



Earthworms Beyond the Record



Biological
Recording
Company



National Earthworm Recording Scheme

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References

- Brown, K.D. (2024). National Earthworm Recording Scheme Records (UK). Occurrence dataset
- Brown, K.D. (2022). National Earthworm Recording Scheme Records (Channel Islands). Occurrence dataset
- Brown, K.D. & Harvey, S.K.(2024). National Earthworm Recording Scheme Records (Isle of Man). Occurrence dataset
- Brown, K.D., Keith, A.M. & Lysaght, L. (2024) Earthworms of Ireland. National Biodiversity Data Centre. Occurrence dataset
- Brown, K.D., Ashwood, F. & Calloway, K. (2024). Earthworm Research Records (UK). Occurrence dataset
- Brown, K.D. (2020). Environment Agency Eiseniella tetraedra Records (England). Occurrence dataset

Number of Records By Country

11 Aug 2024

Scotland
4,561

England
20,124

Wales
554

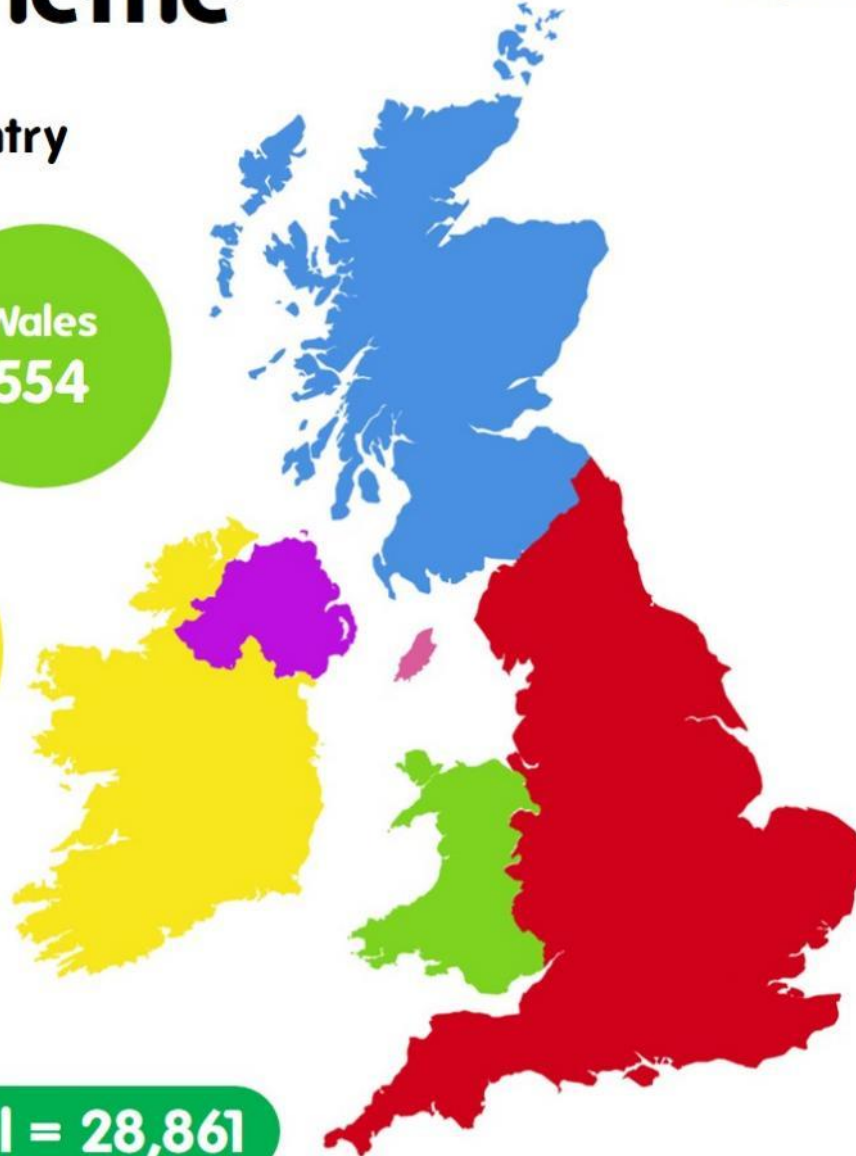
Northern
Ireland
1,069

Republic
of Ireland
2,284

Isle of
Man
159

