

KNOW YOUR CARROTS

With the possible exception of fungi, no group of wild foods fills the average forager with as much trepidation as the carrot family. I have met highly proficient foragers of many years' experience who don't harvest any of them for fear of misidentification and the potentially life-threatening repercussions this might have.

Yet if I were forced to choose only one group of plants to rely on for food and flavour it would be this remarkable and diverse family. Sure, the stakes are high. But, by investing a little focused time on a regular basis, the risks become negligible and the rewards endless. Perhaps surprisingly, winter is the best time to start learning. This allows careful scrutiny over time of the different growth stages of key members, allowing you to "tune in" before hedgerows become too busy.

Referred to more scientifically as the apiaceae (pronounced ay-pee-ay-see-eye or A-P-A-C-I) or umbelliferae, the carrot family includes more than 3,700

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species worldwide. Parsley and celery family are also widely used as labels, but carrot family reflect its best known cultivated member in the average Western

kitchen. Anyone with a culinary or horticultural leaning might also recognise fennel, coriander and dill as members of the same group. Botanists and adventurous foragers will know lots more - over 70 species are native to the UK, or have made their home here. Knowledge of a dozen or so key wild species (including important toxic varieties) is sufficient to keep most

Plant	Protein in g per 100g of edible parts
Curly Kale (cultivated)	3.0
Stinging Nettle	5.9
Common Hogweed	6.7

Plant	Vit C in micrograms per 100g of edible parts
Spinach (cultivated)	52
Broccoli (cultivated)	114
Fat Hen	236
Cow Parsley	179
Ground Elder	201
Common Hogweed	291

Plant	Water (%)	Potassium (mg/100g)	Phosphorous (mg/100g)	Magnesium (mg/100g)	Calcium (mg/100g)	Iron (mg/100g)
Curly Kale (cultvtd)	86.3	490	87	31	212	1.9
Stinging Nettle	84.8	410	105	71	630	7.8
Common Hogweed	79.8	540	125	75	320	3.2

Note: Wild plants of the apiaceae family highlighted in green. Nutritional values can vary widely between species and stage of growth.

Source: Auswertungs und Informationsdienst für Ernährung, Landwirtschaft und Forsten, Bonn, 1987 cited in Cooking Weeds by Vivien Weise, 2004 p@

foragers safe and provide an exciting range of food options including roots, shoots, buds and seeds throughout the growing year. 20 or so species can be mastered over time. To become familiar with more than a couple of dozen varieties requires methodical focused research over a wide area for a sustained period.

THE CARROT FAMILY IN A BUSHCRAFT CONTEXT

In a bushcraft or survival setting, the carrot family is most useful as a food source. Having said that I have had some success using the dry seed heads of common hogweed (*heracleum sphondylium*) as tinder, and the "basket" structure of wild carrot (*daucus carota*) seed heads make excellent combustible receptacles for superior tinder. The smoke smells great too!

Some species have medicinal properties, notably sanicle (*sanicula europaea*) and angelica (*angelica sylvestris*), both of which can be used to treat a range of conditions including digestive problems and coughs/sore throats.

I can find little authoritative analysis of the nutritional values of the wild members of the carrot family. What evidence does exist indicates nutritional benefits far in excess of cultivated so-called "superfoods". They even measure up well against other more commonly used wild plants such as nettle.

Many of the apiaceae have substantial roots which can provide carbohydrate throughout the year. However, identification of roots, especially where a mixture of species are growing, is fraught



Hemlock Water-Dropwort leaf structure and unopened flower head. Note the pinnate divisions, smooth, hairless stem and "rounded serrations" of lobes

with danger - especially as toxins tend to be heavily concentrated in tubers. By far the most deaths from apiaceae poisoning have arisen from misidentification of roots (notably mistaking hemlock water-dropwort for wild parsnip) and I recommend focusing on above-ground parts until you feel very familiar with individual species and their lookalikes. Shoots, leaves, stems, buds and seeds will be our main focus here.

