus Barage Autumn Hawkist Poot-Trefoil Turnip Hamy ceanothus Barage Autumn Hawkist Poot-Trefoil Autumn Hawkist Poot-Trefoil Autumn Hawkist Poot-Trefoil Turnip Hop Autumnip Autumn		Garden invet
Borago officinalis Oxalis articulata Pink-sorrel Veronica albicans Ceanothus oliganthus Brassica rapa Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Myosotis sylvatica Ligus Turnip Hairy ceanothus Hairy ceanothus Hairy ceanothus Bird's-Foot-Trefoil Turnip Hairy ceanothus Bird's-Foot-Trefoil Turnip Happer Red Clover Red		
Oxalis articulata  Veronica albicans  Ceanothus oliganthus  Brassica rapa  Humulus lupulus  Galega officinalis  Lotus  Bird's-Foot-Trefoil  Trifolium pratense  Helenium autumnale  Raspberry  Hydrangea macrophylla  Allium senescens  Rapistrum rugosum  Brasica coleracea  Lucalyptus  Melilotus  Brassica oleracea  Ligustrum lucidum  Rosa odorata  Bellis perennis  Berberis  Fuchsia  Veronica  Origanum vulgare  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Myosotis sylvatica  Lotus  Hairy ceanothus  Hop  Gaut's-rue  Luchover  Red Clover		Borage
Veronica albicans Ceanothus oliganthus Brassica rapa Humulus lupulus Galega officinalis Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Tree Privet Rosa odorata Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium senescephalon Myosotis sylvatica Myosotis sylvatica Myosotis sylvatica Modal's-Foot-Trefoil Turnip Hairy ceanothus Hoairy ceanothus Hairy ceanothus Hair ceanothus H		
Ceanothus oliganthus Brassica rapa Turnip Humulus lupulus Galega officinalis Coat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Red Clover Helenium autumnale Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia American Willowherb Myosotis sylvatica Luma apiculata Mendorter Myorotis Sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		FIIIK-SOITEI
Brassica rapa Humulus lupulus Hop Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Red Clover Helenium autumnale Rubus idaeus Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Berassica oleracea Ligustrum lucidum Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Meleinum Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata Med Clover Red Clover Red Clover Red Clover Red Clover Red Clover Red Clover Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Red Clovage Raspberry Ratum Hawkbit Red Clovage Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Red Clover Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Ratum Hawkbit Raspberry Ratum Hawkb		Hairy coanothus
Humulus lupulus Galega officinalis Goat's-rue Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Rubus idaeus Hydrangea macrophylla Allium senescens Rapistrum rugosum Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Myosotis sylvatica Melelenium Epilobium ciliatum Myosotis sylvatica Melenium Myrtle Myosotis sylvatica Melioun Bird's-Foot-Trefoil Red Clover Red Cl		-
Galega officinalis Lotus Bird's-Foot-Trefoil Trifolium pratense Helenium autumnale Rubus idaeus Hydrangea macrophylla Allium senescens Rapistrum rugosum Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Myosotis sylvatica Myosotis sylvatica Melelenium Epilobium ciliatum Myosotis sylvatica Melelenium Epilobium ciliatum Myrtle Rosa Clover Red Clo	-	·
Lotus Bird's-Foot-Trefoil Trifolium pratense Red Clover Helenium autumnale Sneezeweed Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Autumn Hawkbit Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Arizona cypress Eucalyptus Melilotus Brassica oleracea Cabbage Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Daisy Berberis Fuchsia Veronica Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Wood Forget-me-not Luma apiculata  Biastard Cabbage Raspberry Raspberry Raspberry Raspberry Raspberry Ratpberry R	-	
Trifolium pratense Helenium autumnale Rubus idaeus Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Bellis perennis Bellis perennis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Myosotis sylvatica Lydrangea Raspberry	<u>_</u>	
