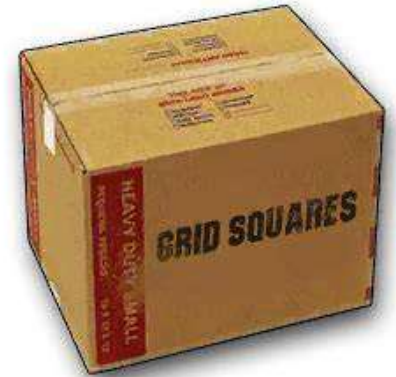




Botanical Society of Britain & Ireland



Grid references – everything you ever wanted to know!
Mark McCorry

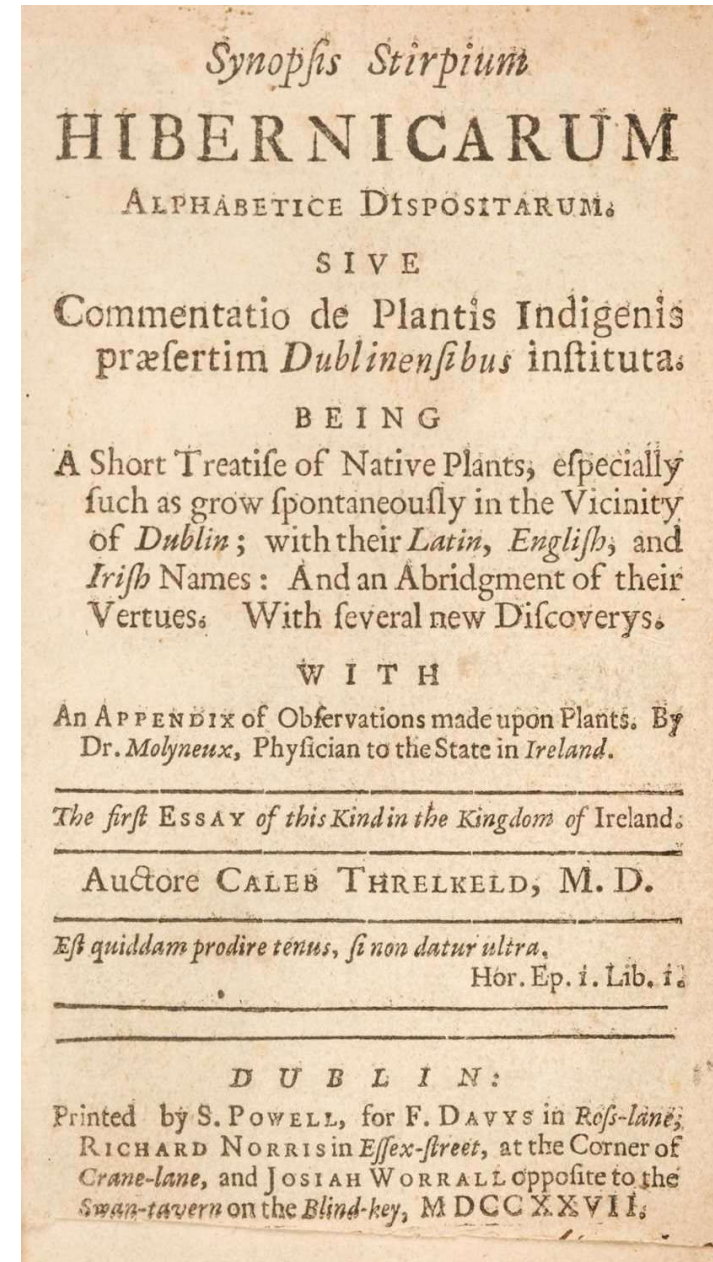
Caleb Threlkeld (1676-1728)

Synopsis Stirpium Hibernicarum

First flora of Ireland.....

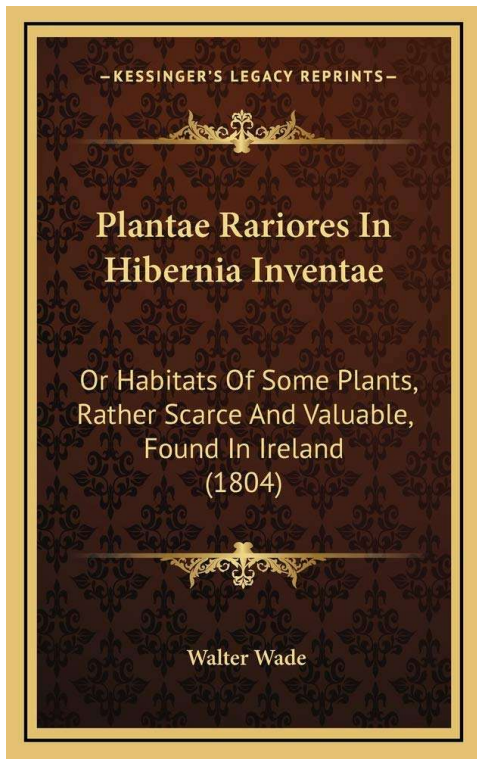
Not too interested in specific locations....

No grid references

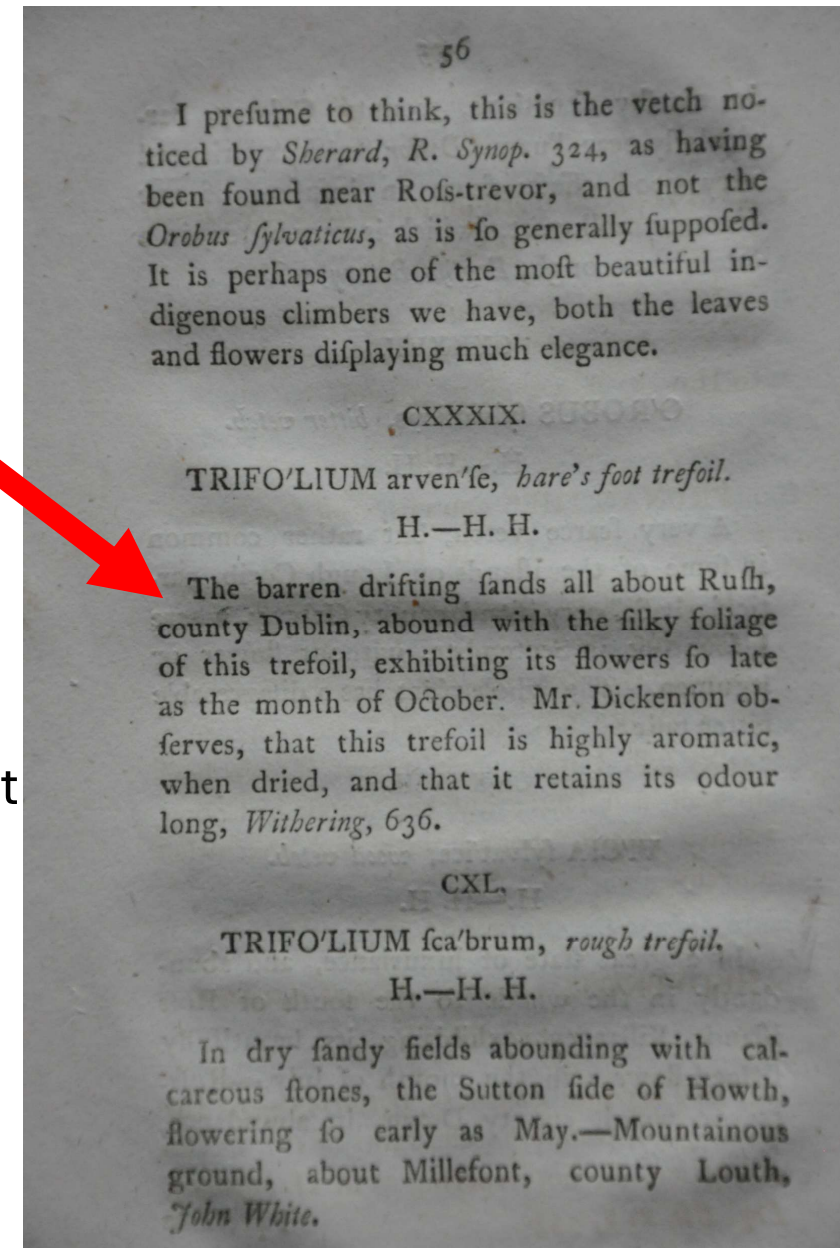


Plantæ Rariores In Hibernia Inventæ: Or, Habitats Of Some Plants, Rather Scarce And Valuable, Found In Ireland, With Concise Remarks On The Properties And Uses Of Many Of Them

Wade, Walter (1804)



This flora
started to list
locations..... But
no grid references



Contributions Towards A Cybele Hibernica (1898) Alexander Goodman More

Outlines of the
Geographical distribution
of Plants in Ireland.

Plants categorised
according to geographical
divisions



Irish Topographic Botany - Robert Lloyd Praeger

Praeger divided Ireland into 40 vice-counties

“The one- inch hill-shaded Ordnance Survey map as my constant companion”

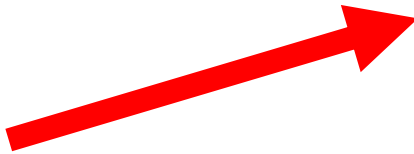
- Each area was surveyed over a 5 year period 1895-1900
- Notes written up in “Irish Naturalist” during this period
- ITB available to view on www.jstor.org

[Praeger's Irish Topographical Botany | National Botanic Gardens of Ireland](#)



Irish Topographic Botany

- Praeger recorded plant records in ITB based on localities
- Plants not recorded using grid yet
- ITB available to view on www.jstor.org



***Drosera rotundifolia* L.** Round-leaved Sundew.

Divisions all. Frequent.