TOXIC SPECIES & LOOKALIKES

The rewards of the carrot family to the forager-gastronome are huge, but the risks are also significant. Several highly toxic species are native to the UK. Of these, two in particular represent the greatest hazard on account of their wide distribution, virulent toxicity and similarity to edible species. They are hemlock (*conium maculatum*) and hemlock water-dropwort (*oenanthe crocata*).

Nobody should consider eating any wild-harvested members of the carrot family unless they can differentiate these species with **100% certainty**.



Hemlock (deadly - left) and Cow Parsley (edible - right). Make careful note of how similar these look. This is why all identifications MUST be based on multiple features.

Knowing these will keep you much safer and you should actively seek them out. Also be aware of other, rarer/less toxic species like fool's parsley and other water-dropworts (oenanthe spp).

Confidence can be gained only by observing living plants (both edible and toxic) on a regular basis throughout the year, noting the development of multiple features. Flicking through a reference book or looking at a few images online is not sufficient.

You need to get down and dirty with these plants on a regular basis. Every year I run "Confidence With Carrots" courses for already experienced herbalists, foragers and bushcrafters looking to refresh or improve their knowledge.

IDENTIFYING APIACEAE

To non-botanists and non-foragers, the key characteristics of the carrot family are umbels of pale (usually white or off-white, occasionally yellow) flowers and multiply (pinnately) divided leaves. Many have pungent aromatics, though these can vary widely from species to species. Such vague observations go no way whatsoever towards distinguishing between edible and toxic species.

Below I give a step-by-step guide to how to get to grips with the carrot family that should take you from novice to confident carrot-cruncher in a year. That is the minimum time you will need, though species like ground elder and sweet cicely should come quickly. Two years is better. Please take time to read and understand the key identification features described below and the table of key species first. Remember that this is advice to use in conjunction with quality field guides and reference books. If you intend to eat them, it is essential to base identification of apiaceae on multiple features. These are:



Hemlock stem. The purple blotches are very distinctive, though sometimes not so obvious as this

DISTRIBUTION/ LOCATION

Consider distribution early - it will help you to narrow down likely suspects. For example, you are unlikely to find sweet cicely in southern England, or alexanders in western Scotland. Be aware of how common species are in general - for example, hemlock water-dropwort is hyper-abundant in south west Scotland, while hemlock is found only in a few coastal locations. This doesn't mean you can be complacent about ever finding poisonous species that are rare in your area, but you can have realistic expectations about what you are likely to find.

SEASON

Where laymen see cow parsley flowers in the hedgerows from spring to late autumn, the experienced apiaceae forager will be aware of a distinct succession of dominant umbellifers. For example, in south west Scotland in a normal year, I would expect to see flowers of hemlock water-dropwort early (maybe March), followed by cow parsley, then ground elder, sweet cicely, hogweed, and finally angelica flowering in September. Note that all these flowering seasons can overlap. As I write in December, I know at a glance that the strong new growth of vibrant green pinnately divided leaves in the hedgerows are almost certainly hemlock water-dropwort or cow parsley. In southern England, alexanders will be looking strong too just now.

Apart from a few very distinctive species, at least three of the following features should be observed to accurately match the species description. Remember, only some of these features will be present at any one time. I have listed them roughly in order of what you should consider when attempting an ID and according to when the features may be observable.

HABITAT

All identifications (of any wild food) should start with habitat. Habitat will never give you a definitive positive ID, but it will rule out a lot of species. So, for example (and most usefully), hemlock water-dropwort always has its feet wet. If you are on well drained sandy dunes, you can eliminate it from your enquiries (though be aware it often grows on foreshores where springs emerge and damp field edges). Conversely, if you are on a soggy riverbank, expect it to be lurking.

SMELL

Flower smell isn't particularly useful here - most apiaceae are pollinated by flies, hoverflies and midges, which they attract through a range of dung and decay-like smells. Instead pick and crush the leaves, stem or seeds then smell them. Be aware that while no UK member of the carrot family is poisonous to touch, the sap of some (notably hogweed and parsnip species) can cause phytophotodermatitis (a recurring burn stimulated in bright sunlight) - so you may wish to wear gloves.

