Concluding remarks

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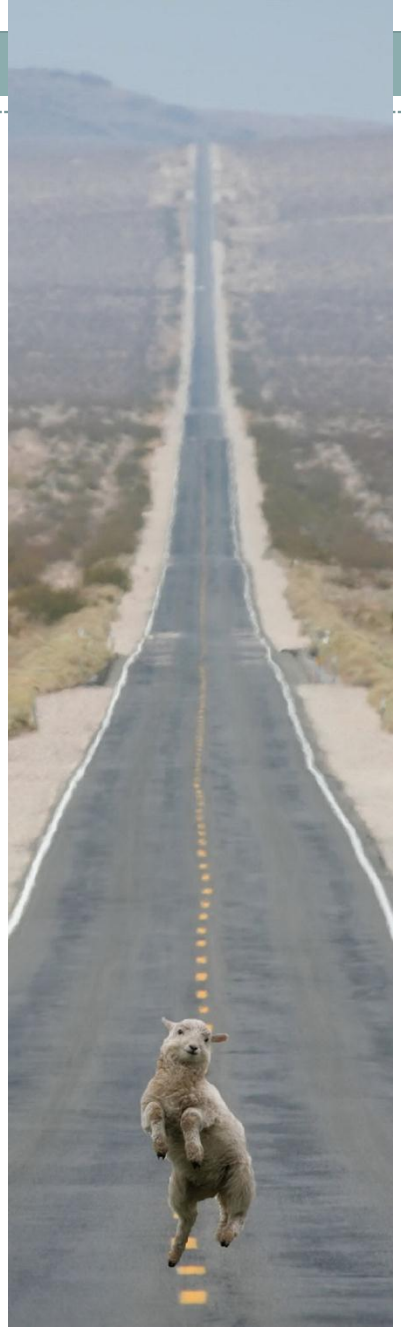
AgriLand

A great deal accomplished.