***Drosera anglica* Huds.** Great Sundew.

Census 34—East 9, Centre 13, West 12.

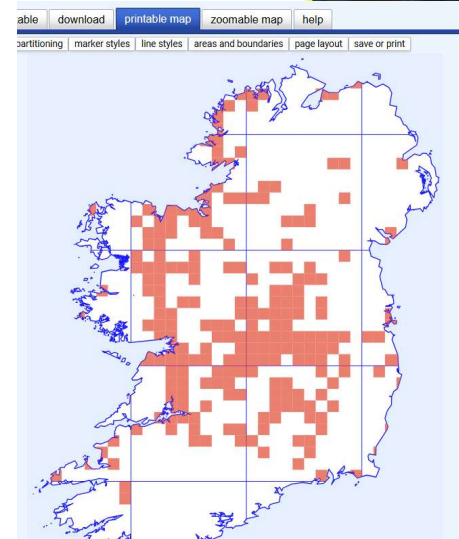
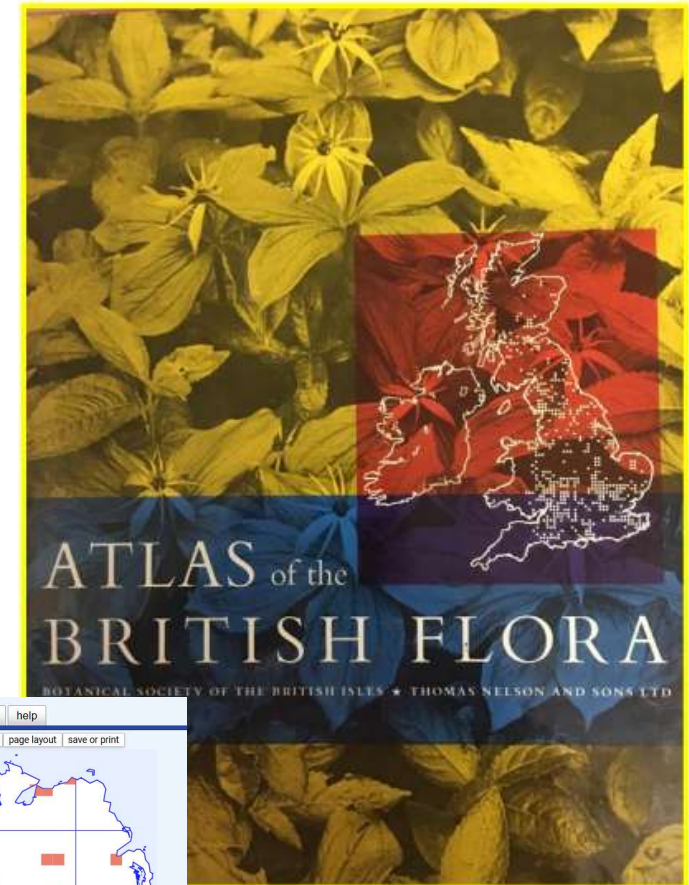
- | | | |
|----|-----------|---|
| 1 | Kerry S. | Glencar '99 : rather frequent—Scully. |
| 2 | Kerry N. | Gneevgullia '98—P. Rather rare—Scully. |
| 3 | Cork W. | Inchigeela '58, J. Sullivan— <i>Cyb.</i> II. Rare—Phillips. |
| 4 | Cork Mid | Bluefort bog near Newmarket—Allin <i>Fl.</i> '83. |
| 7 | Tipp. S. | Ballinure '98—P. |
| 8 | Limrek. | Castleconnell bog '00—R. D. O'Brien ! |
| 9 | Clare | Carrigaholt '86—Stewart. Lisdoonvarna ; Crusheen. |
| 10 | Tipp. N. | Cloughjordan '00—P. Frequent. |
| 11 | Kilkny. | Urlingford '98—P. |
| 14 | Queen's | Abbeyleix '98 : locally common—P. |
| 15 | Galw. SE. | Dalystown '98 : frequent in east, rare in west—P. |
| 16 | Galw. W. | Glen Inagh '98—Colgan. Very frequent. |
| 17 | Galw. NE. | Barbersfort '99 : frequent throughout—P. |
| 18 | King's | Geashill and Tullamore '96, and frequent in west—P. |
| 19 | Kildare | Nurney '97, Carbury '96—P. |

www.jstor.org

First Atlas of the British and Irish Flora - 1962

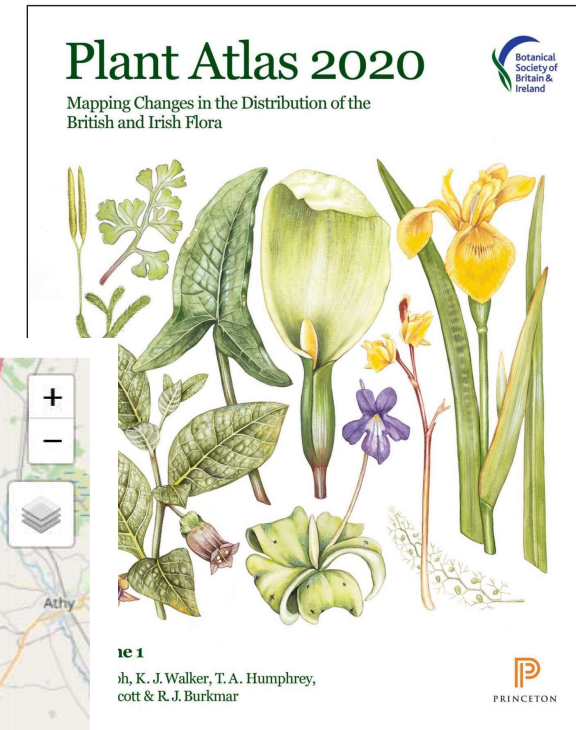
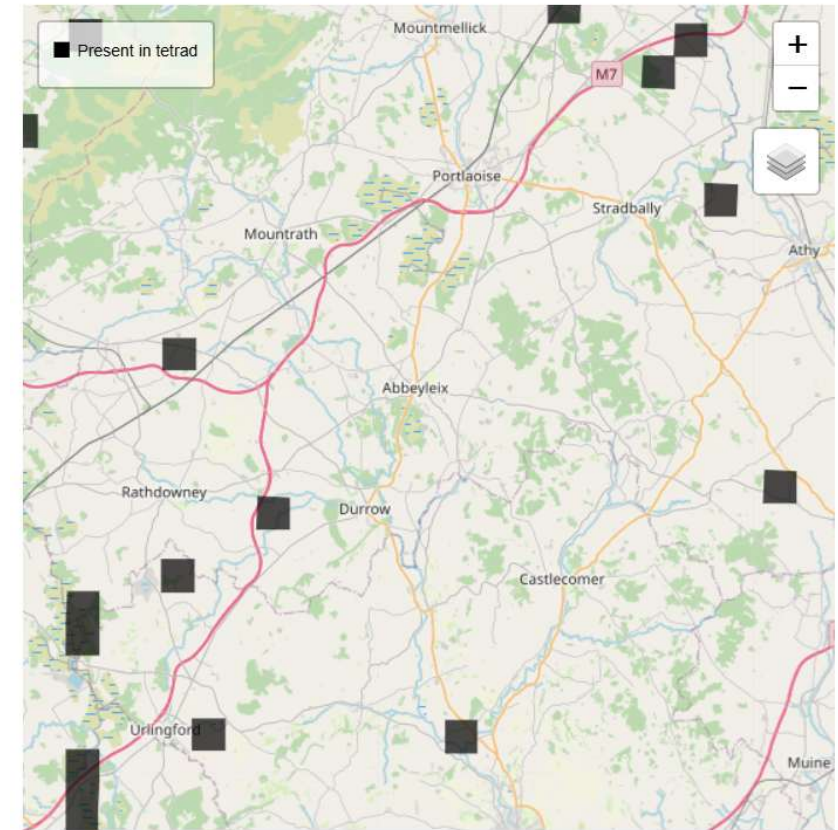
- 1940s – British Ordnance Survey introduced a decimal grid system – National Grid – 10 km x 10 km
- Allowed grid references to be used
- Allowed plant records to be attributed to 10 km x 10 km squares
- First 1962 Plant Atlas used this grid
- Note that the 1962 Atlas used “The Extended British Grid” as the computers of the day could not map the Irish grid separately; remember this when looking at the 1962 Atlas!

