

# Water beetles – towards the end of Phase 2

NFBR May 2016

10.05-10.25


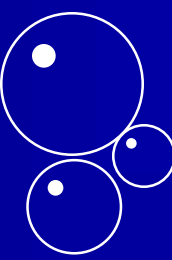

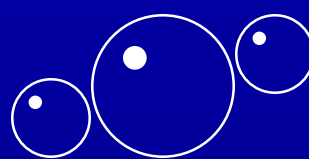
Garth Foster

*The Balfour~Browne Club*  
*The Aquatic Coleoptera Conservation Trust*



# Phases



- Phase 0 1802-1903
  - Phase 1 1904-1955ish
  - Interregnum 1955ish-1979
  - Phase 2 1979-201ish
  - Phase 3 ?
- 
- 
- 
- 





# Phase 0



194

MANDIBULATA.—COLEOPTERA.

Page 67. *COLYMBETES striatus*. "Not very abundant near Marton Lodge."—*L. Rudd, Esq.* "Cardew-mire."—*T. C. Heysham, Esq.* "Newcastle."—*G. Wailes, Esq.*

Page 69. *COLYMBETES pulverosus*. "Very common in the gravel-pits at Weyhill and Appleshaw, sparingly at Kimpton in streams; and in the canal at Chatford, near Andover."—*Rev. G. T. Rudd.* "In profusion near Cambridge."—*C. Darwin, Esq.*

Page 70. *COLYMBETES notatus*. "In abundance near Cambridge."—*C. Darwin, Esq.*

Page 70. *COLYMBETES exoletus*. "Abundantly near Cambridge."—*C. Darwin, Esq.*

Page 71. *COLYMBETES agilis*. "In pools on the hills near Marton Lodge, but very scarce, October, 1828."—*L. Rudd, Esq.* "In profusion near Cambridge, in 1829."—*C. Darwin, Esq.*

Page 71. *COLYMBETES adspersus*. "Plentiful near Cambridge in 1829."—*C. Darwin, Esq.*

extinct in Britain

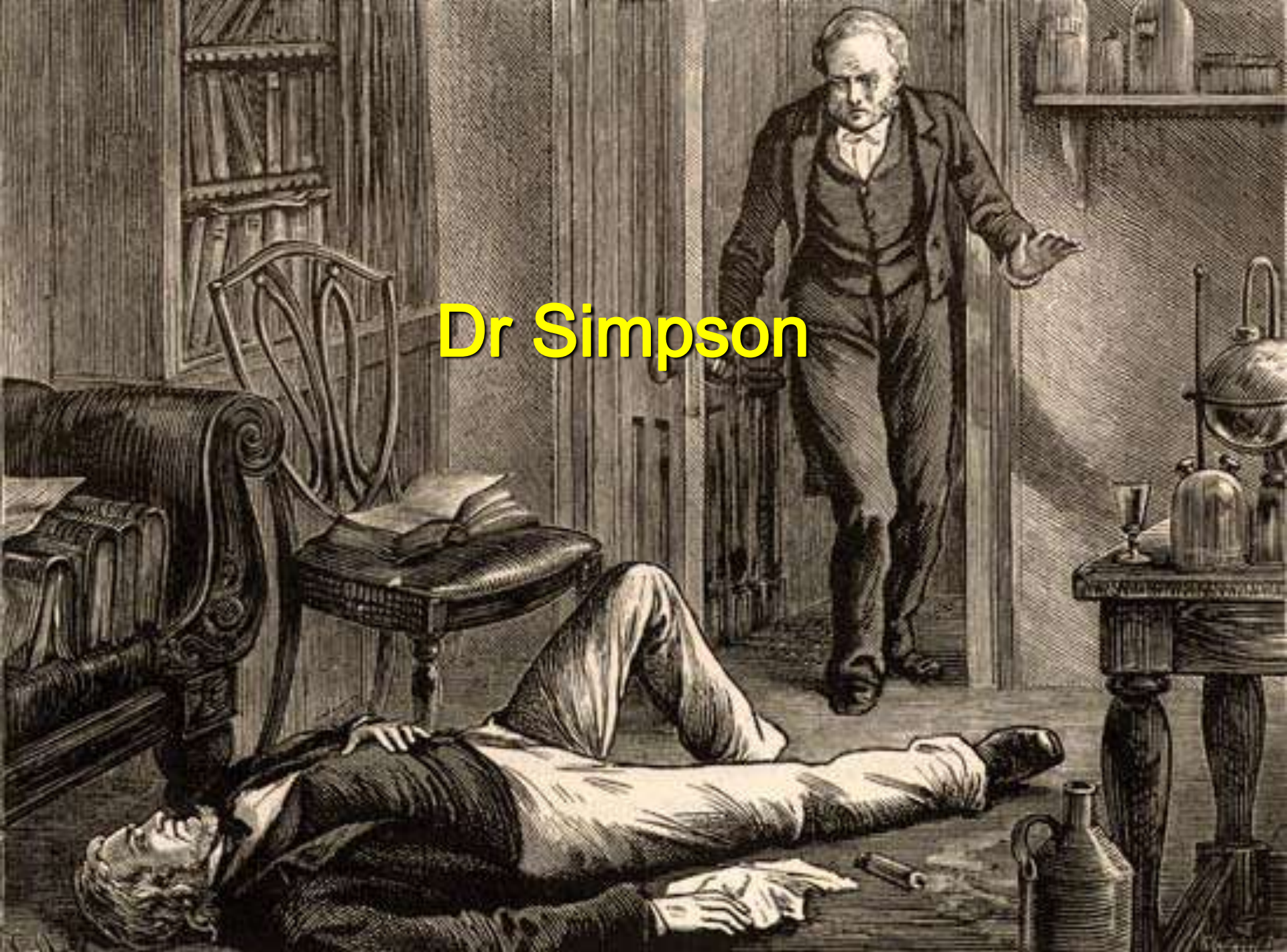
either 1904 Norfolk  
Broads or 1917  
Woodwalton