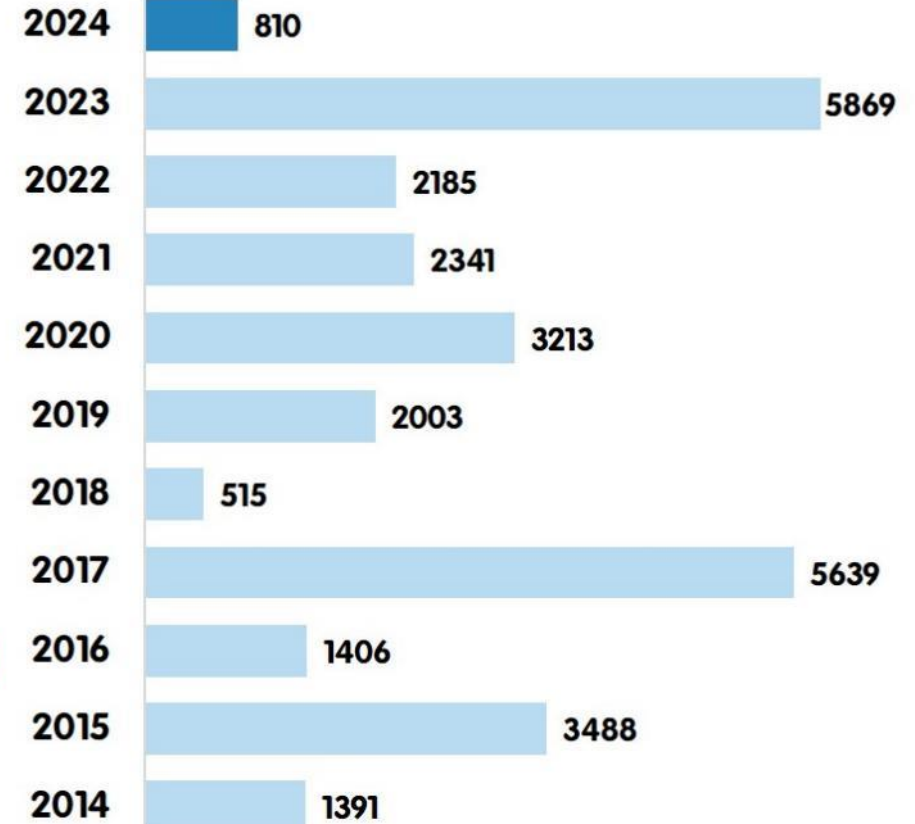
Channel
Islands
109

British Isles Total = 28,861

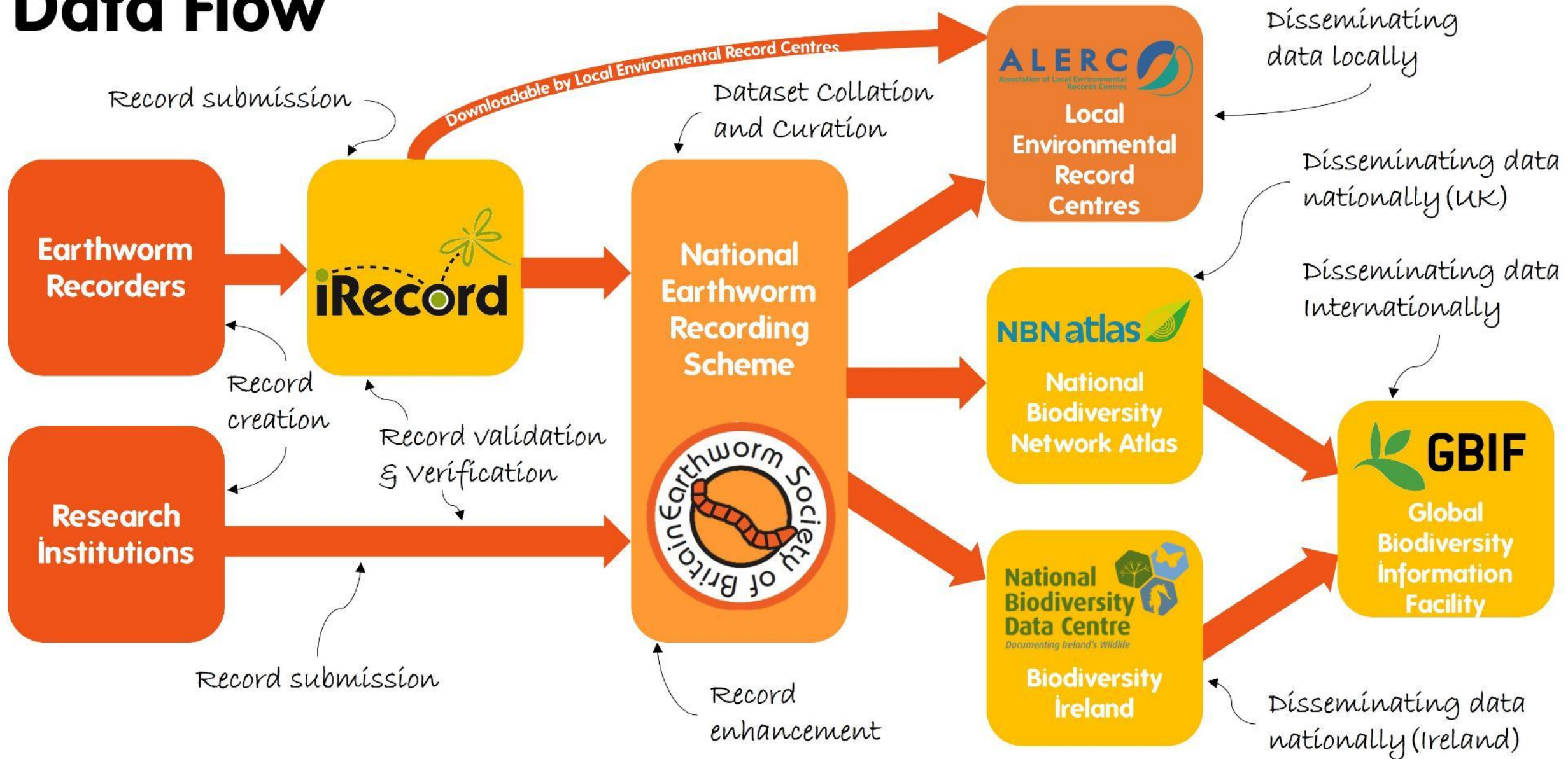


Number of Records Submitted By Year

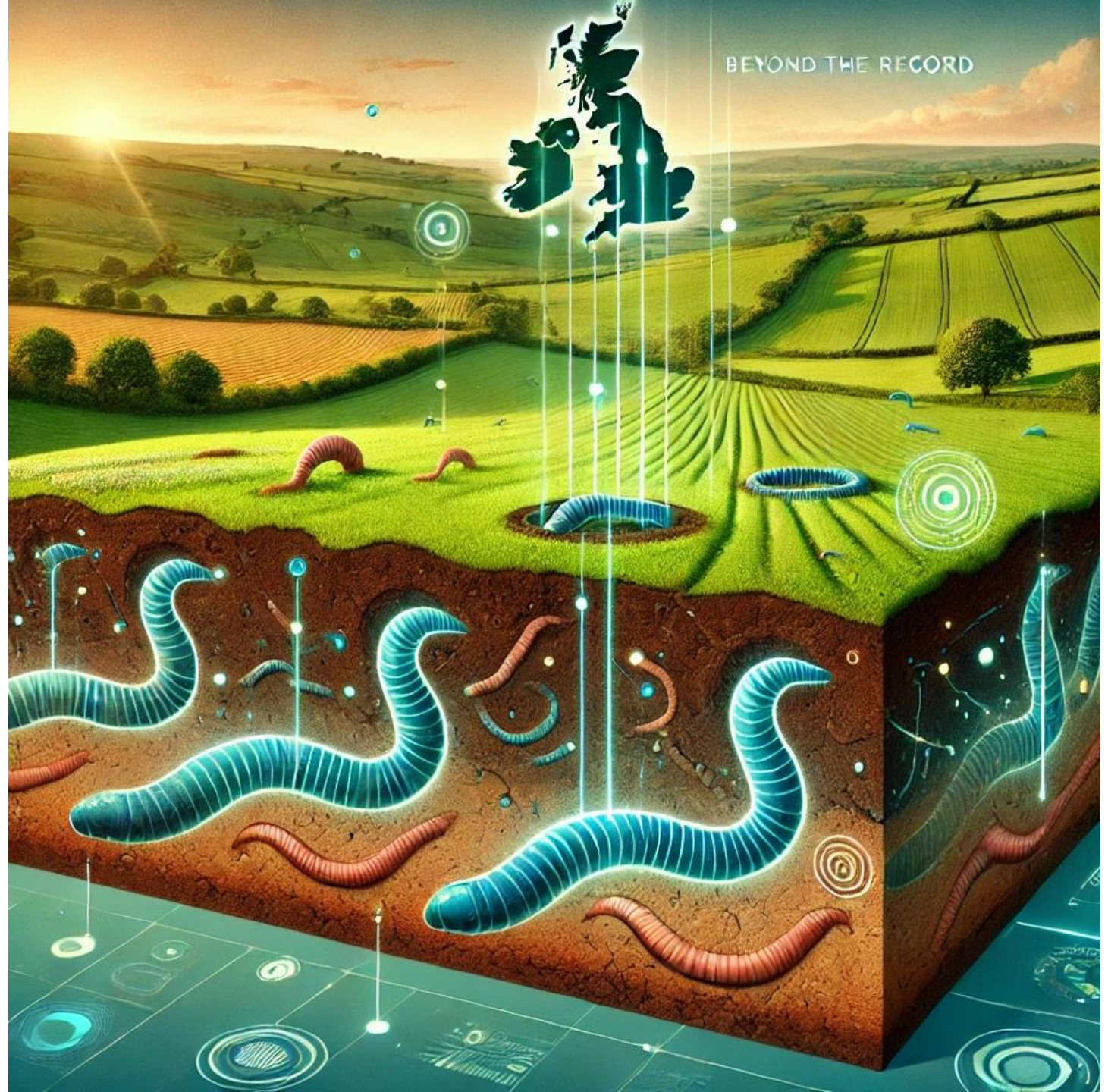
11 Aug 2024



Earthworm Recording Data Flow



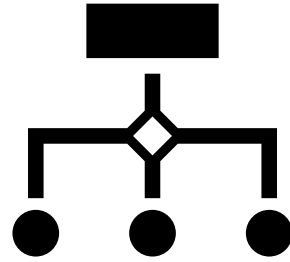
BEYOND THE RECORD



Uses of earthworm records



Distribution



Taxonomy



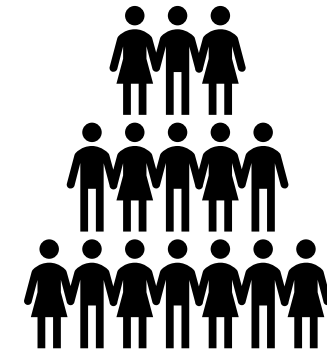
Ecology



Research

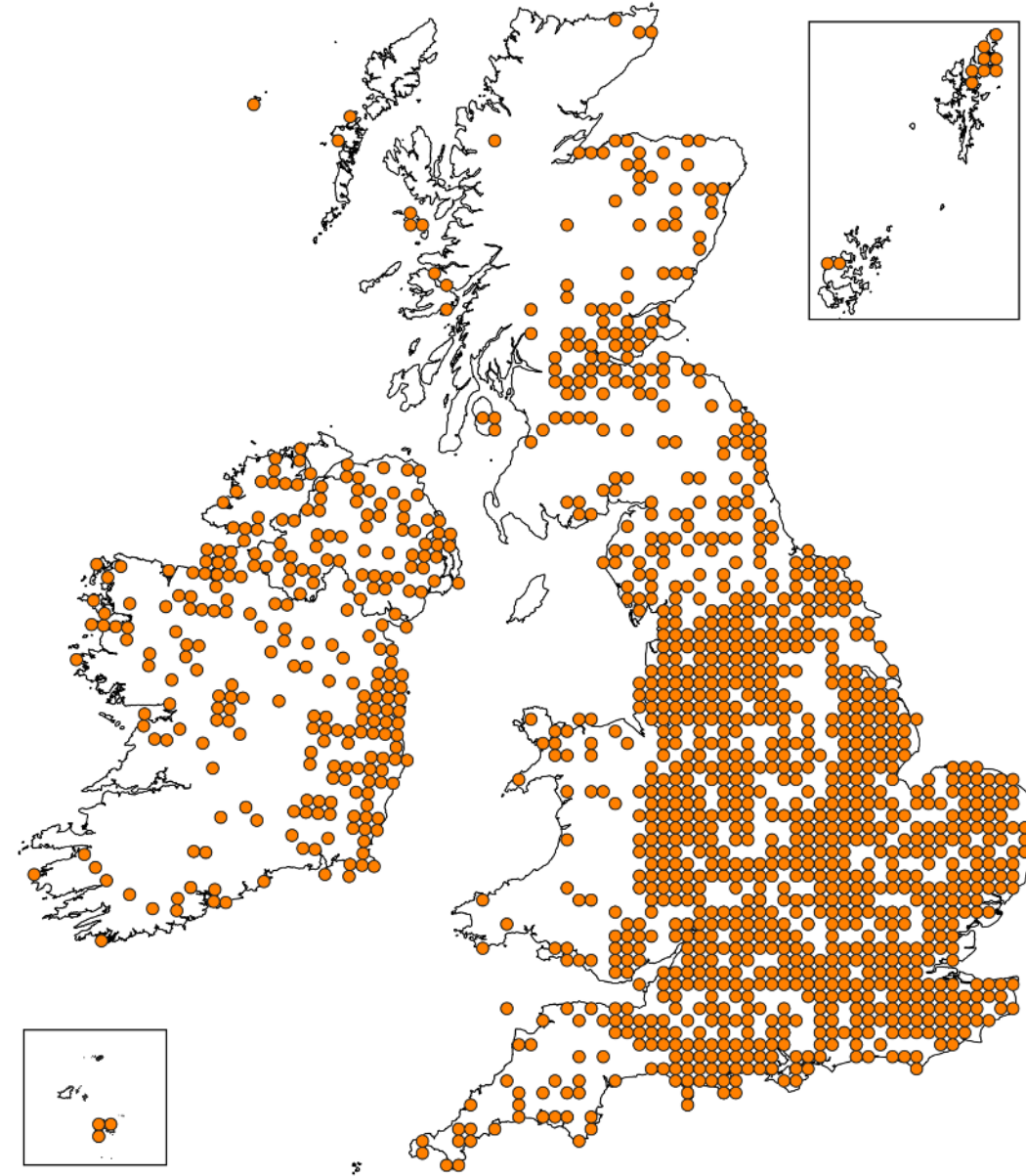
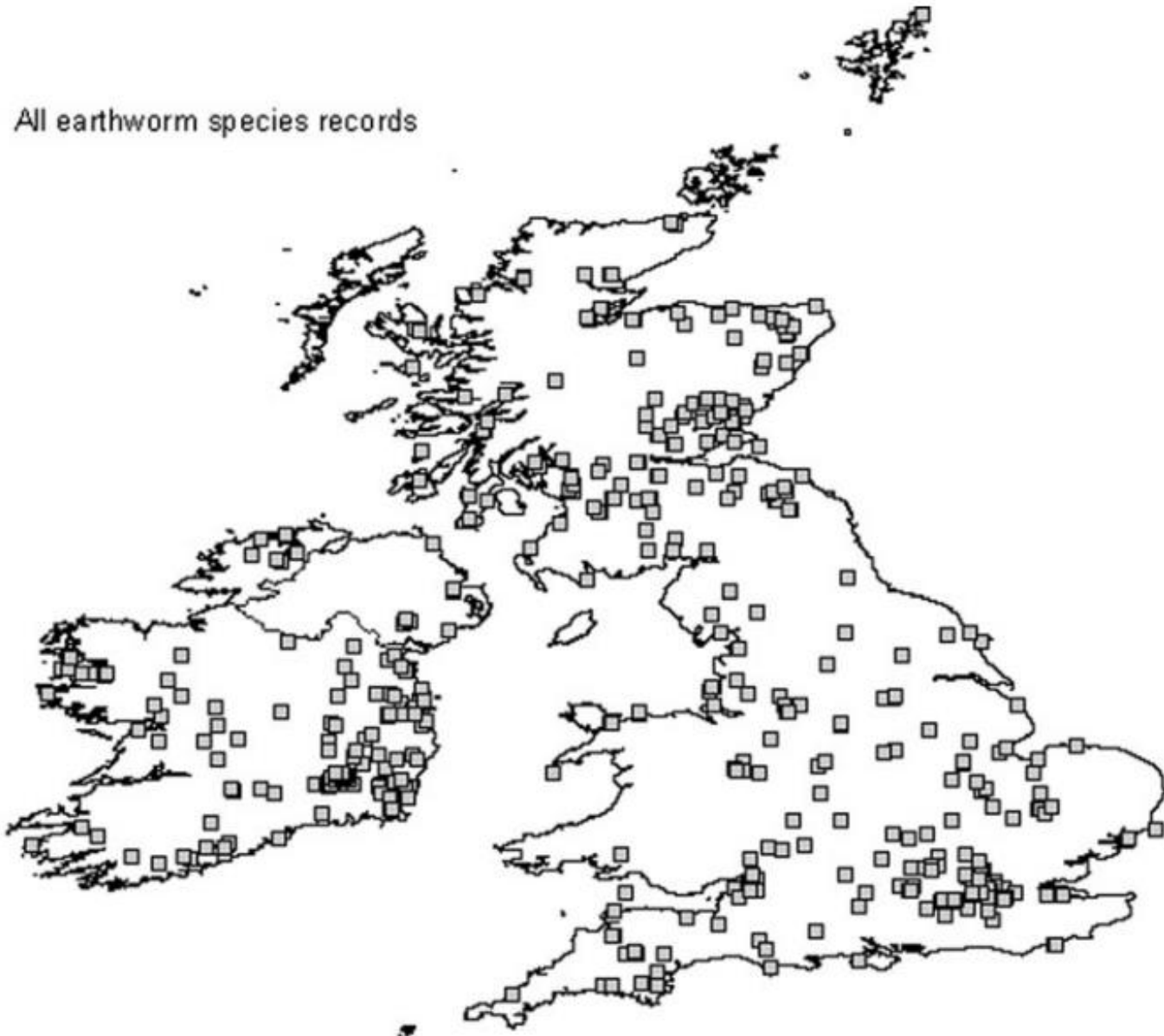