[Mapping the flora of Britain and Ireland – Botanical Society of Britain & Ireland](#)



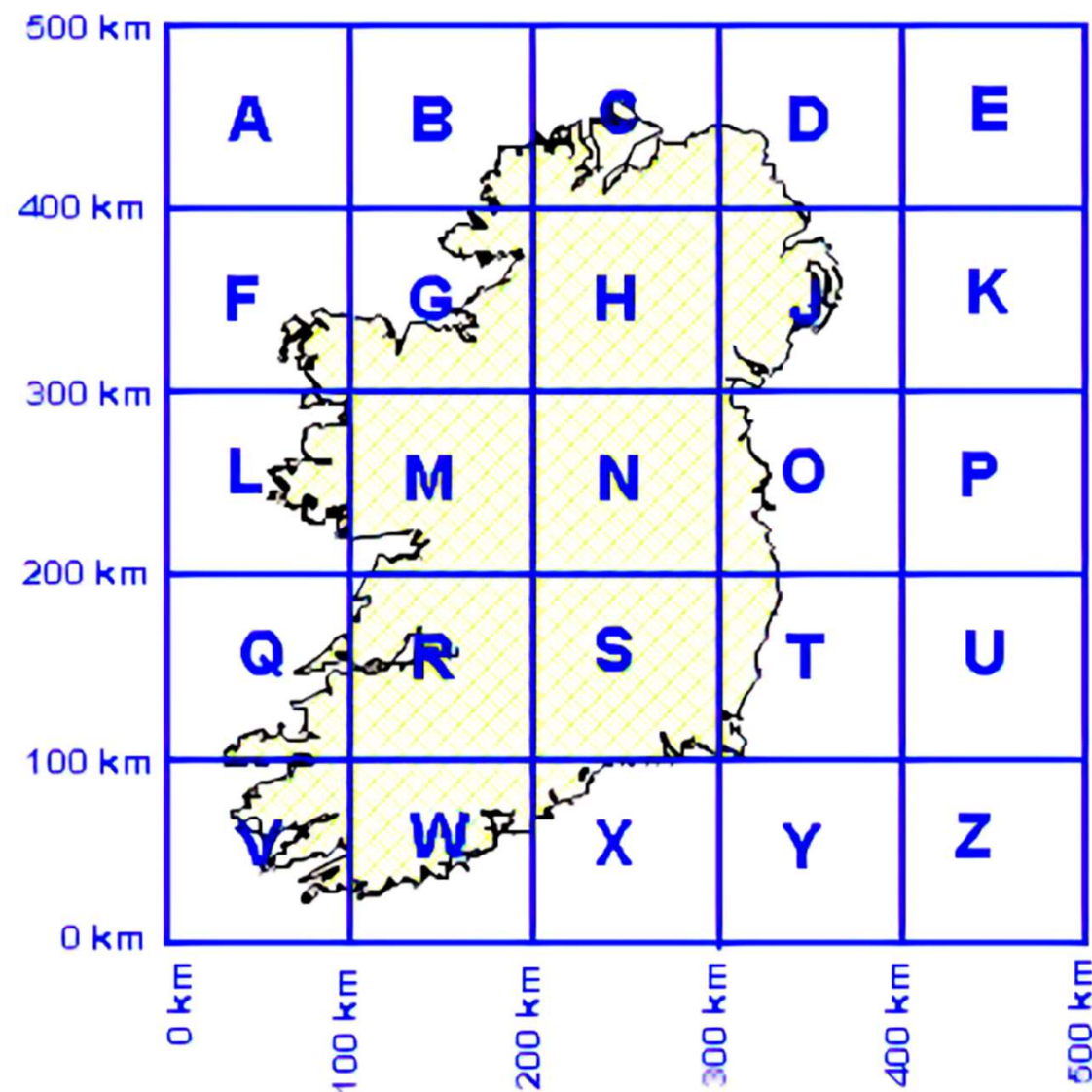
Plant Atlas 2020

- 1970s – grid references started to be used in plant recording
- 1990s – appearance of GPS
- 2020s – ability to plot plant locations to < 5 m



Irish National Grid (ING)

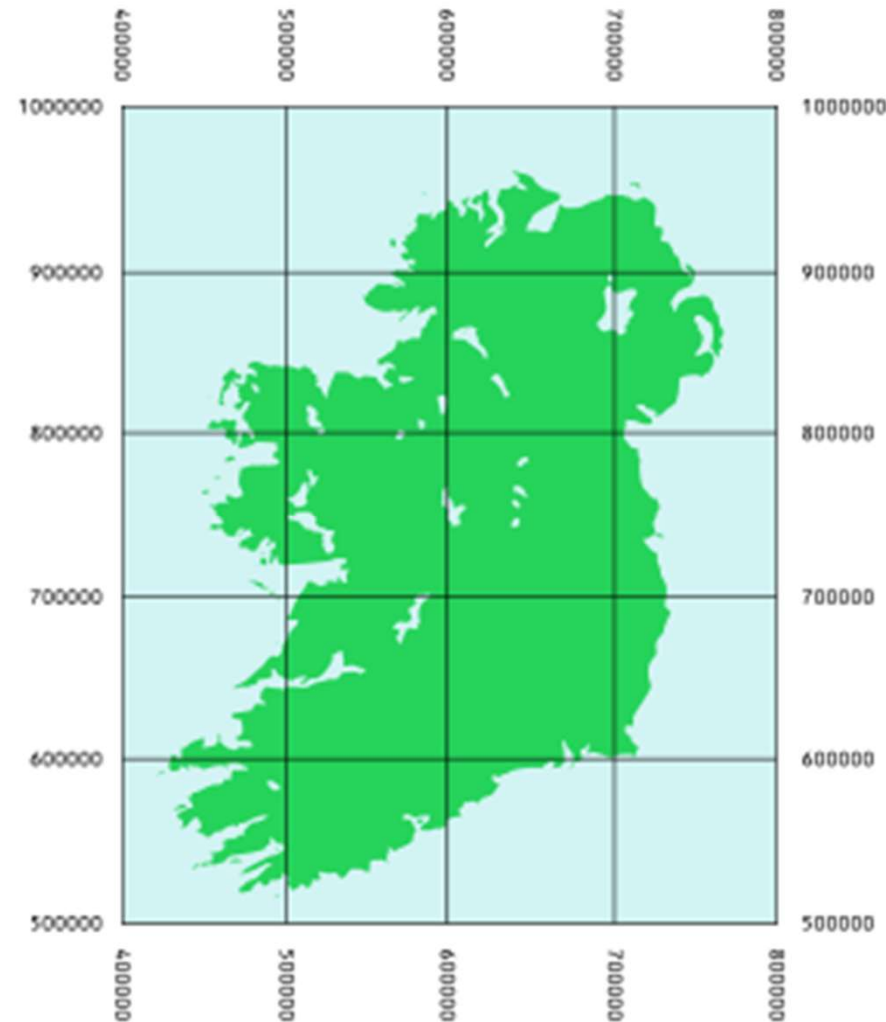
- Used in both Northern Ireland and Republic of Ireland
- Any location in Ireland can be described in terms of its distance from the origin (0, 0), which lies off the southwest coast.
- Ireland divided into 25 squares
- 100 km x 100 km
- “Letter I was omitted”



Irish National Grid 100 km Squares

Irish Transverse Mercator (ITM)

- Switch to Irish Transverse Mercator in 2001
- Adapted by NI and ROI
- In both systems, the true origin is at 53° 30' N, 8° W[3] — a point in Lough Ree, close to the western (Co. Roscommon) shore, whose grid reference is N000500
- Provided better alignment with GPS technology
- **BUT**
- **BSBI still using Irish National Grid!**



Why use a grid reference system?

- Way not stick to latitude and longitude?
- A Grid reference system is decimal
- It looks to provide system to plot grid points on 2 dimensional maps
- But Ireland (and the world) is not 2 dimensional!
- The earth is approximately a sphere with irregular surface.
- Geoid model used- complex mathematical model
- So – we are trying to unpeel an orange, flatten it out, and then draw a grid on it that is referenced to a fixed point!

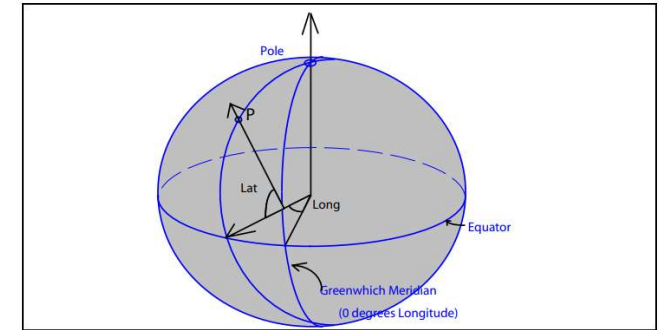
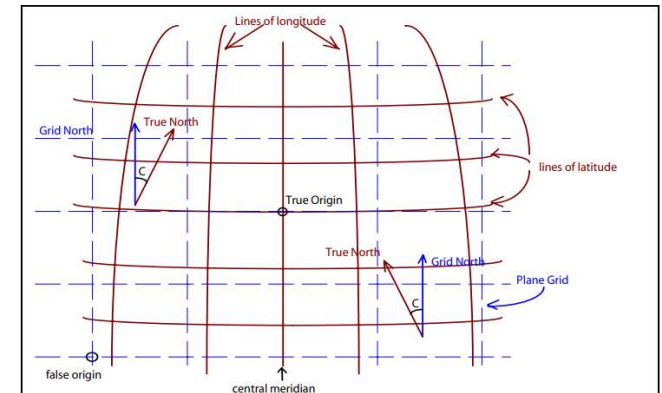
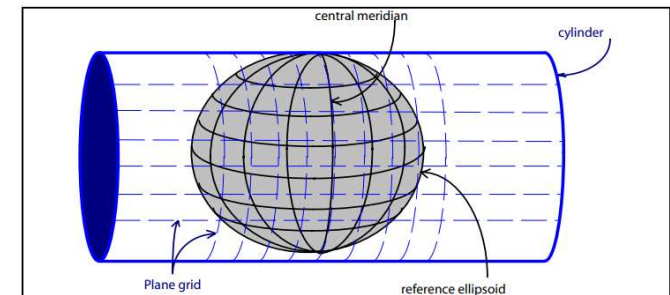


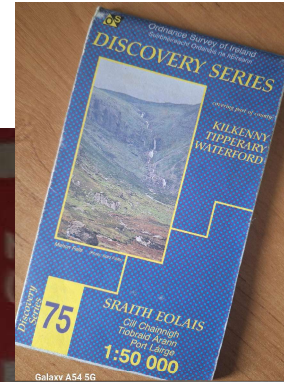
Diagram 2 : Ellipsoidal Reference system.