# Phase 0 – David Sharp





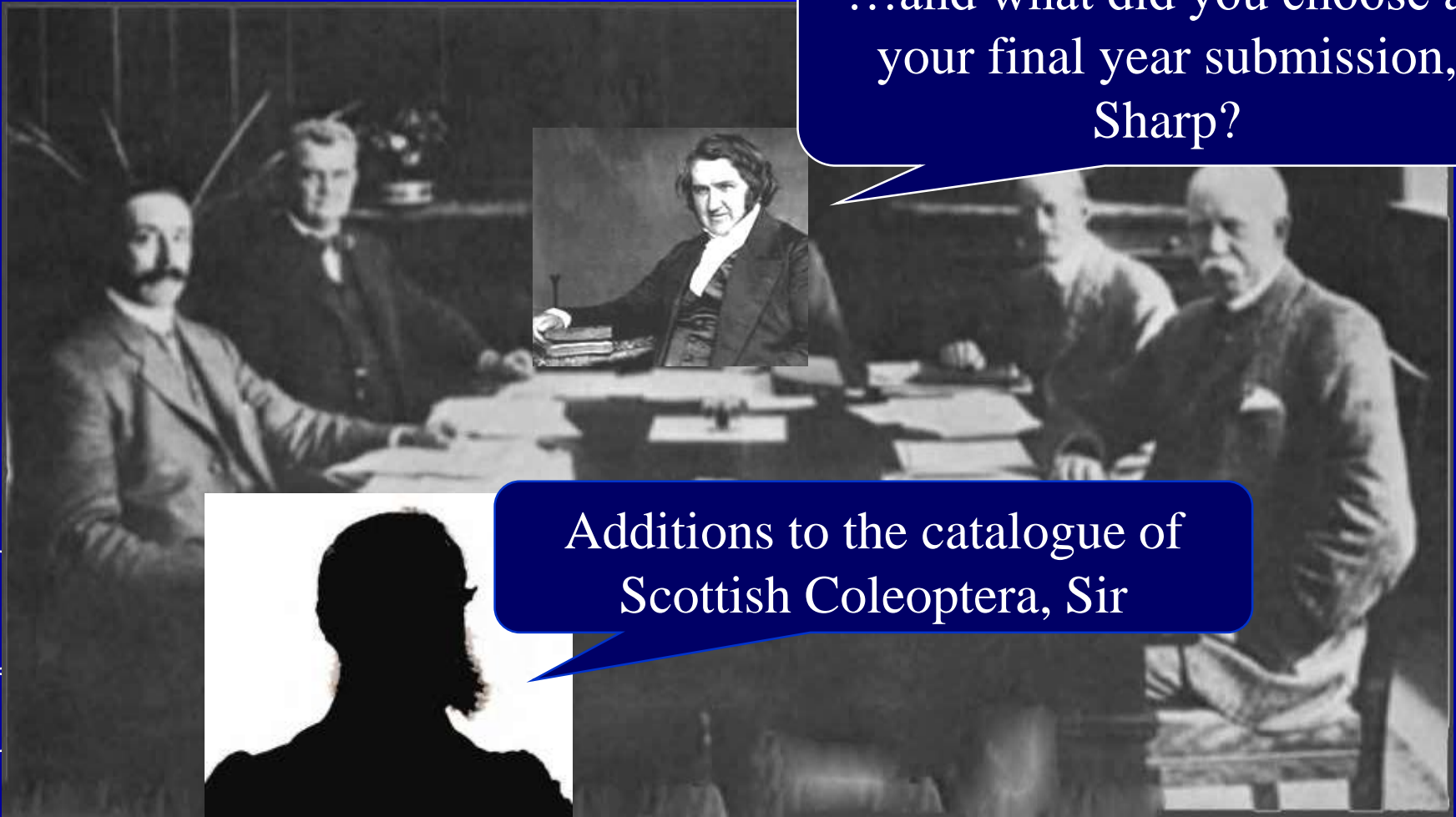
# Dr Simpson



# Meeting Dr Simpson (reconstruction of examination board 1866)

...and what did you choose as  
your final year submission,  
Sharp?

Additions to the catalogue of  
Scottish Coleoptera, Sir







# Phase 1

## 20 August 1904

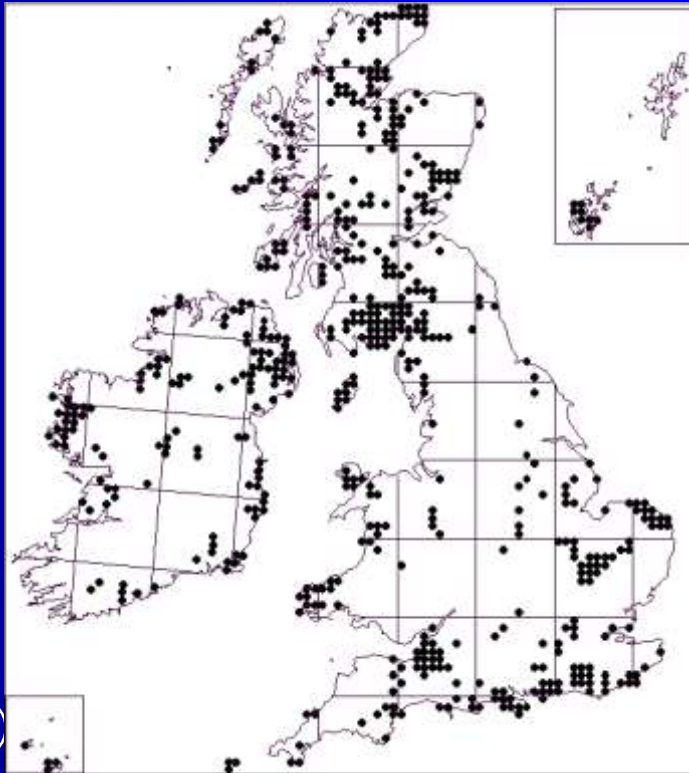


... he [David Sharp] was Curator of Entomology in the University Museum and I [Frank Balfour-Browne] went with him to Burwell Fen where I ...slaked my thirst at a village pump which I then discovered was 'not for drinking'! ...It was Sharp who encouraged me when I proposed to make a study of the distribution of the water beetles throughout the Britannic area and how this fitted in with Forbes' theory of successive invasions."