Conservation



Engagement

■ All earthworm species records

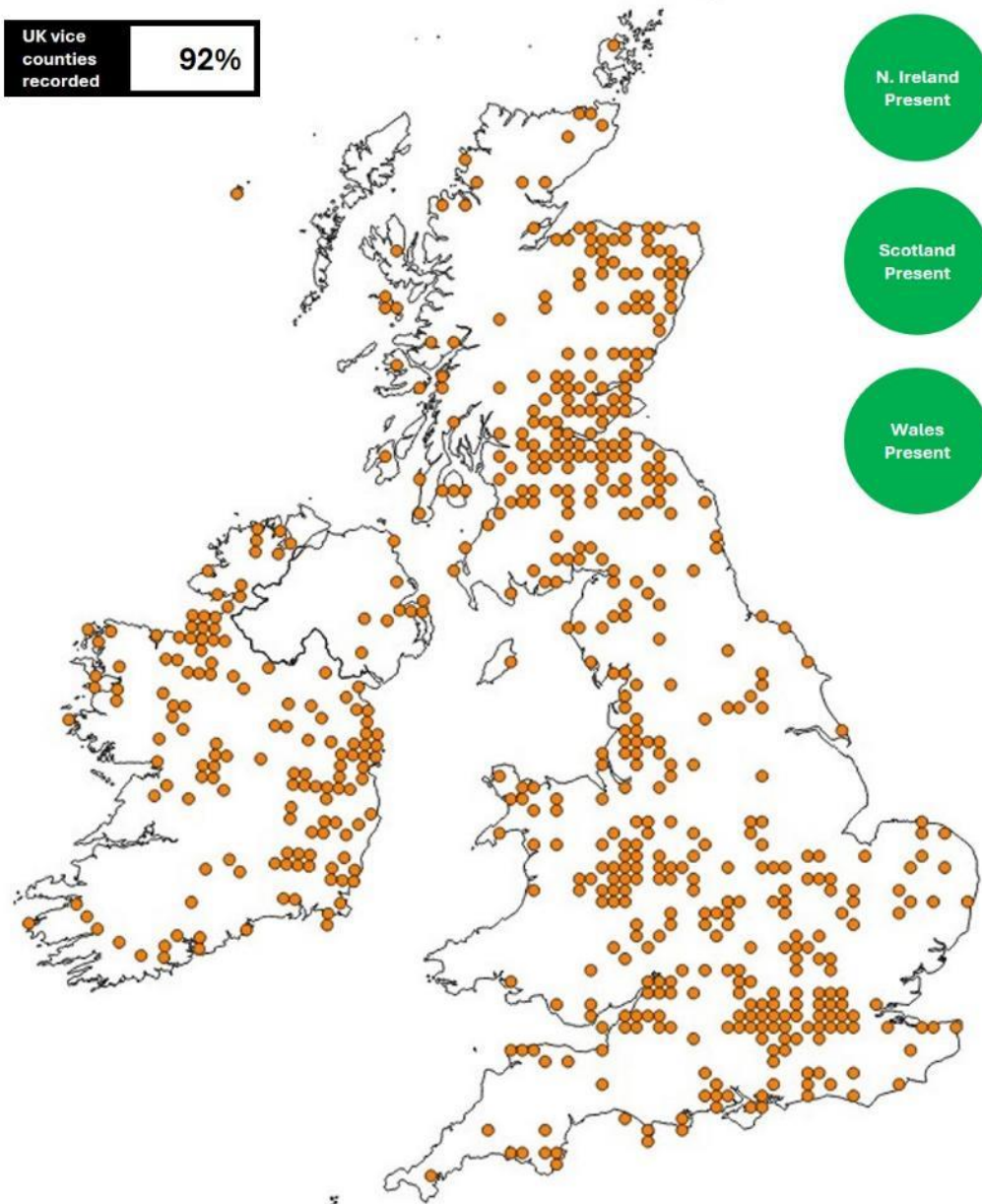


Aporrectodea caliginosa Distribution

Number of UK records **2,273**

Percentage of UK records **10.2%**

UK vice counties recorded **92%**



England Present

N. Ireland Present

Scotland Present

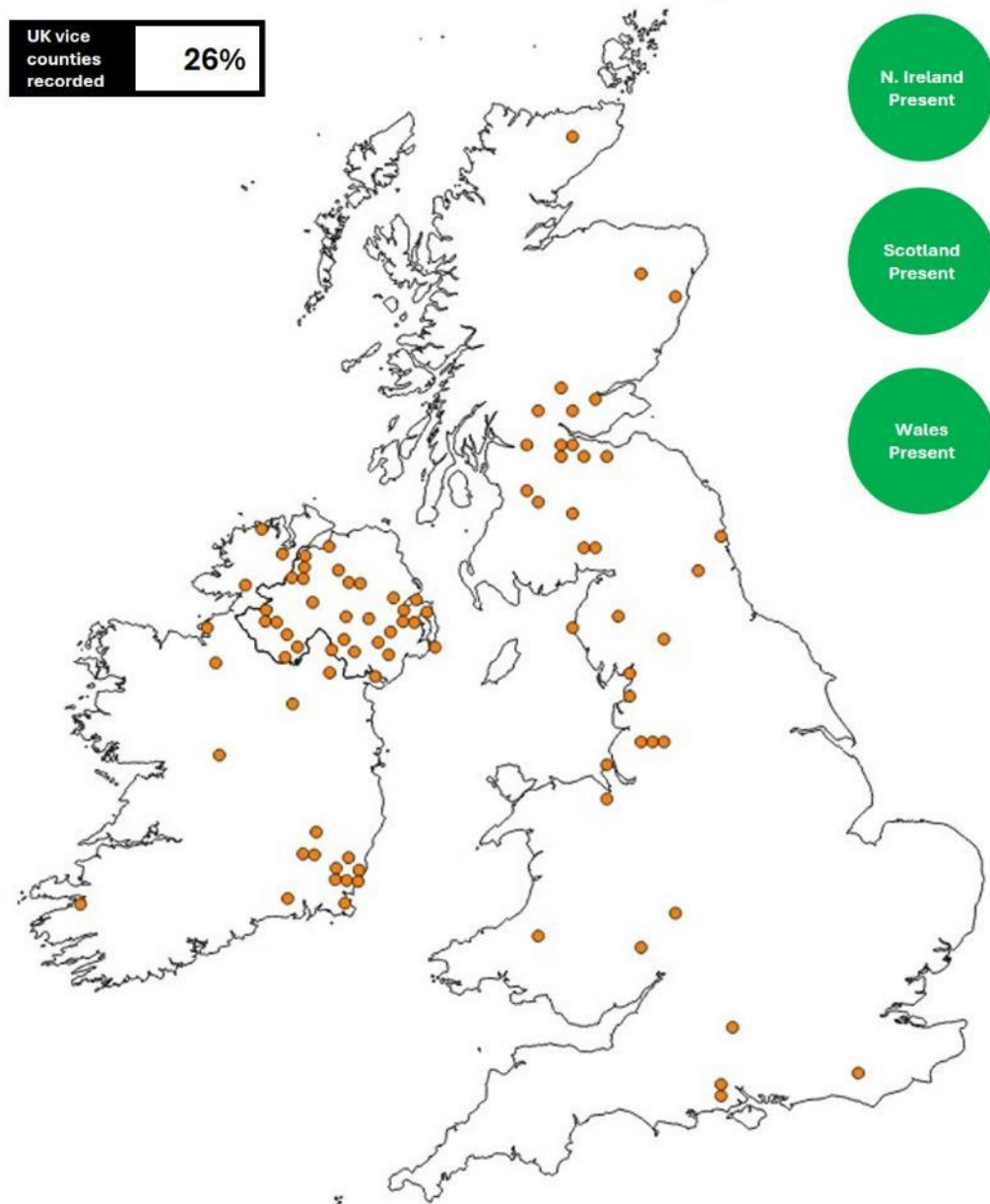
Wales Present

Aporrectodea limicola Distribution

Number of UK records **147**

Percentage of UK records **0.7%**

UK vice counties recorded **26%**



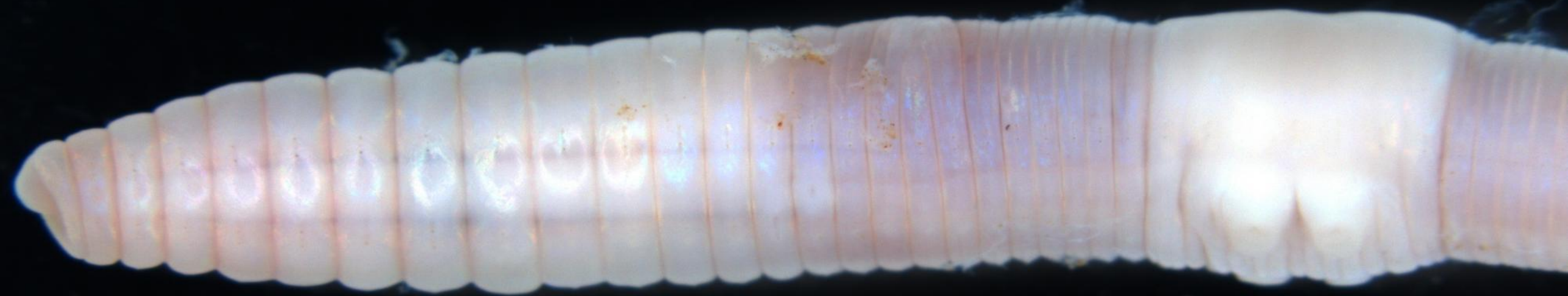
England Present

N. Ireland Present

Scotland Present

Wales Present

Aporrectodea cupulifera



**West Sussex
Recorded by Natural England
17 October 2023**

FSC

BRINGING ENVIRONMENTAL UNDERSTANDING TO ALL

Key to the earthworms of the UK and Ireland

By Emma Sherlock



AIDGAP
Aids to Identification of British Genera of Animals and Plants

Earthworms

Second Edition 2018

AIDGAP
Aids to Identification of British Genera of Animals and Plants

FSC

Key to the earthworms of Britain and Ireland

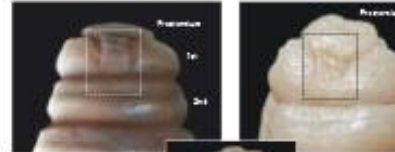


Figure 27. *Tekelshia* holds the head of the protractor near the 2nd segment.

Figure 28. *Sphixis* holds the head of the protractor near the 2nd.

Figure 29. Examples of an *Sphixis* head which might be mistaken for a *Tekelshia* head.



Figure 31. *Sphixis* head side view.



Figure 32. Juvenile worm. No saddle is present.

Clitellum

The presence or absence of a clitellum (or saddle) indicates whether it is a juvenile or adult worm.

The positioning of the saddle is very important when identifying worms.

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Aporrectodes ksterka (Savigny, 1826)

Rare
Ecological group: endogic
Colour in life: usually grey, but can be variable; yellow, grey or sometimes with a brown tint
Habitat: found in grasslands and orchards

External characters ●●
Male pores: segment 15 often encroaching onto segments 14 and 16

Clitellum: 22 or 24 through to 42-43 (rarely 46)
17% long thin band; 25 or 26 through to 42 or 43

Setae: closely paired
Head: aplobic
Length: 50-140 mm. Diameter: 3-6 mm

Internal characters
Calciferous gland: 7) 10-13
Seminal vesicles: 9-12
Spermathecae: 3 pairs in 9, 10 and 11



Internal structures

Spermathecae

Spermathecae are sacs used to store the sperm received from another worm, often with diverticula leading from each sac. Useful characters include the size and shape of the sacs and diverticula, the attachment of the diverticula to the sacs, plus the location of where the spermathecae attach to the body wall.