[Wayback Machine](#)

How to take a grid reference

- Read the LETTER identifying the 100,000 m square
- First quote Eastings
- Locate the vertical grid line to the left of the point
- Next quote Northings
- Locate first Horizontal grid line below the point.
- Estimate tenths from grid line to point.

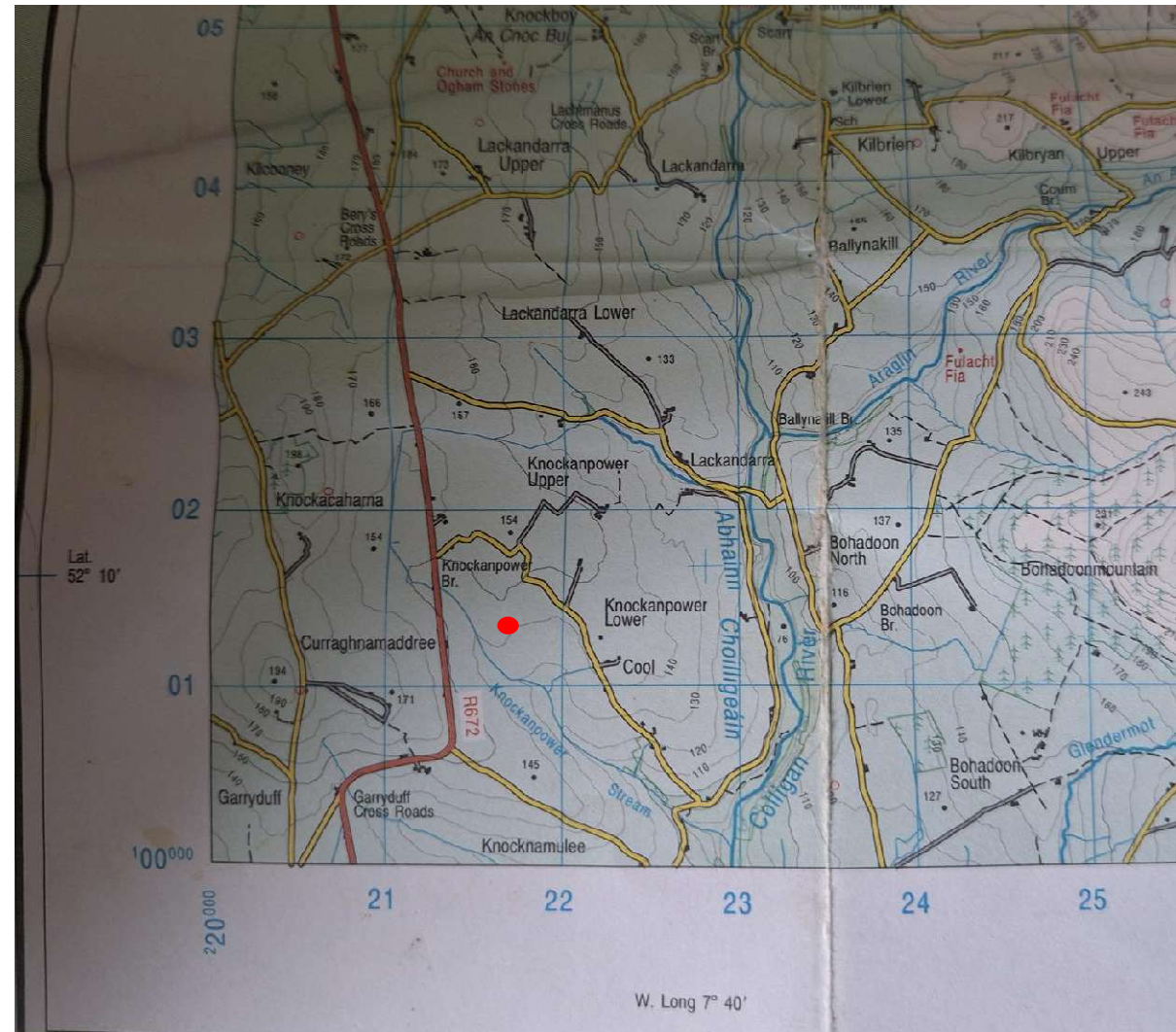


HOW TO TAKE A GRID REFERENCE (ON A GRID)

100 000 Metre GRID SQUARE IDENTIFICATION	TO GIVE A GRID REFERENCE TO NEAREST 10 METRES				
	SAMPLE POINT: SEEFIN Trig. Station				
	<p>1. Read letter identifying 100 000 metre square in which the point lies.</p> <p>2. FIRST QUOTE EASTINGS Locate first VERTICAL grid line to LEFT of point and read LARGE figures labelling the line either in the top or bottom margin or on the line itself. Estimate tenths from grid line to point.</p> <p>3. NEXT QUOTE NORTHINGS Locate first HORIZONTAL grid line BELOW point and read LARGE figures labelling the line either in the left or right margin or on the line itself. Estimate tenths from grid line to point.</p>	S	27	4	06
	<p>Ignore the smaller figures of any grid number; these are for finding the full coordinates. Use only the larger figures of the grid number.</p> <p>EXAMPLE: 260 000</p>				
SAMPLE REFERENCE		S 274 068			
For local referencing grid letters may be omitted.					

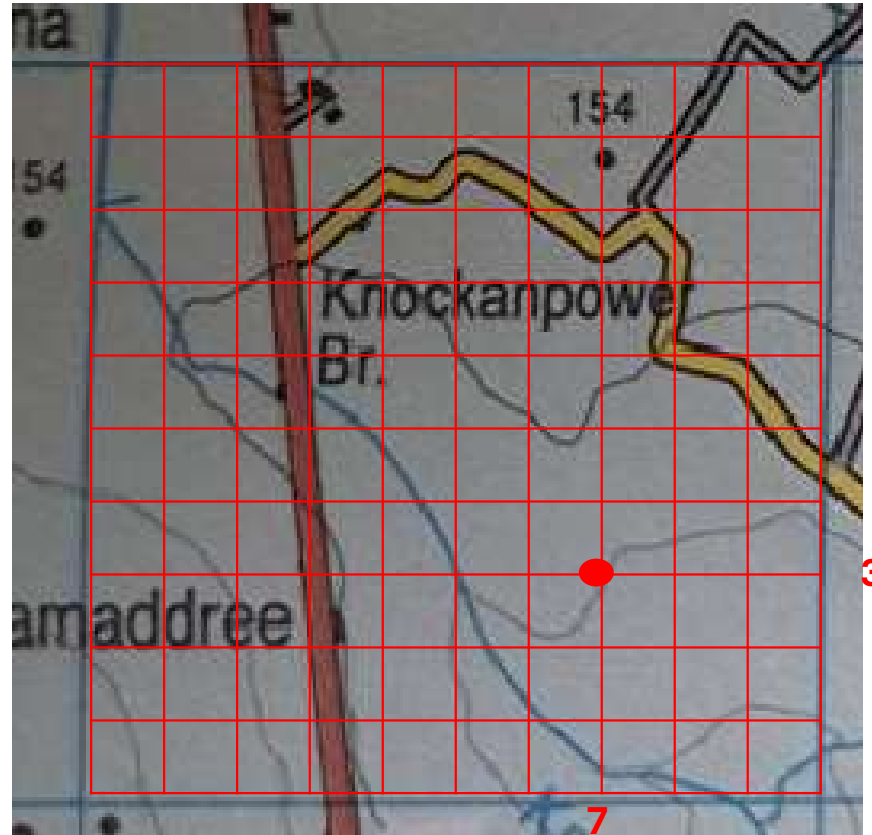
How to take a grid reference

- Discovery Map 1:50,000
- Read the LETTER identifying the 100, 000 m square. **S**
- First quote Eastings
- Locate the vertical grid line to the left of the point **21**
- Next quote Northings
- Locate first Horizontal grid line below the point. **01**



How to take a grid reference

- Read the LETTER identifying the 100, 000 m square. **S**
- First quote Eastings
- Locate the vertical grid line to the left of the point **21**
- Next quote Northings
- Locate first Horizontal grid line below the point. **01**
- Estimate tenths from grid line to point.
- Easting **7**
- Northing **3**
- Easting **217**
- Northing **014**
- Grid reference is **S217014**



BSBI Data Entry guidance

- Always record a site name
- **Always record a grid reference**
- A quick way to enter new sites in MapMate is to use the format “sitename@gridref” in the Site field.
- Use the most appropriate grid ref which (just) encompasses the site, e.g. a 6 figure
- grid ref describes a 100 metre square or a 4 figure grid ref a 1km square, etc, rather
- than central approximations of much larger sites (centroids).