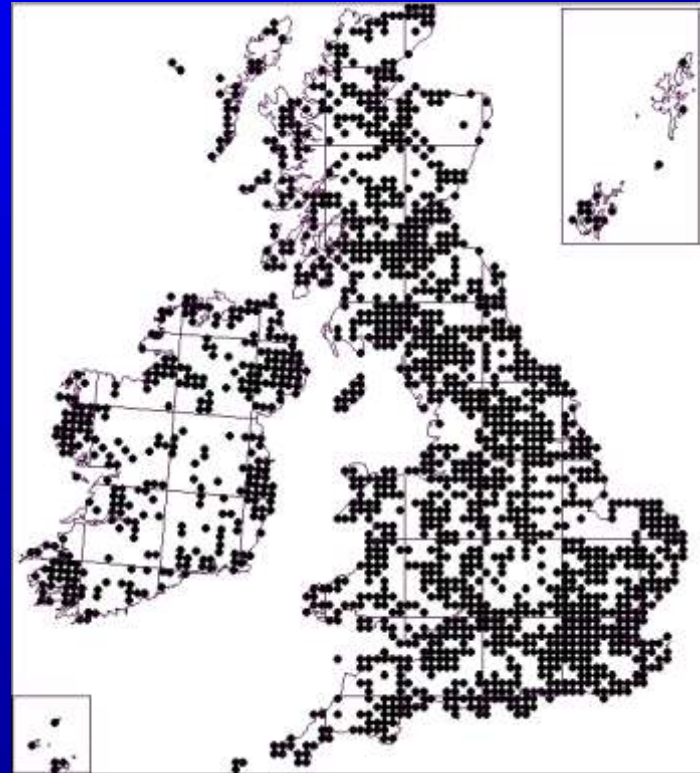
# Phase 1

## Frank Balfour-Browne

his own records 1894-1957



his collation of all records





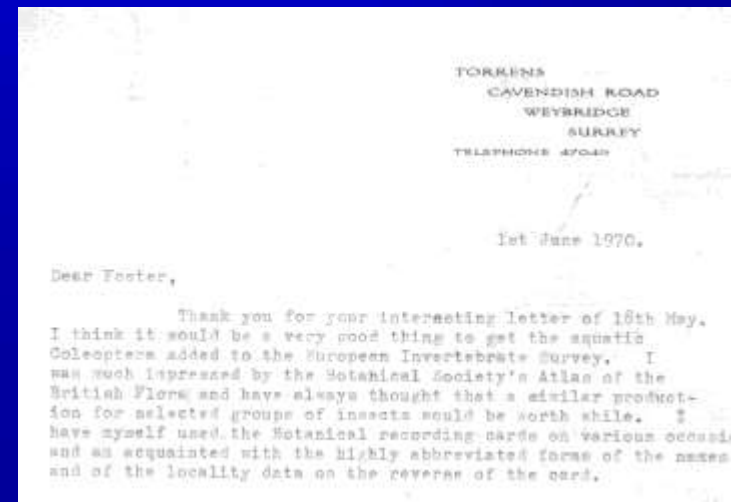
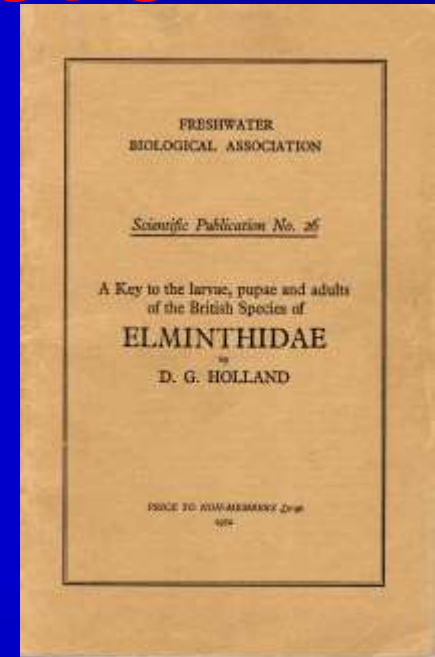
# Interregnum 1954ish -1979

- David Holland 1972

FBA Elmidae

- Jack Balfour-Browne 1970

“I think it would be a very good idea to get the aquatic Coleoptera added to the European Invertebrate Survey.”