Try to develop a meaningful vocabulary to describe, evaluate and compare smells. Hemlock is often described as smelling of mouse pee. I'm willing to bet that most people, including those that regurgitate these descriptions, haven't ever smelled mouse pee! Although they are subjective, descriptions like "pleasant" or "acid" are much more useful.

Some apiaceae have very distinct and instantly recognisable smells (notably sweet cicely and fennel), but be aware that many different species smell "carrotty" or "of celery". Smell is not a rule of thumb (as in "if it smells of x it must be safe"), but is an important weapon in your identification armoury. With training, your nose can keep you as safe as your eyes.

ROOTS

As mentioned earlier, roots are tricky, and I recommend not uprooting plants until you are proficient in identifying above-ground parts. Apart from being illegal without the landowner's permission, uprooting is likely to kill the plant. If you are intent on looking at roots, follow all the guidance for above-ground ID here, then very carefully follow the stem down to the root, ensuring it is attached.

Having said that, you should certainly familiarise yourself with the distinctive "dead man's fingers" roots of hemlock water-dropwort (pictured). These are often exposed or washed up after floods or high tides and resulted in the deaths of many (greedy) dogs around the UK after the big winter storms of January 2014.



Dead Man's Fingers - The roots of Hemlock Water-Dropwort are potentially deadly, but apparently are quite mild tasting. Decoctions of these roots have historically been used to administer death sentences. These were washed up on the shore after a storm alighting next to edible sea beet leaves.

SHOOTS

The unopened basal leaves will be the first visible sign of the plant above ground. This is a challenging stage at which to ID, but often very rewarding in terms of flavour and nutrition. I recommend either making a full year of observation of a specific location before eating, or rummaging among easier to ID fully opened basal leaves to find later-emerging shoots. Focus on hairiness, formation of shoots (e.g. tight rosette, bushy, creeping etc.)

BASAL LEAVES

Basal leaves are the initial surge of growth, usually comprising a rough "rosette" of lush green leaf growth, often visible long before the plant even thinks of flowering. This is often the tastiest and most nutritious edible part.



5 apiaceae leaves. L-R: Sweet cicely, cow parsley, ground elder, hemlock water-dropwort, hemlock. Things to note: white "splashes" on sweet cicely (just visible); large oval serrated lobes (3x3) on ground elder; large, rounded, "non-lacey" lobes of HWD.

Spend plenty of time looking at these. Learning the language and subtleties of leaf structure will stand you in good stead for wider exploration of plants and if you can master apiaceae most other families will seem straightforward.

Become familiar with the general "fern-like" structure, comprising a central stem, multiple divisions with those divisions dividing again and so on, often resulting in a "lacy" look. Botanical guides describe this structure as "pinnate", and the number of divisions can be an excellent aid to ID.

How many times the leaf divides. (= how many times pinnate?)

Is the leaf hairy, smooth or shiny?

Are there distinctive terminal leaf lobes?

Are the terminal lobes sharply toothed or rounded?

What shape is the central stem? - eg "U" shaped or "O" shaped in cross section.

Note any "sheathing" where leaves emerge from the central rosette.

What shade of green is the leaf, are there any variations?

Does the leaf lie on a "flat plane" or is it "corrugated"?

FLOWERING STEMS

When the plant sends up its taller flowering stems, more useful ID characteristics appear: what is its height fully grown, i.e. when flowers are fully formed. What colours/markings are on stems. Is the stem hollow? Smooth or hairy?

BUDS

Many members of the carrot family form flower buds in papery parcels. When these open, the opened parcel becomes the "sheath" at the base of the flowering stem. Note the presence of these, and any colours or marking on the parcels.

FLOWERS

By the time a plant flowers, its leaves are often past their best for eating. Don't let this rush you. Remember, you need to invest at least a year in learning. Wait

for the flowers to confirm your tentative pre-flowering identification as they can be quite distinctive.