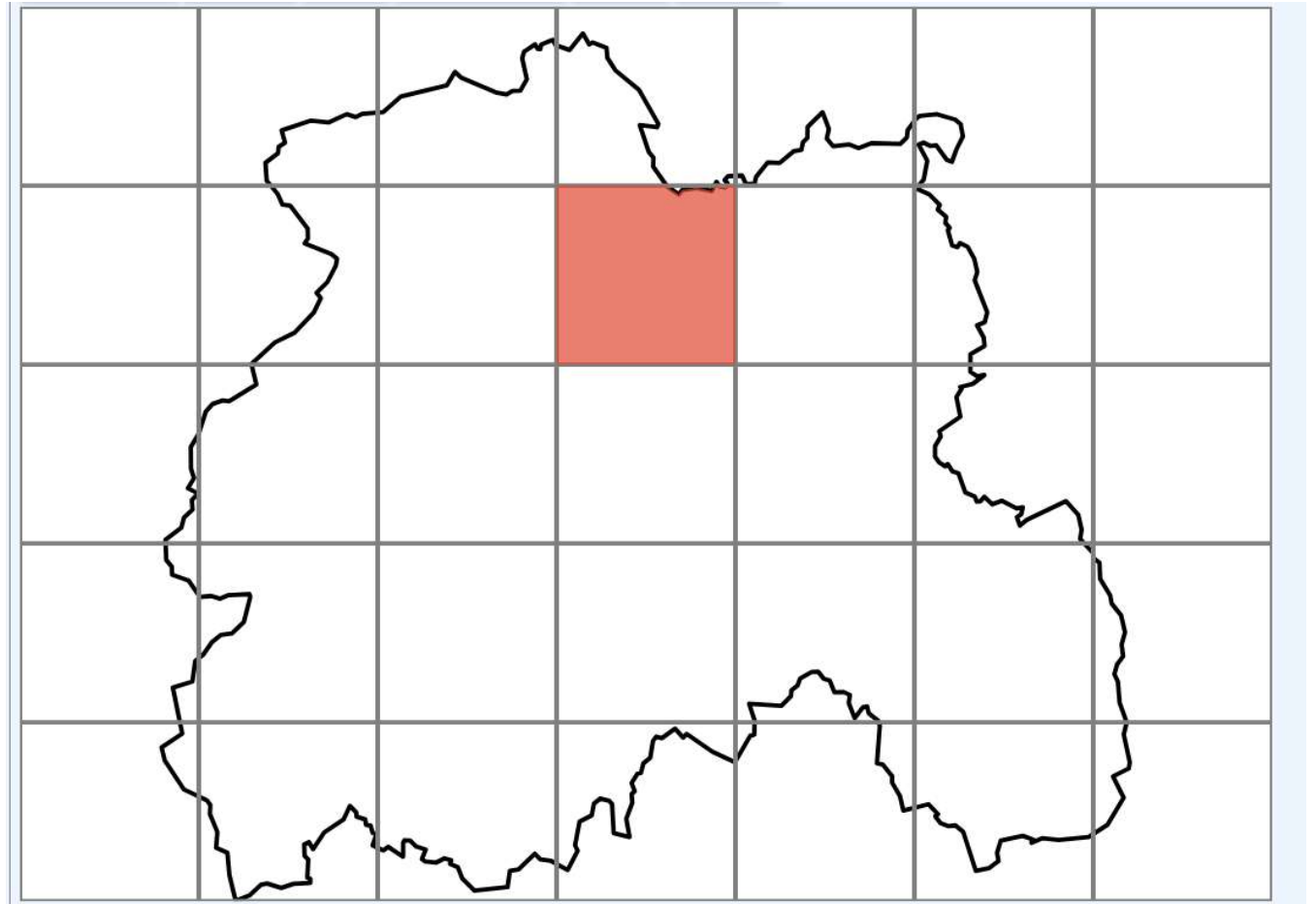
- <https://docs.bsbi.org/guidance/recording/guidance>

Epipactis palustris

results table download printable map zoomable map help								
17 records matched your query.								
	record	taxon	recorder	vc	locality	grid ref	date	status
<input type="checkbox"/>		Epipactis palustris * 1st		VCH14	Laois	N40	1896	
<input type="checkbox"/>		Epipactis palustris *		VCH14	Laois	N41	1950-1969	
<input type="checkbox"/>		Epipactis palustris		VCH14	Laois	N51	1897	
<input type="checkbox"/>		Epipactis palustris *		VCH14	Laois	S38	1960-1969	
<input type="checkbox"/>		Epipactis palustris *	Preston, C.D. Goodwillie, R.N.	VCH14	Grantstown Manor, The Curragh S of	S3477	11/7/1992	
<input type="checkbox"/>		Epipactis palustris *	{ Moorkens, E. }	VCH14	Laois	S47	-1969	
<input type="checkbox"/>		Epipactis palustris	McCorry, Mark	VCH14	Bruckana Windfarm	S223705	12/8/2015	
<input type="checkbox"/>		Epipactis palustris	Hickey, Betsy	VCH14	Cappalug	S666797	15/7/2008	
<input type="checkbox"/>		Epipactis palustris	Hickey, Betsy	VCH14	Jamestown - along canal	N615068	10/7/2007	
<input type="checkbox"/>		Epipactis palustris	Hickey, Betsy	VCH14	Kilbride gravel pit	N526095	15/6/2006	
<input type="checkbox"/>		Epipactis palustris	McCorry, Mark	VCH14	Rathdaire Lake	N585052	9/7/2015	
<input type="checkbox"/>		Epipactis palustris	McCorry, Mark	VCH14	Coolnafeagh Fen	N605111	13/7/2016	
<input type="checkbox"/>		Epipactis palustris	Holyoak, D.T.	VCH14	near Annaghmore Lough	N309145	23/8/2005	
<input type="checkbox"/>		Epipactis palustris	Holyoak, D.T.	VCH14	near Annaghmore Lough	N310144	23/8/2005	
<input type="checkbox"/>		Epipactis palustris	Holyoak, D.T.	VCH14	near Annaghmore Lough	N309146	23/8/2005	
<input type="checkbox"/>		Epipactis palustris	Holyoak, D.T.	VCH14	near Annaghmore Lough	N30981462	23/8/2005	
<input type="checkbox"/>		Epipactis palustris *	McCorry, Mark	VCH14	Mannin Wetland	S288875	21/6/2017	
<div> <input type="button" value="select page"/> <input type="button" value="select all"/> <input type="button" value="clear selection"/> selected records action <input type="button" value="change record validation state"/> </div> <div> mark validation state as <input type="text"/> </div>								