# The Balfour-Browne Club 1974 onwards







# 1979 water beetles in Phase 2

- a mixed bag, part ecological, part systematic
- 401 species
- 481,000 records
- contributors range from professional limnologists to amateur coleopterists
- records come in mostly in large batches or as part of the identification service



# Water beetles in Britain, Ireland and the Channel Isles

- Gyrinidae – whirligigs – 12
  - Haliplidae – crawling water beetles - 20
  - Paelobiidae – squeak beetle – 1
  - Noteridae, Dytiscidae – diving beetles – 119
  - Hydrophiloidea – 100 - [includes some ETs]
  - Hydraenidae - 33
  - Scirtidae – marsh beetles – 19
  - Elmidae - 12
  - Dryopidae – 12
  - Heteroceridae – 8
  - leaf beetles, weevils and others – 65+
- 
- 
- 
- 



# The plan

- Red Data books – but need updates ✓

- Roy. Ent. Soc. Handbooks

- ➔ Hydradeephaga ✓

- ➔ Hydrophiloidea ✓

- ➔ the rest

- Atlases

- ➔ Hydradeephaga ✓

- ➔ Hydrophiloidea

- ➔ the rest

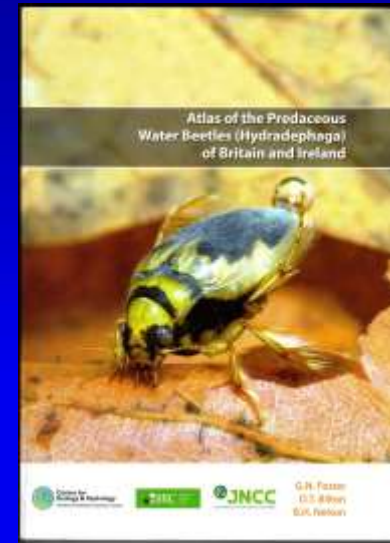
- The corrections



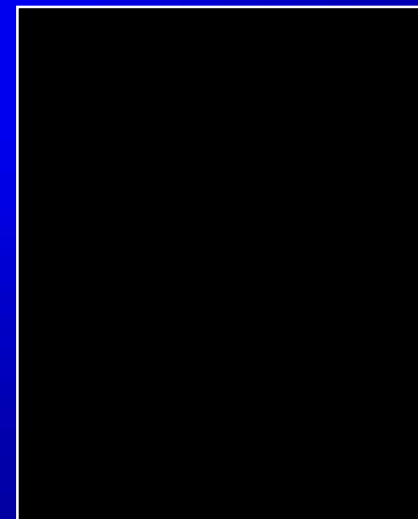
## Red Lists



## RES Handbooks



## Atlases







# Phase 3


Technologies driving in two directions

- popularisation, social media, Citizen Science, crowdsourcing, etc.

versus

- recognition of new cryptic taxa by DNA (and little else)

Which is most likely to deliver what Balfour-Browne wanted, i.e. “a study ..... of successive invasions”?





# Latest species splits and generic reshuffling

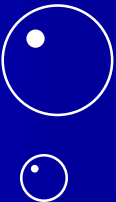
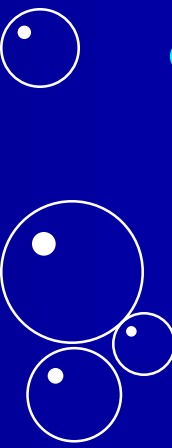

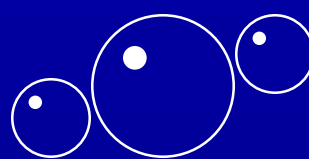
- 2012. Sympatry and colour variation disguised well-differentiated sister species: *Suphrodytes* revised with integrative taxonomy including 5 kbp of housekeeping genes (Coleoptera: Dytiscidae). *DNA Barcodes* 1 1-18
- 2013. Bayesian tests of typology hypotheses with an example from diving beetles. *Systematic Biology* 62 660-673.
- 2015. Species delimitation in northern European water scavenger beetles of the genus *Hydrobius* (Coleoptera, Hydrophilidae). *ZooKeys* 564 71-120.