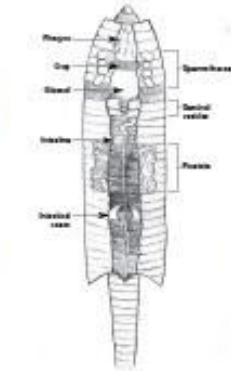


Figure 30. Internal structures (in *Sphixis*) were revealed by dissection.



Figure 33. Spermathecae.



Figure 35. Testes and gon.

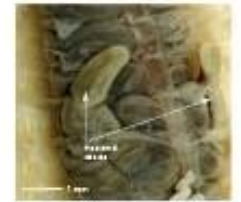


Figure 37. Internal testes.

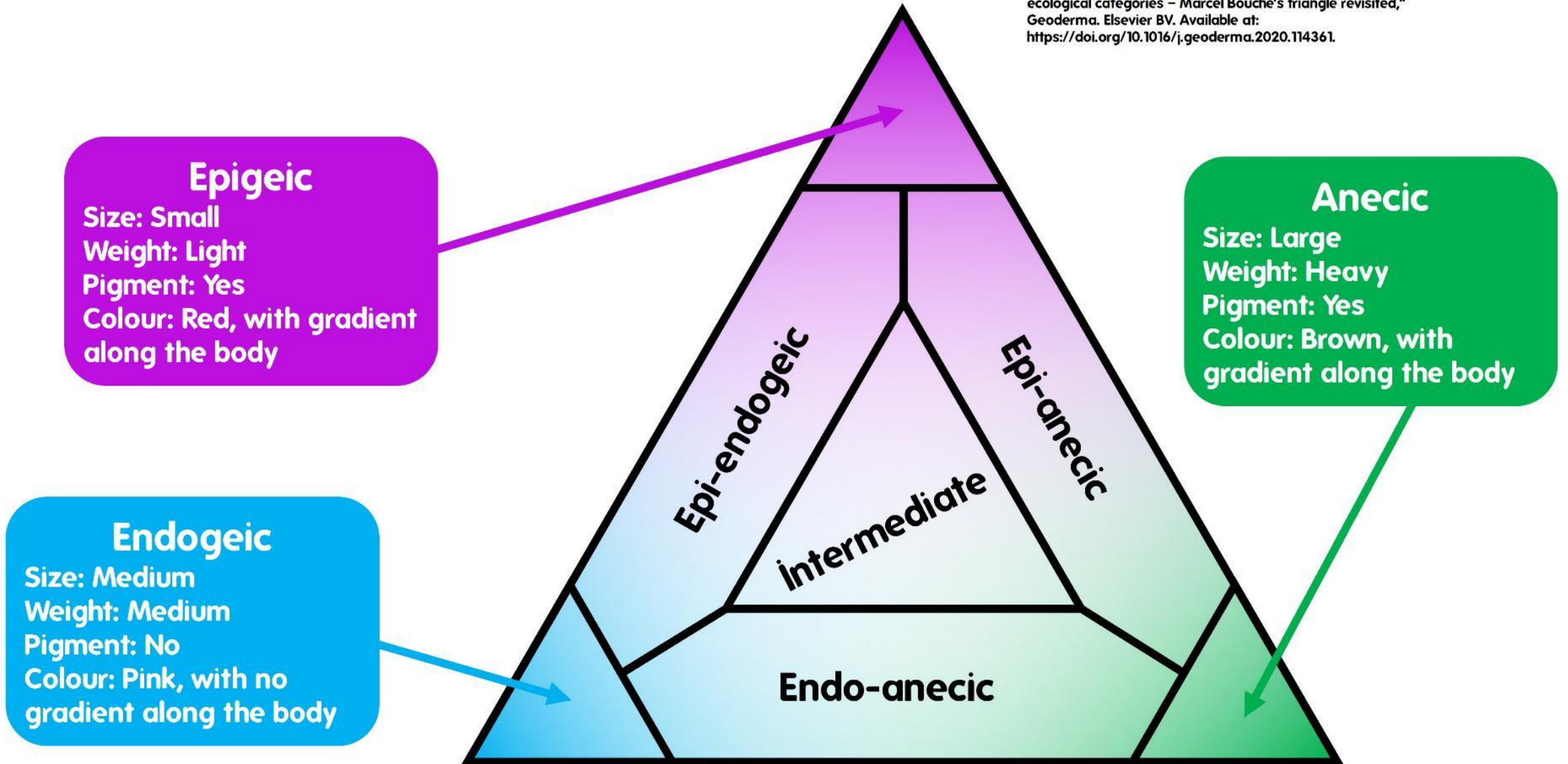
Earthworm Ecological Categories

Earthworm Ecological Categories v2 © Keiron Derek. Licenced under a Creative Commons By Attribution 4.0 Licence (CC BY 4.0)



References

Bottinelli, N. et al. (2020) "An explicit definition of earthworm ecological categories – Marcel Bouché's triangle revisited," *Geoderma*. Elsevier BV. Available at: <https://doi.org/10.1016/j.geoderma.2020.114361>.

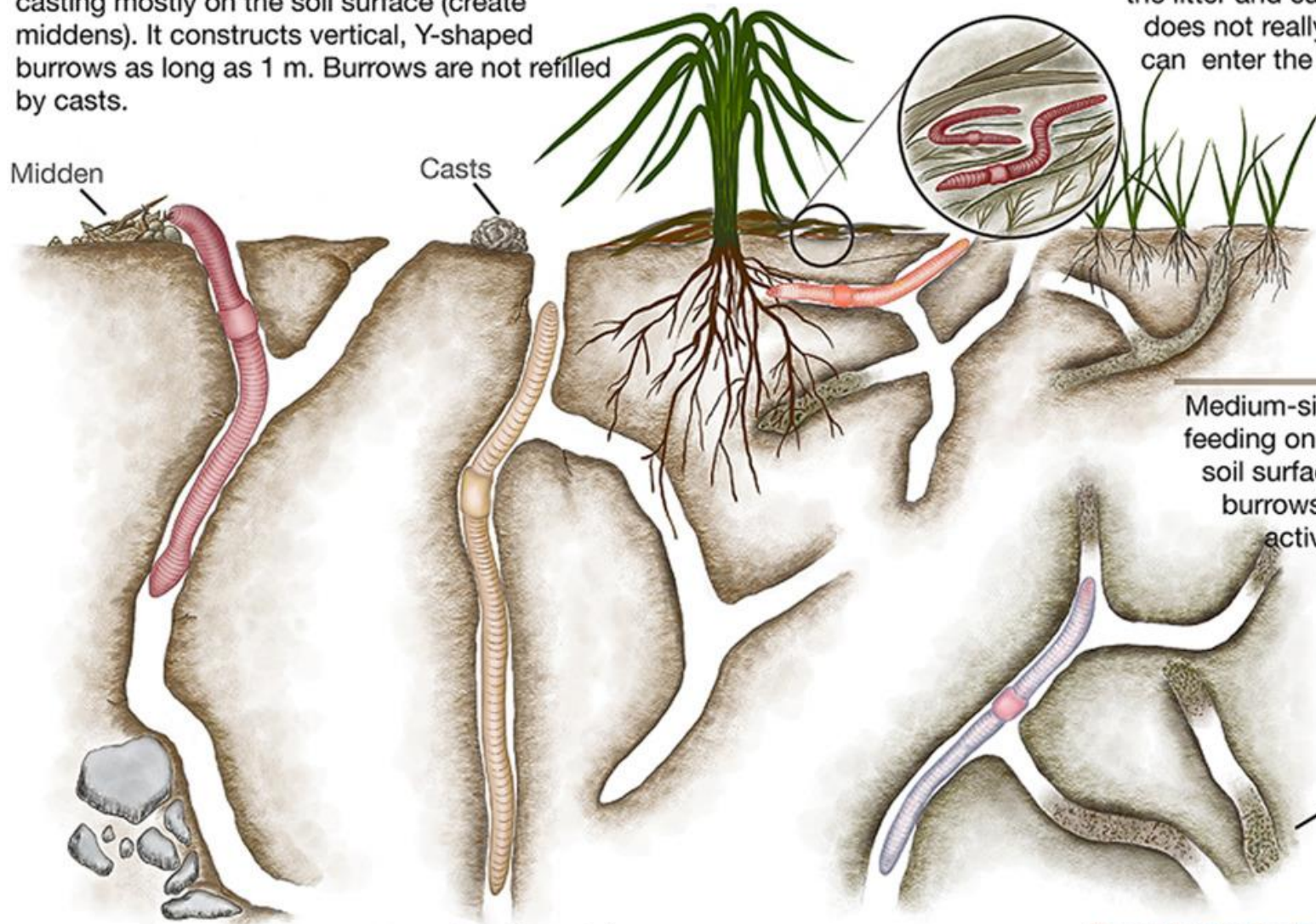


Burrower (Epi-aneic)

Large-sized earthworms (15 cm), feeding and casting mostly on the soil surface (create middens). It constructs vertical, Y-shaped burrows as long as 1 m. Burrows are not refilled by casts.