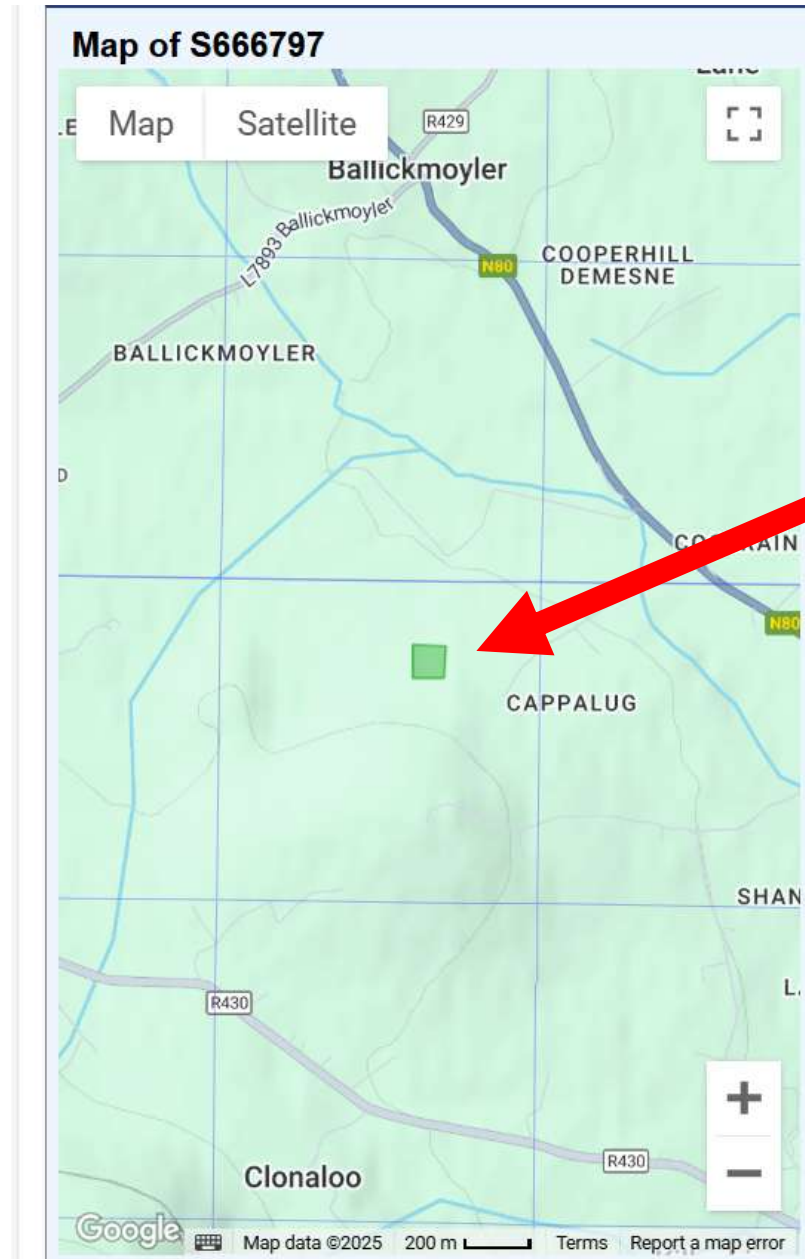
Epipactis palustris

- 1st record in Laois (1896) – **N40**
- 10 km x 10 km square
- tetrad

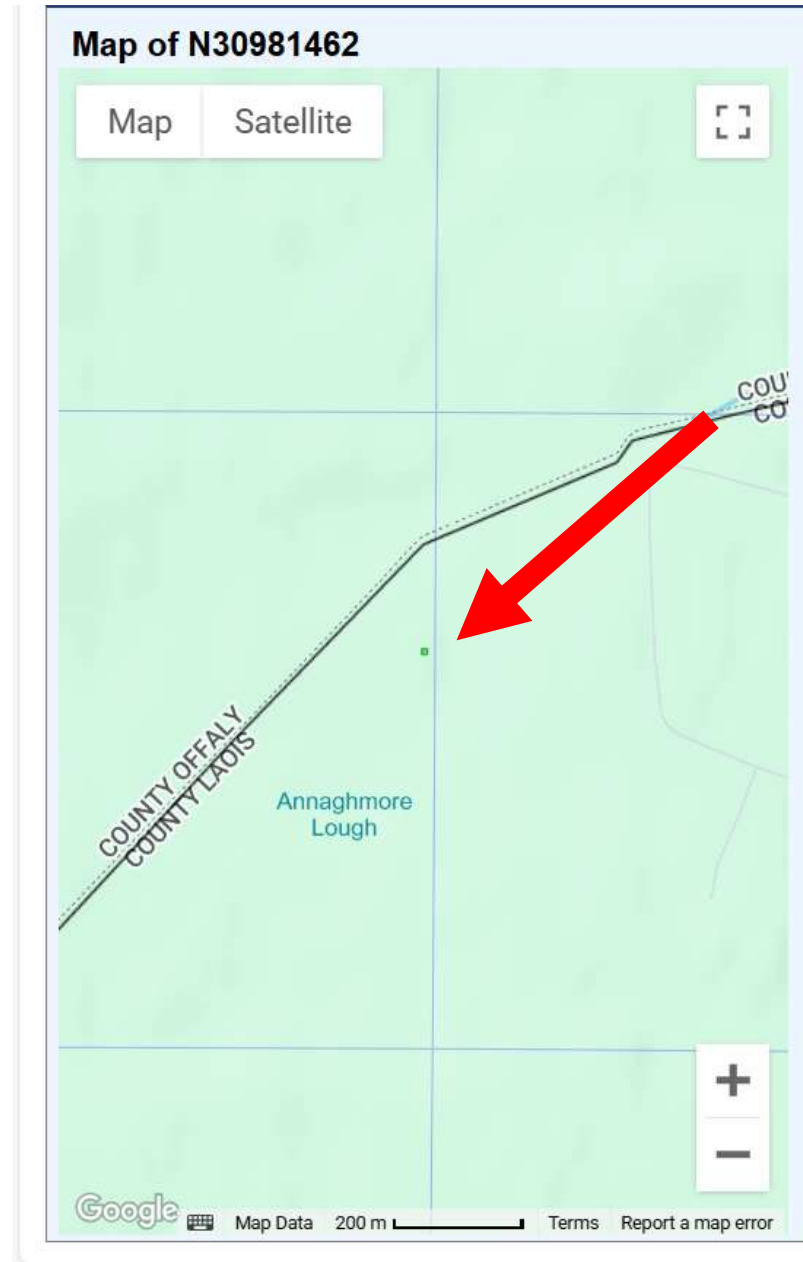


- ***Epipactis palustris***

- S666797
- 100 m x 100 m square
- 6 digit grid ref



- ***Epipactis palustris***
- N30981462
- 10 m x 10 m square
- 8 digit grid ref
- Probably accurate enough for plant recording and capability of Phone based mapping
- **GPS?**
- Potentially greater accuracy but would need a 1 metre accuracy to accurately record a 10 digit grid ref.



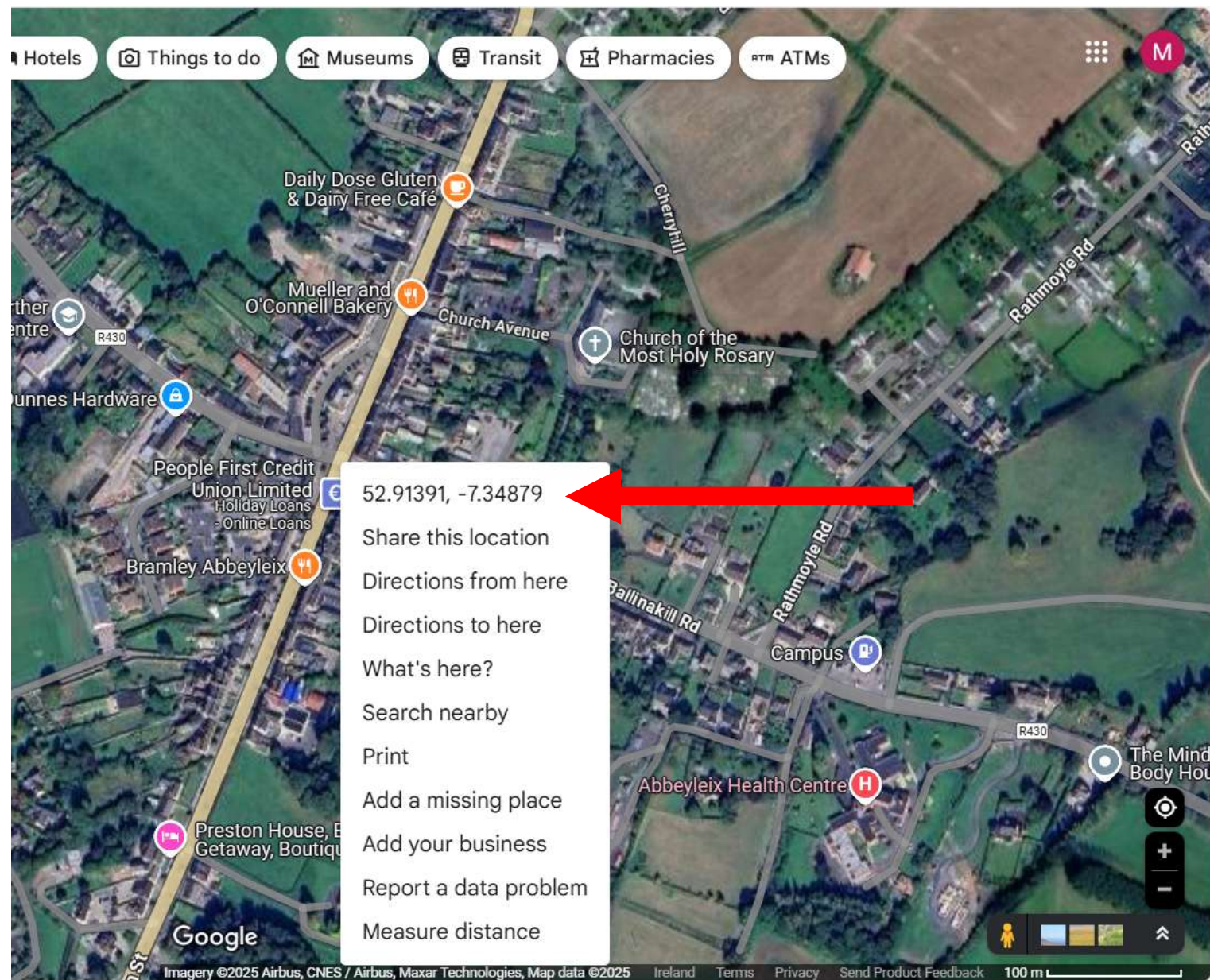
First grid references used for plant recording in Laois !