Typically flower structure consists of one large umbel made up of multiple smaller umbellules. Note flower colour (usually white or yellow, though pink hues can develop and look out for odd individual flowers of a red colour). What number of umbellules make up the umbel? Are there green bracts or bracteoles descending beneath individual flowers? Are the individual flowers and petals all the same size, or are some larger? What is the general shape of the fully formed umbel? Flat topped? Globe shaped?

SEEDS

Seeds are usually unique to species and can clinch identification, though very close observation may be required. Look for shape, size, grooves, ribs, hairs and burrs. (Note: By "seed", I refer to entire seed casing - technically the "fruit").

SKELETONS

The remains of the previous year's growth will often persist. These can be very useful reference points for observing general structure - height, proportions, umbel shape etc. Look also for young shoots of the following year's growth at their base - invaluable for understanding plant development.

GESTALT

Once a degree of proficiency has been achieved, it is possible to recognise many species by their "gestalt" - the general "feel" of a plant based on habitat, season and general shape - as memory-mapped by the experienced forager. (Bird watchers use the term "jizz" for this when identifying a bird at a glance). This will only develop after a period of careful observation of precise botanical features. It should never be used alone as the basis for harvesting for the pot.

LEARN THE KEY MEMBERS OF THE CARROT FAMILY IN A YEAR - A Step By Step Guide

Use the following guidance in conjunction with the table provided and field guides.

1. Invest in at least two quality botanical field guides with thorough coverage of the carrot family. (See my recommendations below).
2. Ideally, start in January when hedgerows are uncluttered and basal growth can be easily observed.
3. Select a few locations where you have noticed a variety of apiaceae. Look for skeletons of old growth. You shouldn't need to look far, most hedgerows, wood-edges and waste ground should have at least 5 varieties. Typically, 100m of old rough verge/hedgerow should provide lots of learning opportunities. Try to choose somewhere that you visit regularly for other reasons - walking the dog maybe. Thus your learning will be part of a natural pattern, not a chore.
4. It may help to keep a notebook, though the human brain is evolved to recognise and remember many subtly different plant structures and you will be pleasantly surprised at your recall skills if you visit your sites regularly. Notes are very useful after a year of observation though. Cameraphones are also very useful - ensure images are labelled (best guess, location) and dated for comparison.
5. Look for shoots and basal leaves forming. Focus initially on the "easy/common/important" species listed in the table. But don't ignore any likely carrot species.



Common Hogweed shoots, April. Note they are surprisingly thick and hairy. This is a challenging ID for beginners, but well worth investing the time in as these are the nicest vegetable in the UK, bar none!

6. Make all the observations (noted above) that are possible and eliminate unlikely species from your enquiries. Don't expect to nail the ID at this stage, but try to work on a shortlist.

7. Return on a regular basis (at least monthly) and watch the development of the plants, noting new characteristics as they develop. Refine or confirm your initial IDs.

8. Keep an eye out for "new arrivals" - bearing in mind the rough chronology noted above under "season".

9. Take leaves, stems, buds, flowers and seeds home and spend time comparing them to quality plant guides.

10. You should soon be feeling confident about the easier species. Get used to noticing these as you move about the countryside. Watch them develop. Notice the different patterns of flowering leaves to basal leaves. You should soon start to recognize the gestalt of common species.

11. Seek out toxic species if they don't seem to occur in your observation areas. You won't feel good about harvesting for the pot until you have got up close and personal with the important poisonous species. HWD is common in most areas of the UK, but those in the north may have to search for hemlock.