Midden

Casts



Litter dweller (Epigeic)

Small-sized earthworms (5 cm), feeding in the litter and casting at the soil surface. It does not really construct burrows, but it can enter the soil to avoid unfavourable conditions and predators

Shallow bioturbator (Epi-endogeic)

Medium-sized earthworms (7.5 cm), feeding on litter accumulated on the soil surface, and casting inside the burrows refilling them. Burrowing activity closes to rhizosphere.

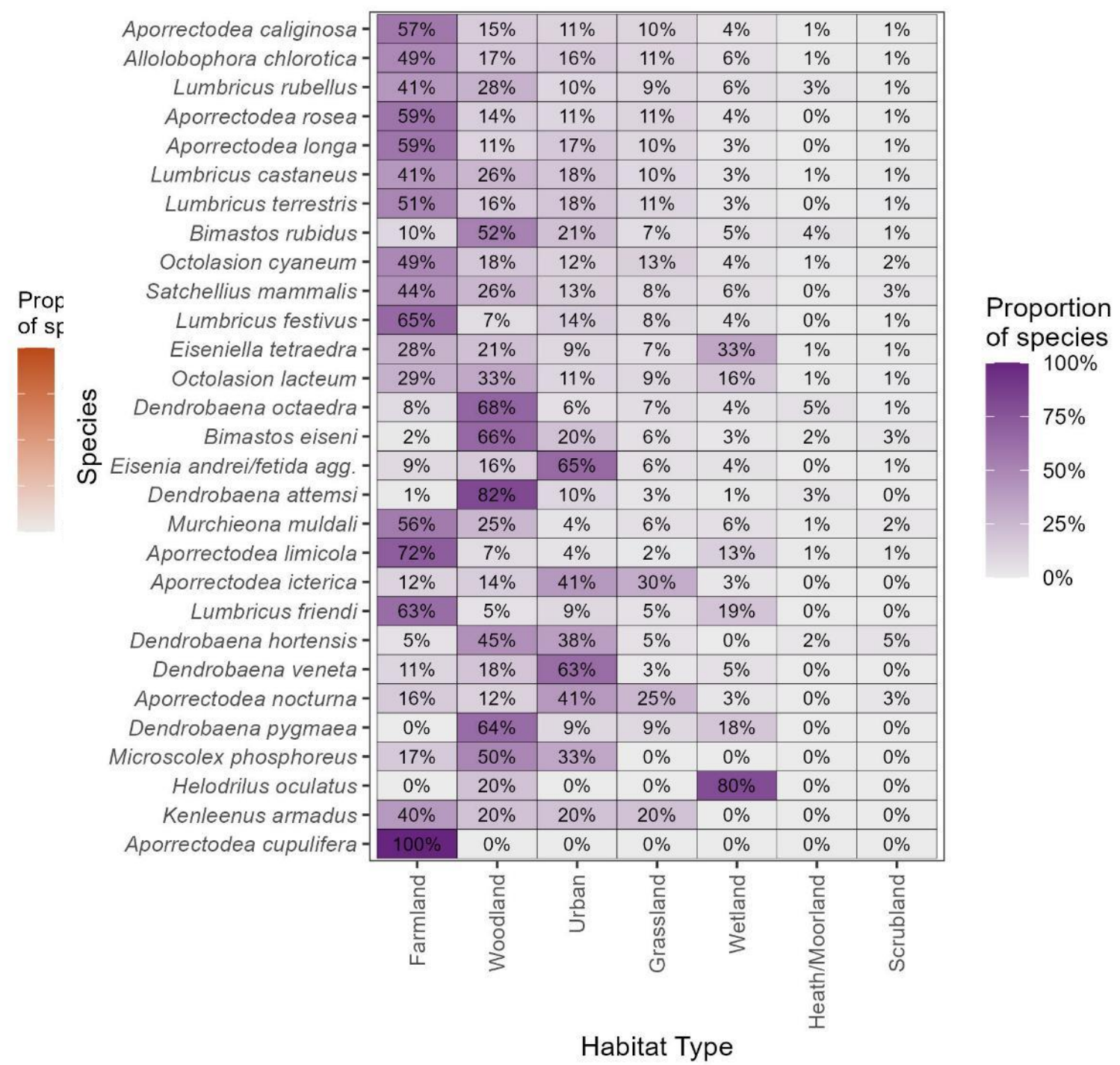
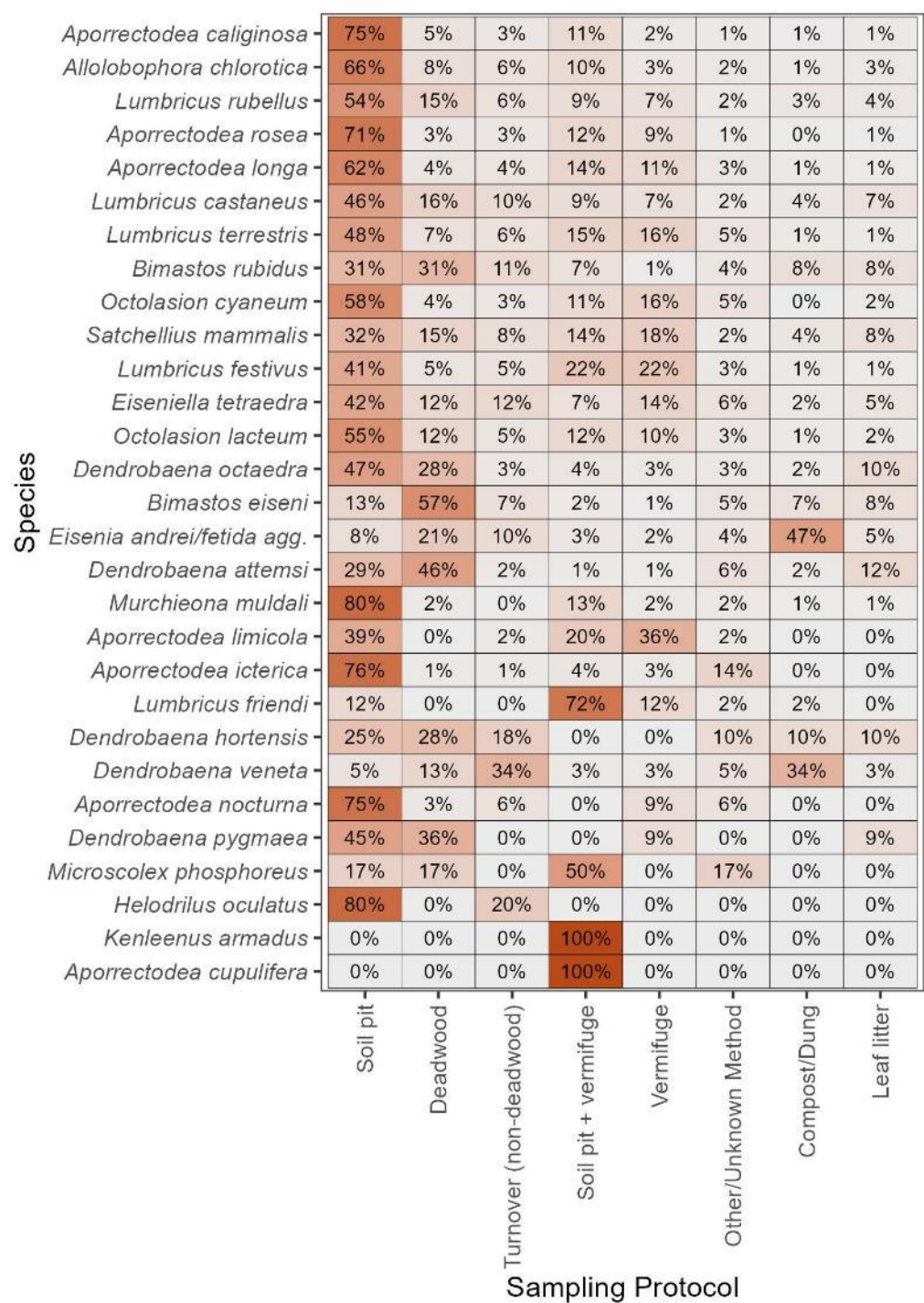
Cast-refilled burrows

Intense tunneler (Anecic)

Large-sized earthworms (>20 cm), feeding and casting on the soil surface. High burrowing activity constructing preferentially vertical burrows, which rarely are refilled by casts.