Helenium autumnale Rubus idaeus Raspberry Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Alium sphaerocephalon Myosotis sylvatica Lydram sutumnale Raspberry Raspberry Raspberry Raspberry Raspberry Raspberry Rastard Cabbage Panicled hydrangea Panicled hydrangea Autumn Hawkbit Panicled hydrangea Rattumn Hawk's-beard Arizona cypress Cabbage Ligustrom cypress Cabbage Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Daisy Beredwell Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata Chilean Myrtle		
Rubus idaeus Hydrangea macrophylla Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Picris echioides Hydrangea paniculata Panicled hydrangea Crepis capillaris Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata  Raspberry  Raspberry  Raspberry  Rattum luchabage Arizona cypress  Cabbage Triee Privet  Daisy Berberis Fuebris  Speedwell Wild Marjoram  Dicotyledons Hoary Ragwort  Round-headed Leek  Wood Forget-me-not Chilean Myrtle	-	
Hydrangea macrophylla Allium senescens Rapistrum rugosum Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Myosotis sylvatica Lydrum lucidum Rosa od Forget-me-not Luma apiculata Autumn Hawkbit Autumn Hawk's-beard Arizona Cyres  Autumn Hawkte		
Allium senescens Rapistrum rugosum Bastard Cabbage Scorzoneroides autumnalis Autumn Hawkbit Picris echioides Bristly Oxtongue Hydrangea paniculata Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Tree Privet Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Myosotis sylvatica Ligust Mum Hawkbit Autumn Hawkbit Arizona Cabbage Cabbage Cabbage Cabbage Ligustrum Licidum Tree Privet  Rosa odorata Bellis perennis Daisy Berberis Fuchsia Veronica Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata Chilean Myrtle		казррену
Rapistrum rugosum Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Bruchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Meliotum Epilobium ciliatum Arizona cypress Arizona cypress Eucalyptus Cabbage Labbage Labb		
Scorzoneroides autumnalis Picris echioides Bristly Oxtongue Hydrangea paniculata Panicled hydrangea Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Holary Ragwort Allium sphaerocephalon Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata  Panicled hydrange  Roxtongue Panicled hydrangea  Cabbage Cabbage Cabbage Cabbage  Cabbage Varizona Cypress  Daisy  Beer Privet  Cabbage Cabbage Valbage Valbage Valbage Valbage Valbage Valid Marjoram Vill Marjoram Allium sphaerocephalon Round-headed Leek Wood Forget-me-not Chilean Myrtle		Dantard Calibratia
Picris echioides Hydrangea paniculata Crepis capillaris Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Hydrangea Panicled hydrangea Panicled hydrangea Panicled hydrangea Panicled hydrangea Panicled hydrangea Arizona cypress Cabbage Cabbage Tree Privet Daisy Daisy Daisy Daisy Berberis Fuchsia Wild Marjoram Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata Chilean Myrtle		
Hydrangea paniculata Crepis capillaris Smooth Hawk's-beard Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Ligustrum lucidum Tree Privet Cabbage Cabbage Cabbage Tree Privet Rosa odorata Bellis perennis Daisy Speedwell Wild Marjoram Wild Marjoram Tamarix hohenackeri Oenothera hexandra Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum Myosotis sylvatica Chilean Myrtle		
Crepis capillaris Hesperocyparis arizonica Eucalyptus Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Bruchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Ligustrum lucidum Tree Privet Cabbage Ligustrum lucidum Tree Privet Daisy Daisy Daisy Daisy Diosy Wild Marjoram Vild Marjoram Dicotyledons Dicotyledons Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Luma apiculata Chilean Myrtle		-
Hesperocyparis arizonica Eucalyptus  Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Melilotus Arizona cypress Cabbage Tree Privet Daisy Daisy Daisy Daisy Wild Marjoram Wild Marjoram Dicotyledons Dicotyledons Round-headed Leek Helenium American Willowherb Myosotis sylvatica Luma apiculata Chilean Myrtle		