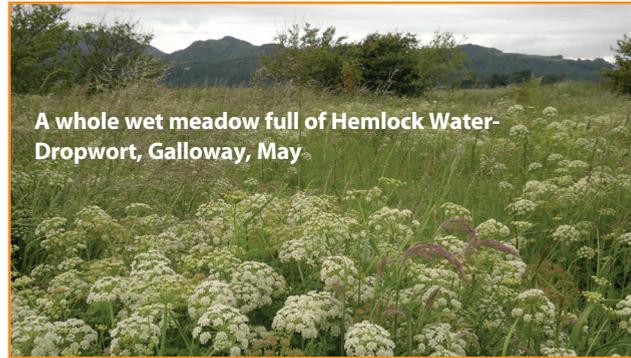
12. After a year of observation, you should be feeling very comfortable with many of the species, at all stages of growth. The truest test of your confidence is whether you feel good about eating edible varieties. If you don't, that's fine: spend some more time enjoying getting to know them.

13. USE IT OR LOSE IT. The key to feeling truly confident

with the carrot family is to stay intimate with them. While time invested is never wasted, a failure to stay in touch with the plants will make your IDs rusty and sloppy. Uncertainty will creep back in, or worse still, over-confidence.

The uncertainty I encounter most often, even in experienced apiaceae foragers, is in distinguishing cow parsley from hemlock. Although the leaf structure is very similar, the stems are quite distinctive and the real problem is usually that the person hasn't managed to find hemlock, yet imagines it at every turn! The hairless, rounded, purple/

red-blotched stems of hemlock are really quite different from the U-shaped, rough, green or purple stems of cow parsley. Seek them out!



A whole wet meadow full of Hemlock Water-Dropwort, Galloway, May

I hope you enjoy the process of getting to know these remarkable plants. They provide me with a year-round stream of delicious ingredients. I'm running out of space to go into much more detail on specific plants and their uses, but hopefully I'll be asked back for some more focused articles!

But you may wish to pay particular attention to the following...

Hogweed - Young shoots are the finest vegetable in the

UK, bar none. Steamed leaf buds beat broccoli in every way, the seeds make a fantastic spice and the roots a rich aromatic gin. My favourite plant!

Sweet Cicely - I feel sorry for foraging friends in the South, where this wonderful aromatic plant seldom grows. Its sweet aniseed aromatics go fantastically in desserts and drinks (I make wild Sambuca with it), or are great with fish.

Alexanders - Foraging friends in the South feel sorry for us Northerners as this delightful aromatic is a scarcity in Scotland. It has countless uses as a vegetable, but its myrrh-like aromatics also go well in sweet things and booze.

Ground Elder - You are never far from ground elder. Its flavour profile is surprisingly complex when you give it a chance - and check out its off-the-scale nutritional profile in the tables above!

Happy Foraging!

Recommended Reading

Umbellifers of the British Isles, BSBI Handbook No 2, by T.G. Tutin, 1980

The most comprehensive work I have found, though taxonomy somewhat out of date, dryly scientific in tone and includes a lot of rare species - perhaps more than the novice needs.

Field Guide to the Wild Flowers of Britain, Readers Digest, 1981

Fabulous book, with detailed illustrations of multiple parts (including seeds) and comparative layouts. .

Wild Flowers (Encyclopedia), by John Akeroyd, 2003
A good book covering most of the important species, including distribution maps and decent photographs.

The Forager Handbook, by Miles Irving, 2009
Comprehensive coverage of key edible species from a forager's perspective. Useful comparative tables for look-alikes.