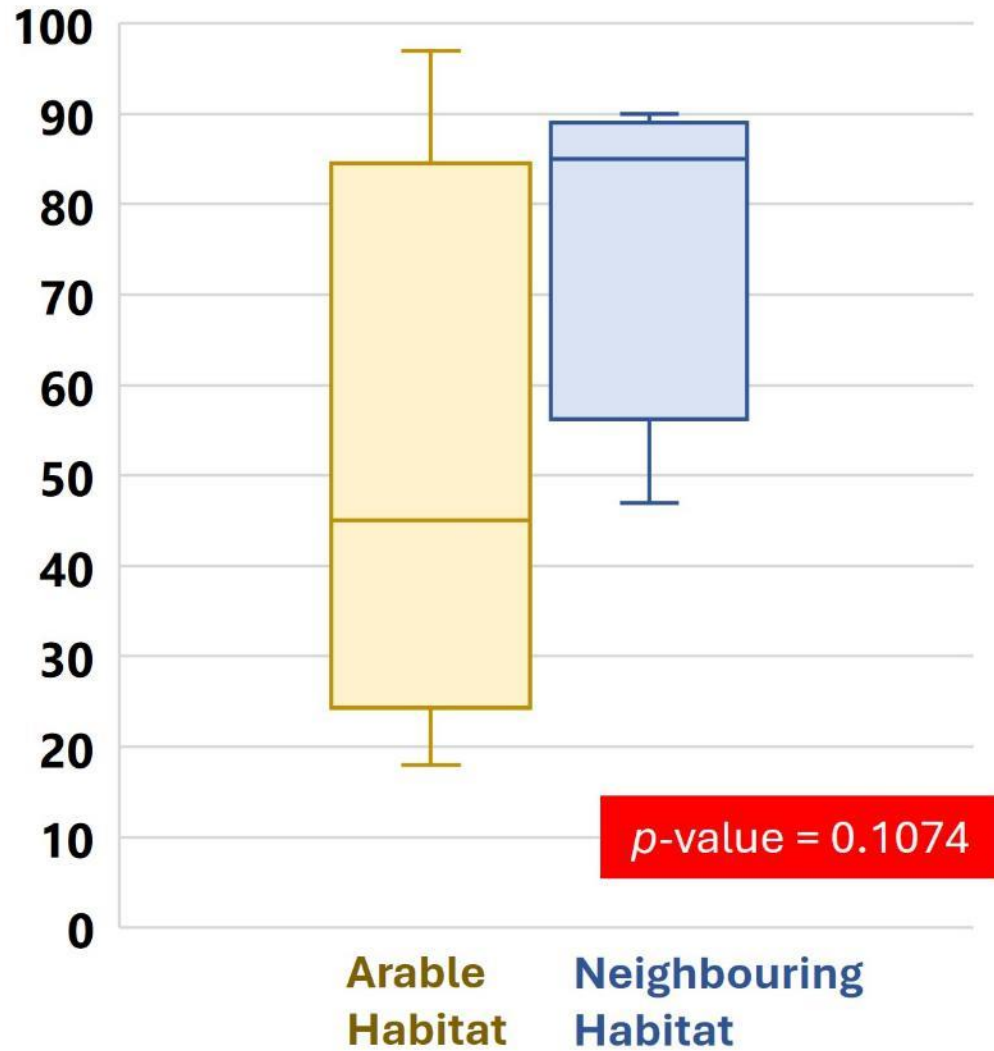
Deep bioturbator (Hypo-endogeic)

Large-sized (10 cm), geophagous earthworms permanently living in the subsoil (>15 cm depth). The burrows are not connected to the soil surface, and they can be mostly filled by casts.

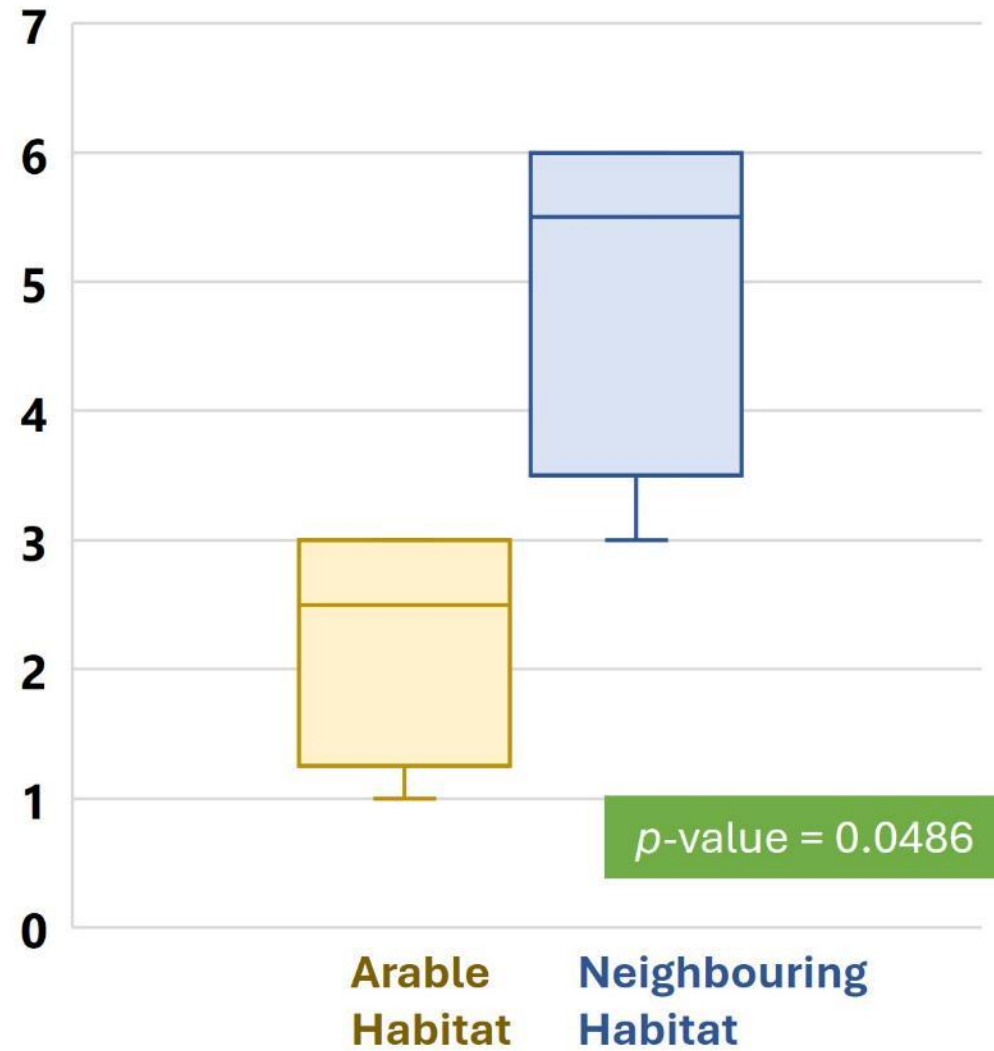


Arable Sites Earthworm Survey Results

Box plot: Earthworm abundance



Box plot: Earthworm species diversity





Original article

Earthworm records and habitat associations in the British Isles


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Conservation Biology



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▼ [Megan Booyesen](#), [Derek Sikes](#), [Matthew L. Bowser](#), [Robin Andrews](#)

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Information Facility



Research Article

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Emilio García-Roselló, Jacinto González-Dacosta, Jorge M. Lobo



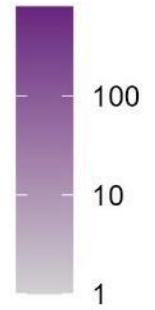
Sampling Protocol

		Recorder						
Sampling Protocol	Leaf litter	1	85	33	2	3	1	3
	Other/Unknown Method	7	21	91	20	13	2	5
	Vermifuge	3	11	23	15	2	1	2
	Compost/Dung	21	6	100	13	3	2	1
	Soil pit + vermifuge	0	0	1	0	0	0	0
	Turnover (non-deadwood)	10	85	122	20	23	5	5
	Deadwood	10	282	83	42	30	2	13
	Soil pit	54	173	176	150	88	4	10
		Farmland	Woodland	Urban	Grassland	Wetland	Heath/Moorland	Scrubland