<input type="checkbox"/>		<i>Hedera helix</i> S.I.		VCH14	Laois	S68	1974	
<input type="checkbox"/>		<i>Dactylorhiza traunsteinerioides</i>	Scannell	VCH14	Roscrea, Co. Laois	S38	1974	
<input type="checkbox"/>		<i>Anthoxanthum odoratum</i>		VCH14	Laois	S18	1974-1986	
<input type="checkbox"/>		<i>Ribes rubrum</i> * 1st	Perring, F.H. Webb, D.A.	VCH14	Laois	S6282	27/4/1974	
<input type="checkbox"/>		<i>Crepis paludosa</i> *	Perring, F.H. Webb, D.A.	VCH14	Laois	S7184	27/4/1974	
<input type="checkbox"/>		<i>Ranunculus omiophyllus</i> * †	Perring, F.H. Webb, D.A.	VCH14	Arless, Gales Hill	S6282	27/4/1974	
<input type="checkbox"/>		<i>Dactylorhiza traunsteinerioides</i> *	Scannell, M.	VCH14	Aghanaboe	S38	14/5/1974	

<< first < prev 1 2 3 4 5 6 next > last >>								
			record		locality	grid ref	date	
<input type="checkbox"/>		<i>Capsella bursa-pastoris</i>	Webb, D.A.	VCH14	Laois	S27	1975	
<input type="checkbox"/>		<i>Groenlandia densa</i>	Scannell, Maura	VCH14	Durrow, SW of	S3677	1975	FPO scarce IE:NT
<input type="checkbox"/>		<i>Groenlandia densa</i>	Scannell, Maura	VCH14	Laois	S3677	1975	FPO scarce IE:NT
<input type="checkbox"/>		<i>Potamogeton crispus</i>	Scannell, M.J.P.	VCH14	Cullahill, R Goul W of	S37	31/5/1975	
<input type="checkbox"/>		<i>Groenlandia densa</i>	Scannell, M.J.P.	VCH14	Cullahill, R Goul W of	S37	31/5/1975	FPO scarce IE:NT
<input type="checkbox"/>		<i>Equisetum variegatum</i>	Scannell, M.J.P.	VCH14	Derry Hills	N21	1975	
<input type="checkbox"/>		<i>Sorbus hibernica</i>	Walters, S.M.	VCH14	Roadside two miles west of Stradbally	S535976	1978	IE:VU
<input type="checkbox"/>		<i>Sorbus hibernica</i> *	Walters, S.M.	VCH14	Stradbally	S535976	1/7/1978	IE:VU

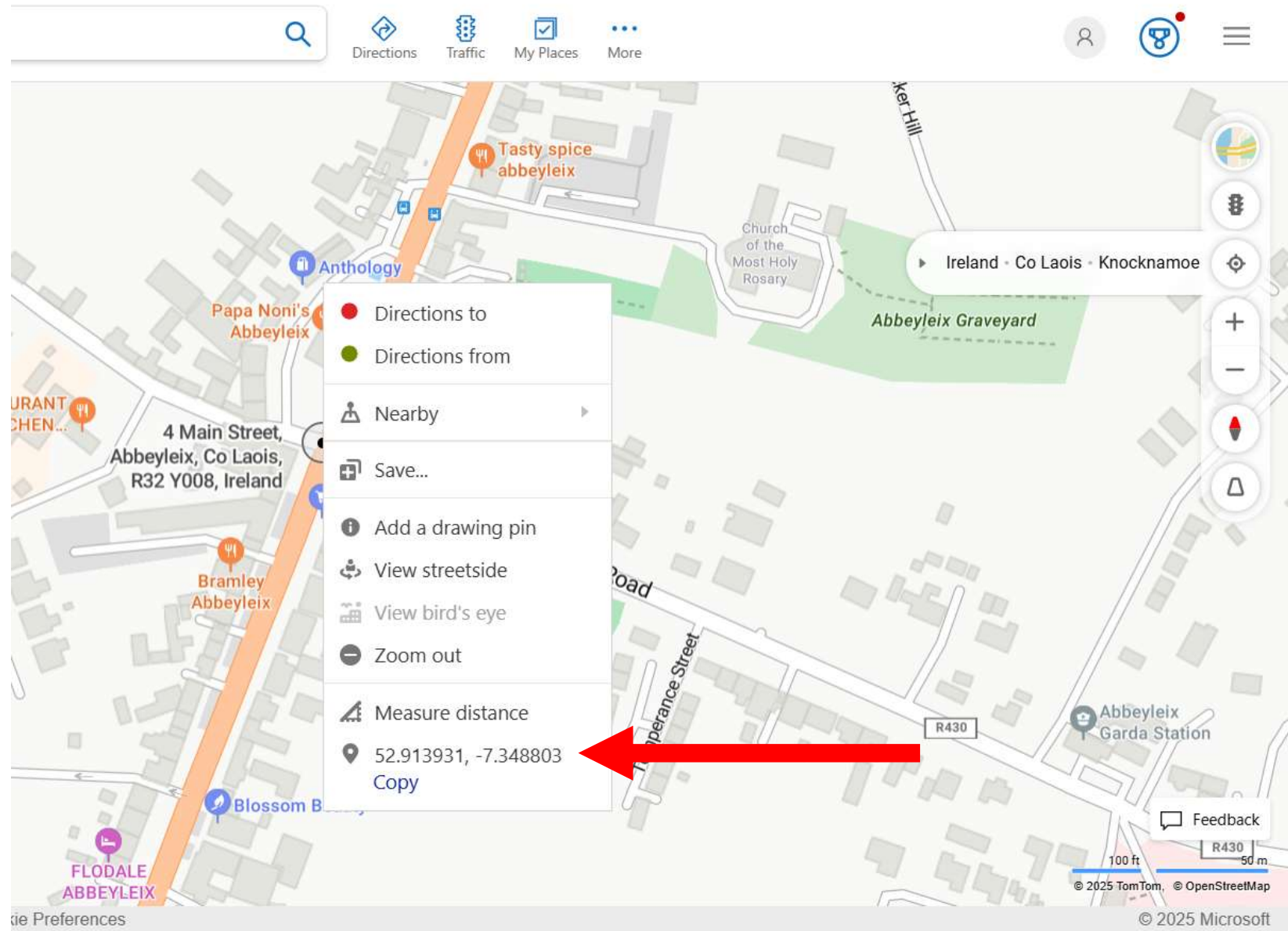
Google Maps

- Google Maps will give latitude and longitude for any point
- Just right click.....



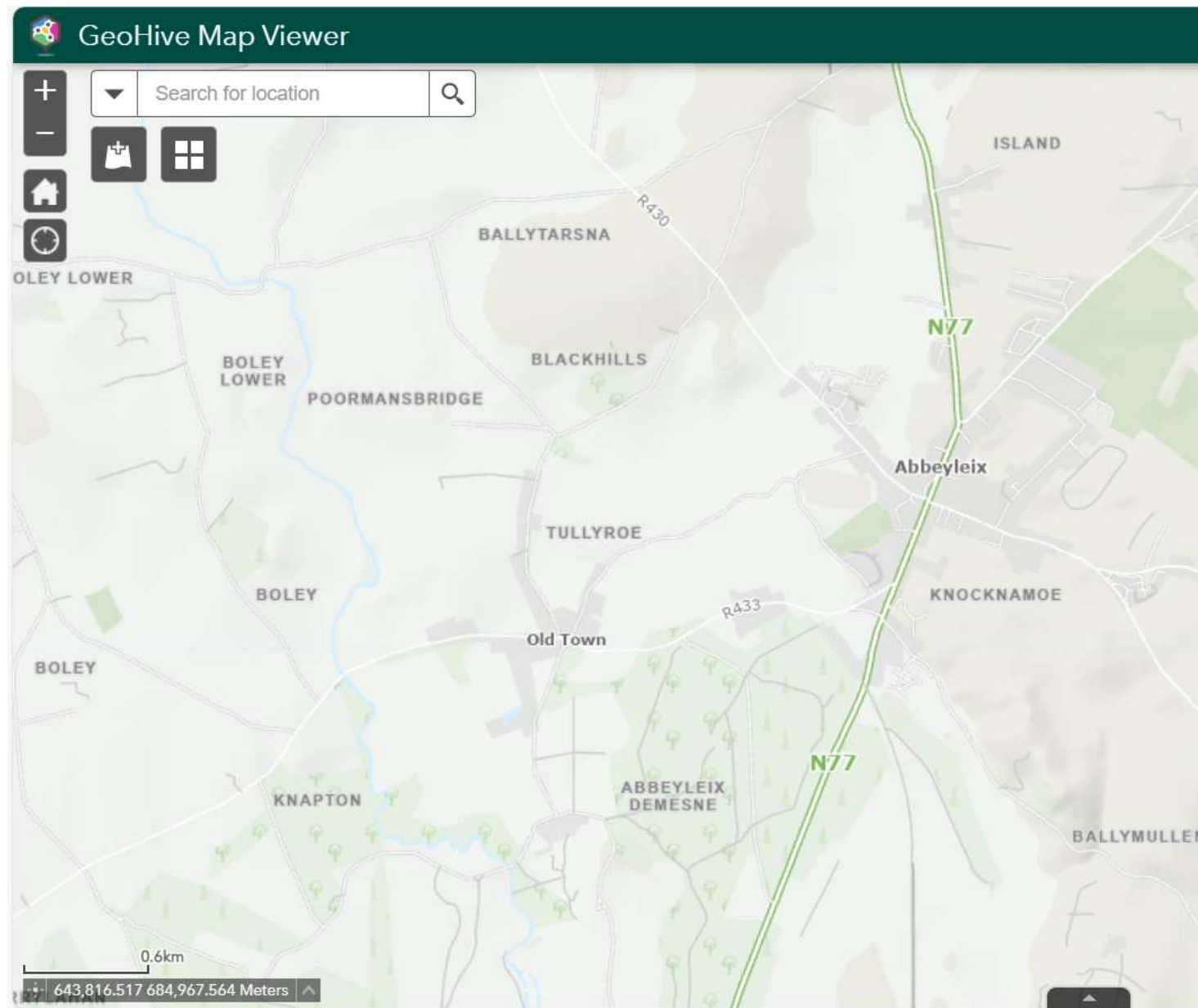
Bing Maps

- Same with Bing Maps
- Just right click.....