Eucalyptus  Melilotus  Brassica oleracea  Ligustrum lucidum  Rosa odorata  Bellis perennis  Berberis  Fuchsia  Veronica  Origanum vulgare  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Jacobaea erucifolia  Allium sphaerocephalon  Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  Cabbage  Cabbage  Nabage  Cabbage  Wive  Interest Privet	•	
Melilotus Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Cabbage Cabbage Daisy Dioly Marjoram Wild Marjoram Tamarix hohenackeri Dicotyledons Hoary Ragwort Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Chilean Myrtle		Arizona cypress
Brassica oleracea Ligustrum lucidum Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata  Tree Privet Tree Privet Tree Privet  Roabage  Wild Marioram  Wild Marjoram  Dicotyledons  Hoary Ragwort  Round-headed Leek  Helenium  Epilobium ciliatum American Willowherb  Wood Forget-me-not  Chilean Myrtle		
Ligustrum lucidum  Rosa odorata  Bellis perennis  Berberis  Fuchsia  Veronica  Origanum vulgare  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Jacobaea erucifolia  Allium sphaerocephalon  Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  Tree Privet  Alisy  Tree Privet  Ablasy  Assumble Pedwell  Wild Marjoram  Dicotyledons  Hoary Ragwort  Round-headed Leek  Helenium  Epilobium ciliatum  American Willowherb  Myosotis sylvatica  Chilean Myrtle		
Rosa odorata Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata Daisy Daisy Daisy Daisy Disy Daisy Disy Disy Disy Disy Disy Disy Disy D		
Bellis perennis Berberis Fuchsia Veronica Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata Diaisy Speedwell Wild Marjoram Dicotyledons Dicotyledons Hoary Ragwort Round-headed Leek Helenium Chilean Myrtle		Tree Privet
Berberis Fuchsia Veronica Speedwell Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Jacobaea erucifolia Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata Speedwell Wild Marjoram Dicotyledons Hoary Ragwort Round-headed Leek Merican Willowherb Myosotis mylvatica Chilean Myrtle		
Fuchsia Veronica Speedwell Origanum vulgare Wild Marjoram Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata Speedwell Wild Marjoram Wild Marjoram Americane	· · · · · · · · · · · · · · · · · · ·	Daisy
Veronica  Origanum vulgare  Tamarix hohenackeri  Oenothera hexandra  Magnoliopsida  Jacobaea erucifolia  Allium sphaerocephalon  Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  Wild Marjoram  Wild Marjoram  Dicotyledons  Hoary Ragwort  Round-headed Leek  Mound-headed Leek  Mood Forget-me-not  Chilean Myrtle		
Origanum vulgare Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Helenium Epilobium ciliatum Myosotis sylvatica Luma apiculata Willd Marjoram Willd Marjoram American Will Marjoram Willd Marjoram Mortyle American Willows Wood Forget-me-not Chilean Myrtle		
Tamarix hohenackeri Oenothera hexandra Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		•
Oenothera hexandra  Magnoliopsida  Jacobaea erucifolia  Allium sphaerocephalon  Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  Dicotyledons  Hoary Ragwort  Round-headed Leek  Round-headed Leek  Mound-headed Leek  Mound-headed Leek  Round-headed Leek  Mound-headed Leek  Chilean Myrtle		Wild Marjoram
Magnoliopsida Dicotyledons Jacobaea erucifolia Hoary Ragwort Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum American Willowherb Myosotis sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		
Jacobaea erucifolia  Allium sphaerocephalon  Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  Hoary Ragwort  Round-headed Leek  American Willowherb  Wood Forget-me-not  Chilean Myrtle		
Allium sphaerocephalon Round-headed Leek Helenium Epilobium ciliatum Myosotis sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		•
Helenium  Epilobium ciliatum  Myosotis sylvatica  Luma apiculata  American Willowherb  Wood Forget-me-not  Chilean Myrtle		
Epilobium ciliatum American Willowherb  Myosotis sylvatica Wood Forget-me-not  Luma apiculata Chilean Myrtle		Round-headed Leek
Myosotis sylvatica Wood Forget-me-not Luma apiculata Chilean Myrtle		
Luma apiculata Chilean Myrtle	-	
•	Myosotis sylvatica	•
Allium ampeloprasum Wild Leek	Luma apiculata	•
	Allium ampeloprasum	Wild Leek