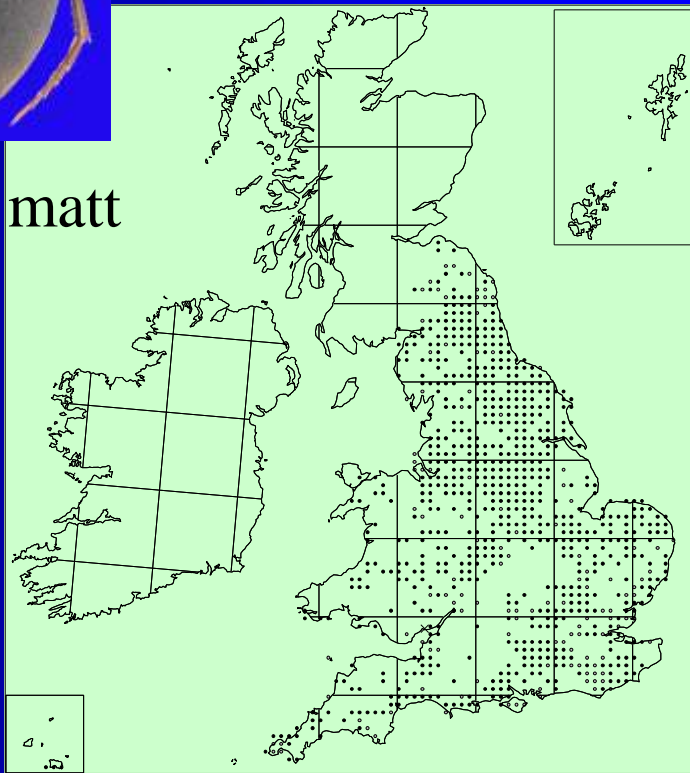
# Phase 3

- **never forget**
    - ➔ that Britain is an archipelago
    - ➔ that subspecific forms may give a better indication of successive invasions than species
  - **and this is great for some old-fashioned basic recording**
- 
- 
- 
- 

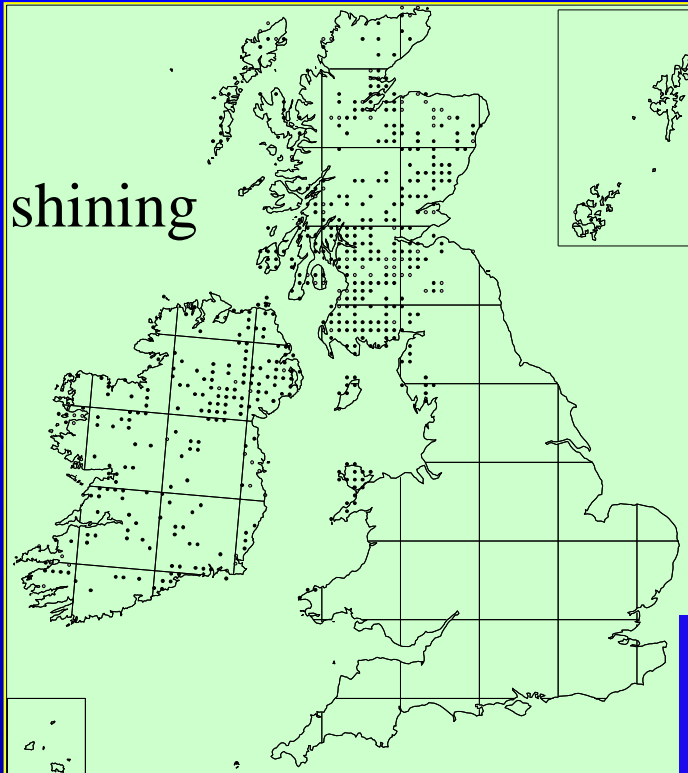


# *Hydroporus memnonius*

matt



shining



The matt form (left), which is *less* thermally tolerant than the shining form (right), has moved 40-50 km more into Scotland in the past 30 years (*PeerJ* in press).







## acknowledgements etc

- Biological Records Centre, Wallingford
  - National Biodiversity Data Centre, Waterford
  - CEDaR, Belfast
  - NPWS, UK countryside agencies, Manx gov't
  - Royal Entomological Society
  - The Balfour~Browne Club
  - Aquatic Coleoptera Conservation Trust
    - ➔ UK charity (SCO37556)
- 

## photo credits

David Bilton, Jonty Denton, Jirí Hájek, Neil Phillips