GeoHive Mapviewer

- Grid reference in corner
- Abbeyleix Crossroads
- 643816, 684967
- ITM grid reference



- [Ordnance Survey Ireland :: Geodetic services :: Co-ordinate converter](#)
- Abbeyleix Cross-raods
- 643816, 684967

Convert data from one of the four standard co-ordinate systems (e.g. ITM) to each of the others (e.g. ETRF89 GPS, UTM and Irish Grid) and vice-versa.

You can also download an application for more options - [Download App](#)

Co-ordinate converter

ETRF89 GPS Co-ordinates:

Latitude:	<input type="text" value="52"/>	deg	<input type="text" value="54"/>	min	<input type="text" value="49.512844"/>	sec	
Longitude:	<input type="text" value="-7"/>	deg	<input type="text" value="20"/>	min	<input type="text" value="54.753543"/>	sec	
Altitude:	<input type="text"/>						<input type="button" value="Convert"/>

Irish Grid Co-ordinates:

Easting:	<input type="text" value="243875.0133"/>		Northing:	<input type="text" value="184929.6639"/>		
Orthometric Height:	<input type="text"/>					<input type="button" value="Convert"/>

Irish Transverse Mercator (ITM) Co-ordinates::

Easting:	<input type="text" value="643816"/>		Northing:	<input type="text" value="684967"/>		
Orthometric Height:	<input type="text"/>					<input type="button" value="Convert"/>

Universal Transverse Mercator (UTM) Co-ordinates - Zone 29:

Easting:	<input type="text" value="611046.4599"/>		Northing:	<input type="text" value="5863953.2049"/>		
Ellipsoid Height:	<input type="text"/>					<input type="button" value="Convert"/>

Hint: Use the TAB key to move around the input boxes quickly.

Instructions: Find a grid reference on the map by simply right-clicking on the map. Enter a location search below.

Location (Road , Town)
 Go

Grid Reference
 Go

X (Easting) Y (Northing)
 Go

Lat Long
 Go

ITM X ITM Y
 Go

What3Words
 Go

Advertisement

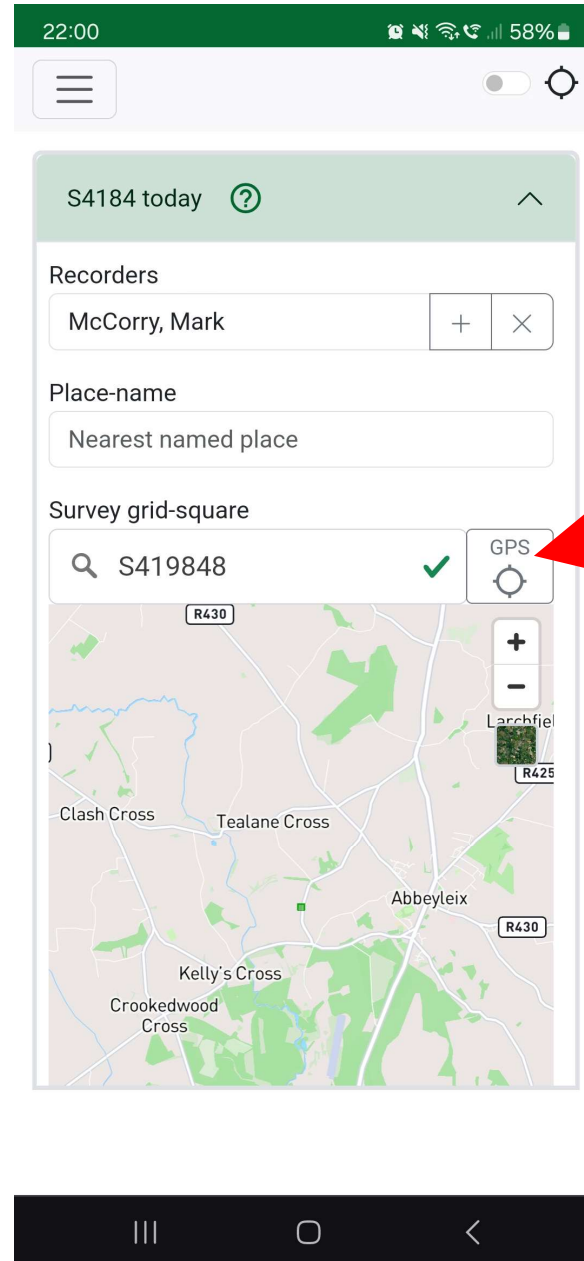


Instructions: Right-click (or Tap) on the Map to Display the Grid Reference and Location Information

[illegible]

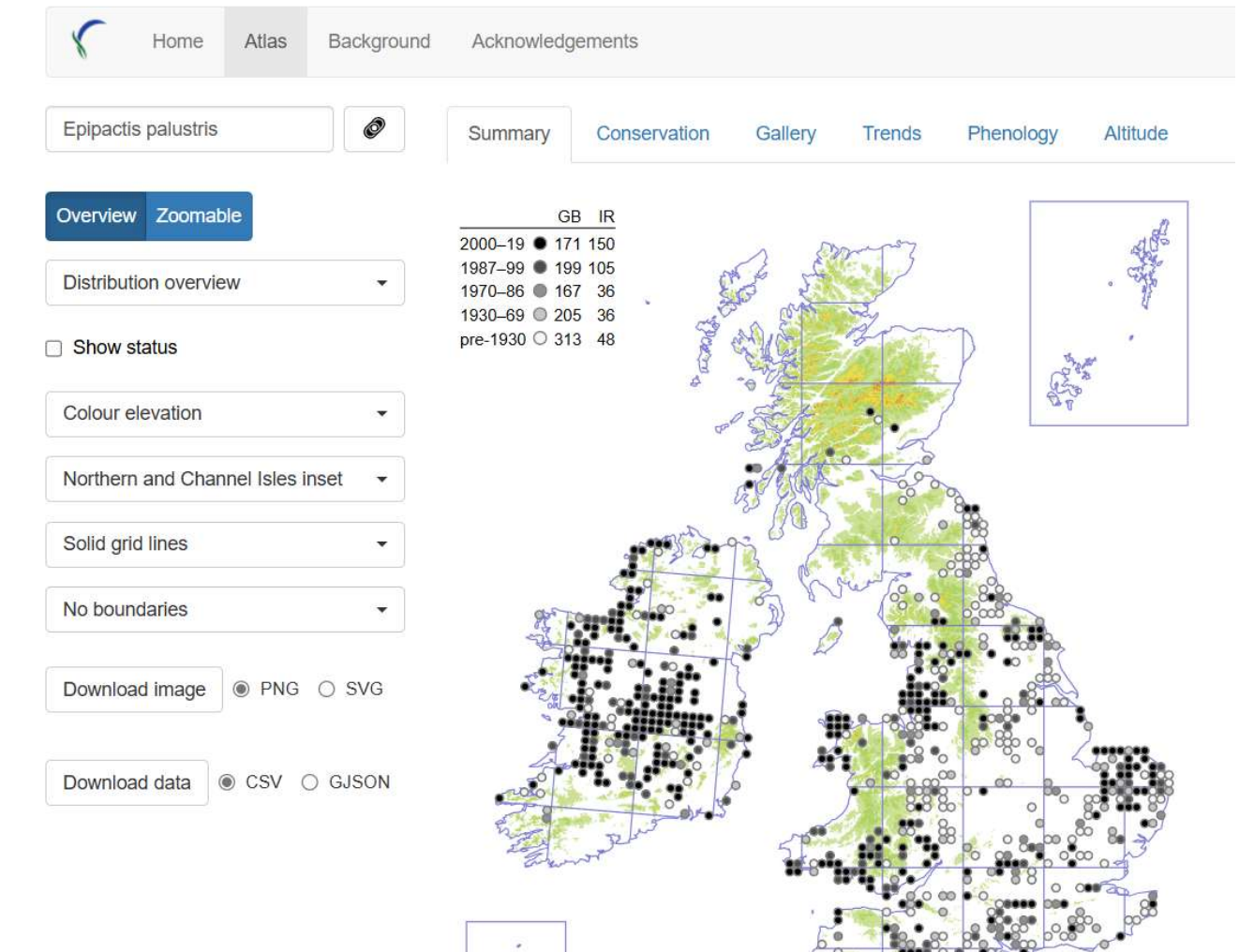
BSBI App

- Generates grid reference
- ING
- S419848



BSBI Plant Atlas 2020

- <https://plantatlas2020.org/>
- Overview grid is a 10 km x 10 km grid
- Hectad



How to use grid references

- Phone vs GPS
- Mobile phones do not have true GPS (satellite signals)
- They triangulate by bouncing signal off phone masts
- Take SIM card out and – no mapping info available – unless you have WIFI connection
- GPS bounces signals too and from Satellites
- Typical GPS is accurate within 5 m
- Special widget available as a plug in to get sub m accuracy



How not to use grid references !

- Be careful about entering grid references.
- For Atlas 2020 I decided that I would enter all the saltmarsh quadrats that I had collected from the Saltmarsh survey 2006-2009. For fun!
- Species were recorded in quadrats, quadrats had a grid reference. About 5000 records.
- I created lists of species and manually tried to copy and paste grid references.
- Mistakes were made.....Lots of Spartina was being found in Laois and other inland counties.....
- The theory was good but I did not check and re-check and created records with the wrong grid references.....
- So always be careful when manually entering grid references!
- If in doubt – Go and ask BSBI CFI for a box of grid squares to create grid references