	Common Name	Binomial Name	Principle Edible Parts	UK Distribution (in appropriate habitat)
Important/Easy/Common	Hemlock	<i>Conium maculatum</i>	Highly poisonous	Sporadic, more common S
	Hemlock water-dropwort	<i>Oenanthe crocata</i>	Highly poisonous	Abundant most of UK
	Fool's Parsley	<i>Aethusa cynapium</i>	Poisonous	Common, less so in N
	Giant Hogweed	<i>Heracleum mantegazzianum</i>	None known - toxic	Common
	Pig Nut	<i>Conopodium majus</i>	Root, seed	Common most of UK
	Ground Elder	<i>Aegopodium podagraria</i>	Leaf, seed	Hyperabundant
	Cow Parsley	<i>Anthriscus sylvestris</i>	Leaf, shoot	Abundant most of UK
	Pie/Fool's Water Cress	<i>Apium nodiflorum</i>	Foliage	Fairly common England
	Sweet Cicely	<i>Myrrhis odorata</i>	All	Sporadic, N of Derbyshire
	Common Hogweed	<i>Heracleum sphondylium</i>	Leaf, root, seed, bud	Abundant most of UK
Alexanders	<i>Smyrniolum olusatrum</i>	Leaf, stem, bud, seed	Common in S England, rare N	
Rarer Species	Wild Carrot	<i>Daucus carota</i>	Leaf, root, seed	Occasional
	Burnet-Saxifrage	<i>Pimpinella saxifraga</i>	Basal leaves	Widespread, less so in N
	Wild Parsnip	<i>Pastinaca sativa</i>	Root, leaves	Sporadic, mostly England
	Wild Celery	<i>Apium graveolens</i>	Leaf, shoot	Sporadic, absent in Scotland
	Bur Chervil	<i>Anthriscus caucalis</i>	Leaf, shoot	Sporadic, mostly England
	Spignel	<i>Meum athamanticum</i>	Foliage, seed	Sporadic Scotland
	Rock Samphire	<i>Crithmum maritimum</i>	Foliage, seed	Sporadic England
	Scots Lovage	<i>Ligusticum scoticum</i>	Foliage, seed	Sporadic Scotland
	Sea holly	<i>Eryngium maritimum</i>	Root	Sporadic, mostly England
	Sanicle	<i>Sanicula europaea</i>	Leaves	Common
	Cowbane	<i>Cicuta virosa</i>	Highly poisonous	Rare

Key:

Easy/Common/Important
Rarer/Advanced
Poisonous
Extreme care required

Habitat	Possible confusion with	Distinguishing features
Verges, waste ground, fields, coast	Cow parsley, Bur chervil	Red blotched, round, hairless stem
Wet ground, ditches, riverbanks	Wild celery, pie cress	Habitat, acrid celery smell, rounded lobes, hollow stem
Verges, waste ground, fields	Cow parsley	Finely toothed leaves, pendulous bracts
Riverbanks, verges, waste ground	Common Hogweed	Giant size, purple spiny stems, huge skeletons
Fields, verges	Burnet-Saxifrage (young)	Small size, lack of foliage, tuber
Anywhere with partial shade	Young angelica	Hairless, 3x3 groups toothed oval leaves
Verges, waste ground, fields, edges	Hemlock, fool's parsley	Sometimes purple stemmed, NEVER blotchy
Ditches, streams, standing water	HWD	Habitat, Opposed serrated oval leaves (not pinnate)
Damp hedgerows, riverbanks	Nothing if smelled	Aniseed smell, white splashes
Verges, waste ground, fields, edges	Giant hogweed, Parsnip	Hairy (not spiny), >6', usually rounded lobes
Mostly coastal	Angelica	Hairless, glossy, yellow flowers, striped buds
Mostly coastal, dry fields inland	Very young hemlock	Habitat, Cage-like bracts, roughly hairy
Wood edges, meadows, verges	Pignut (when young)	Stem solid, hairy, shallow ridges
Verges, rough ground	Common Hogweed	Yellow flowers, smell of parsnip, winged seeds
Salt marsh, wet ground	HWD	Solid stem, toothed 3-lobed leaves
Dry hedgerows, waste ground	Hemlock, fool's parsley	White hairs on underside of leaves
Unimproved grassland, verges	Dill, fennel	Habitat, smell
Coastal cliffs, rocky foreshore	Nothing	Habitat, smell, succulence
Coastal cliffs, foreshore	Nothing	Distribution, habitat, smell
Coastal dunes, sandy shores	Nothing	Looks like blueish thistle/holly
Woodland	Young hogweed	3 - 5 lobed deeply toothed leaves, not pinnate
Still or slow flowing water	Greater water parsnip	Thin, sharply toothed leaves, 2-3 x pinnate

Quick Reference Table of Key Apiaceae for Foragers (To be used in conjunction with field guides)

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