		Research						
Sampling Protocol	Leaf litter	1	27	1	0	0	0	0
	Other/Unknown Method	2	2	3	0	4	1	0
	Vermifuge	97	5	4	10	0	2	0
	Compost/Dung	4	1	4	2	0	0	0
	Soil pit + vermifuge	116	35	6	16	12	5	2
	Turnover (non-deadwood)	0	0	1	0	0	0	1
	Deadwood	1	22	1	0	2	0	2
	Soil pit	800	105	4	39	8	33	4
		Farmland	Woodland	Urban	Grassland	Wetland	Heath/Moorland	Scrubland

Habitat

n Sites



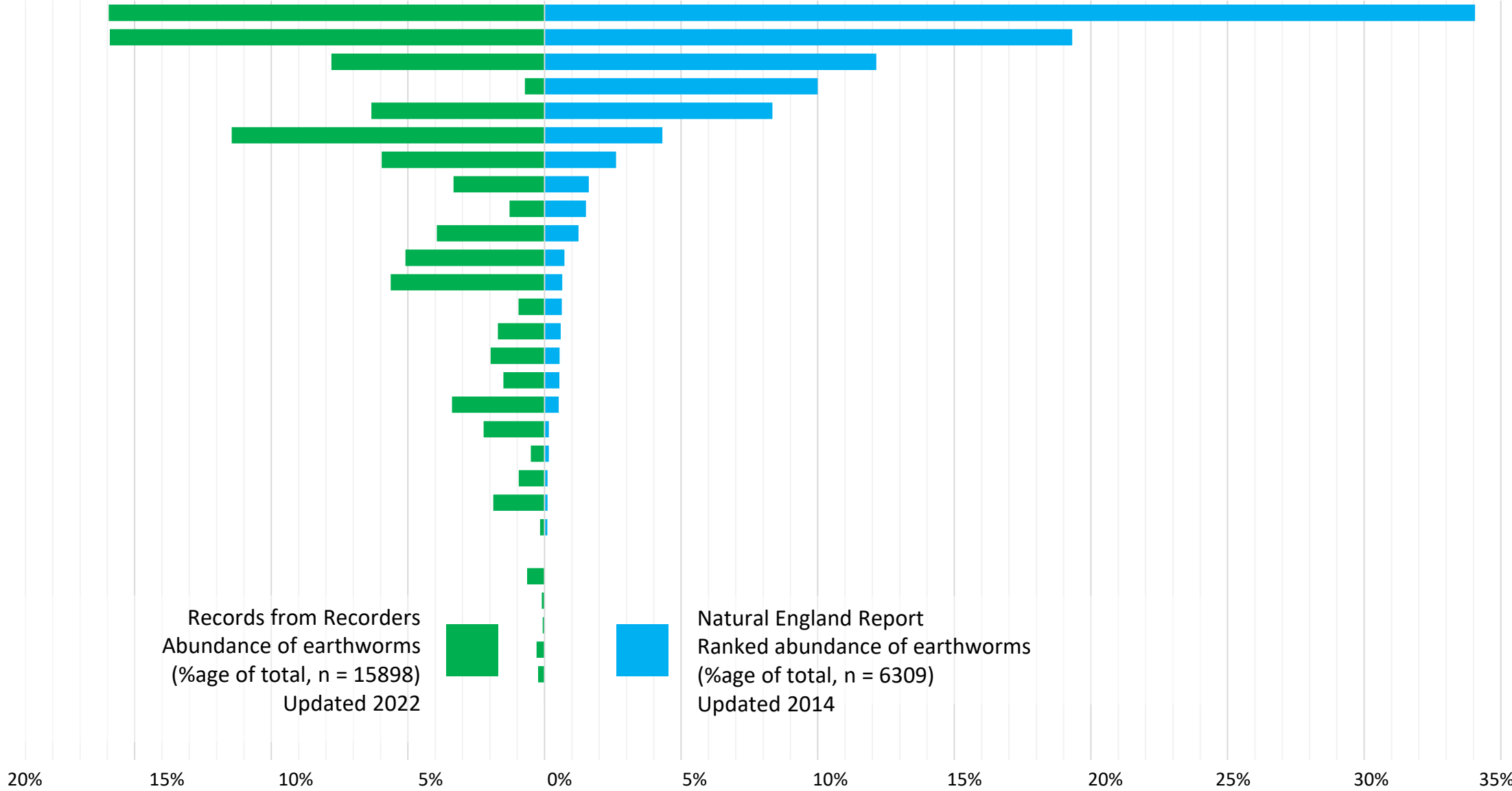
Ranked Abundance of Earthworms in the British Isles

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References
 Brown, K.D. (2022) Earthworms of Ireland. National Biodiversity Data Centre. Occurrence dataset
 Earthworm Society of Britain (2020). National Earthworm Recording Scheme Records (Channel Islands) . Occurrence dataset
 Earthworm Society of Britain (2022). National Earthworm Recording Scheme Records (UK). Occurrence dataset
 Natural England (2014) *Natural England Commissioned Report NECR145 Earthworms in England: distribution, abundance and habitats*

- Allolobophora chlorotica
- Aporrectodea caliginosa
- Lumbricus castaneus
- Murchieona muldali
- Aporrectodea rosea
- Lumbricus rubellus
- Aporrectodea longa
- Satchellius mammalis
- Dendrobaena octaedra
- Lumbricus terrestris
- Bimastos rubidus
- Eisenia fetida
- Aporrectodea icterica
- Octolasion lacteum
- Octolasion cyaneum
- Dendrobaena attemsi
- Eiseniella tetraedra
- Bimastos eiseni
- Dendrobaena hortensis
- Dendrobaena veneta
- Lumbricus festivus
- Helodrilus oculatus
- Aporrectodea cupulifera
- Aporrectodea limicola
- Eisenia andrei
- Dendrobaena pygmaea
- Lumbricus friendi
- Aporrectodea nocturna
- Microscolex phosphoreus
- Kenleenus armadas
- Sparganophilus tamesis



Provisional Conservation Status Assessment

Geographic
Range

Population
Size

Habitat
Specificity

Number of
Records

Lack of Recent
Records

Rarity

Very Rare

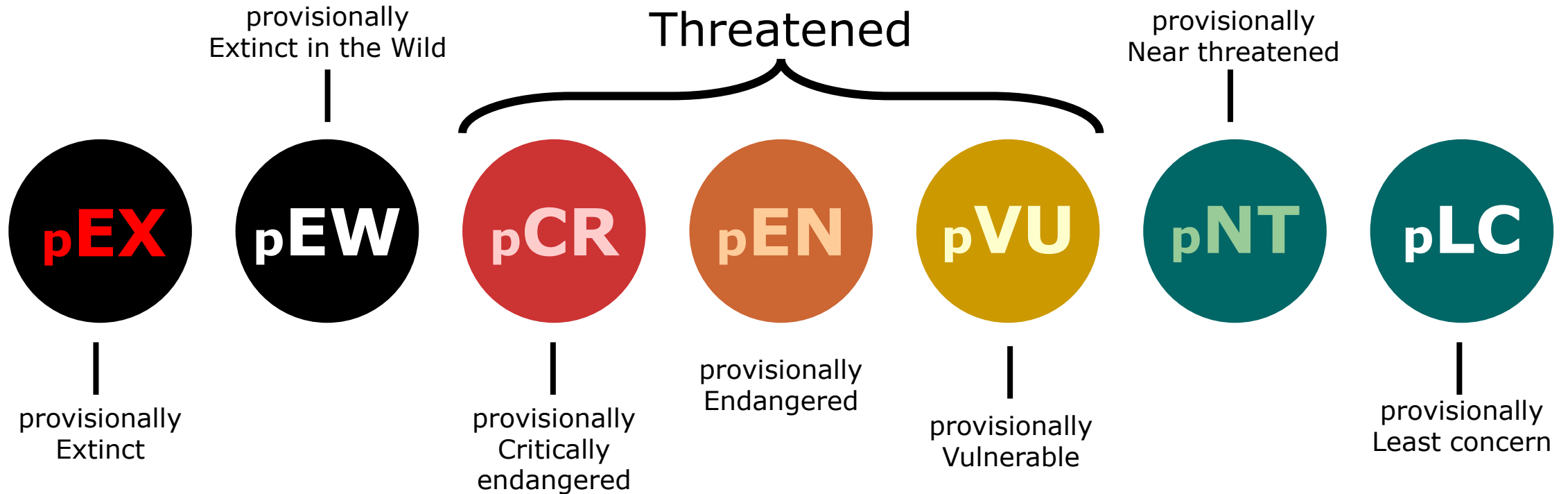
Rare

Uncommon

Common

Very Common

Provisional Conservation Status Assessment



ento
LIVE

Using
Bioturbation
Behaviour To Create
New Functional
Groups for
Earthworms



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**Earthworm
Sampling
Day**



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Image: Frank Ashwood

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Insights into Urban
Earthworm
Communities



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