A great deal left to do…



Source: http://rudebeast.com/funny-images/a-long-way-to-go/

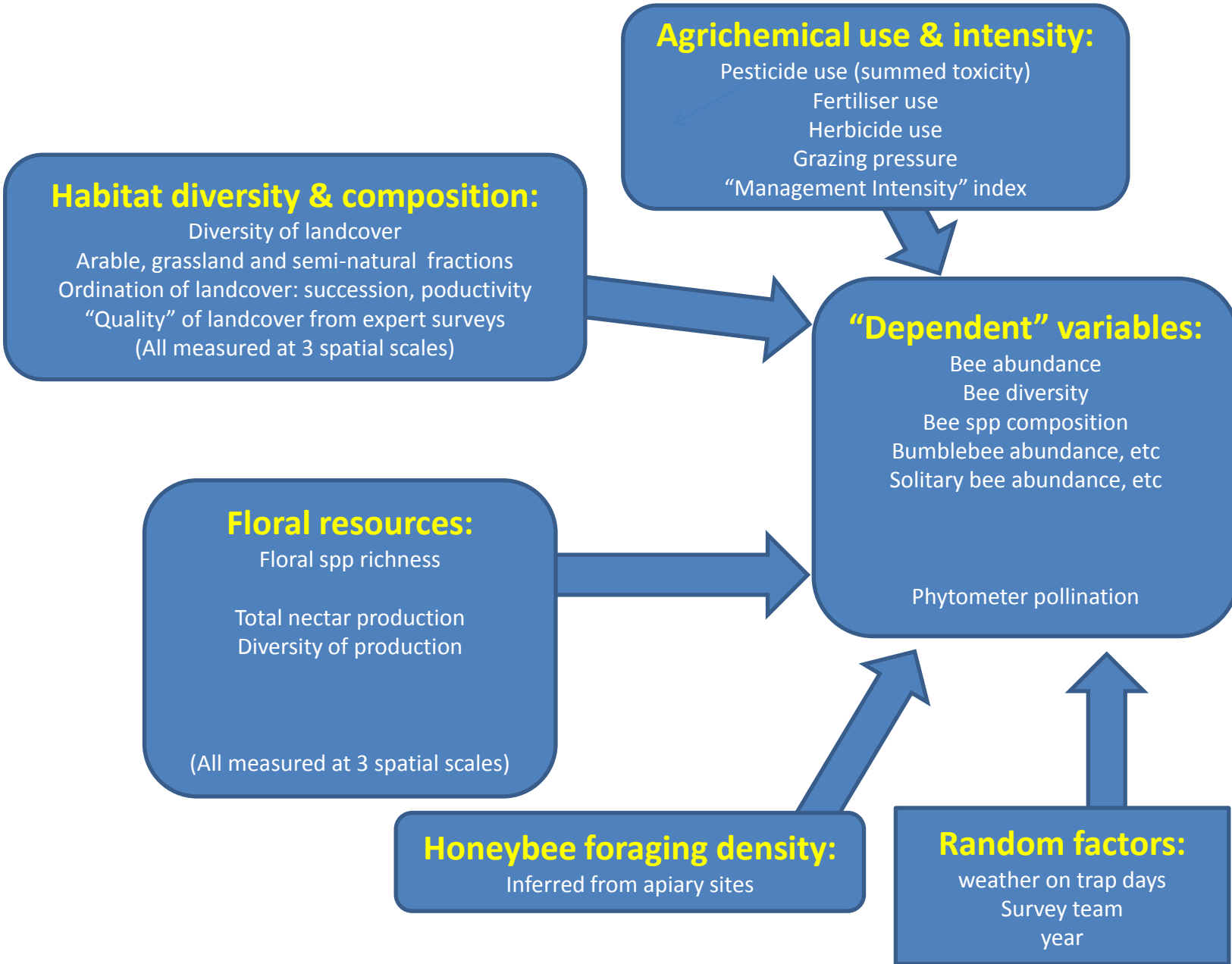
Next steps…

- Extend & refine analyses
- Explore application and impact
- Unanswered questions for the future work…

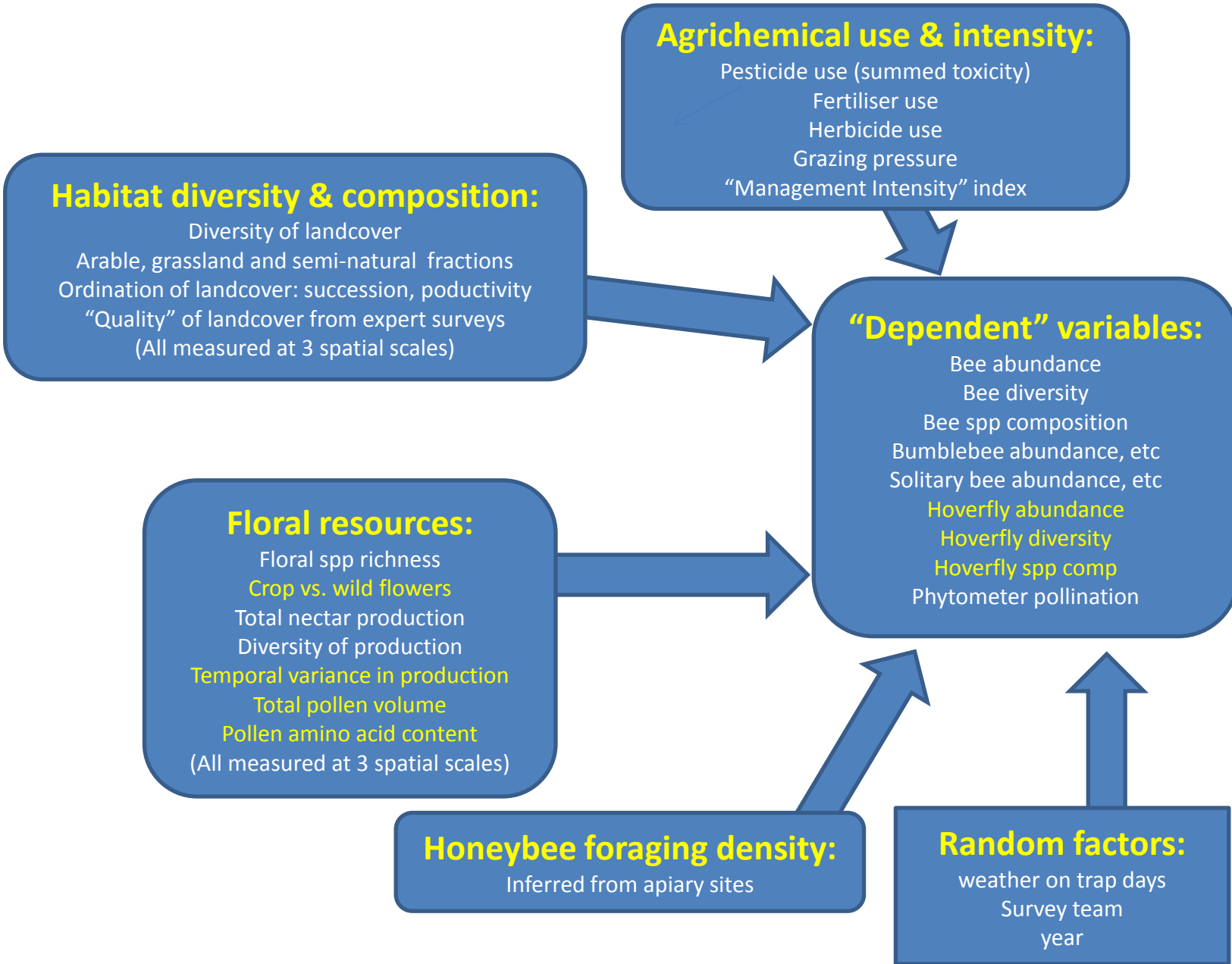
Extend and refine analyses

- **Additional variables to explore**, e.g. effects of temporal variation, pollen resources.
- **Additional taxa to consider**, e.g. hoverfly responses
- **Refined statistical approaches**, to allow inter-relationships between variables to be accounted for

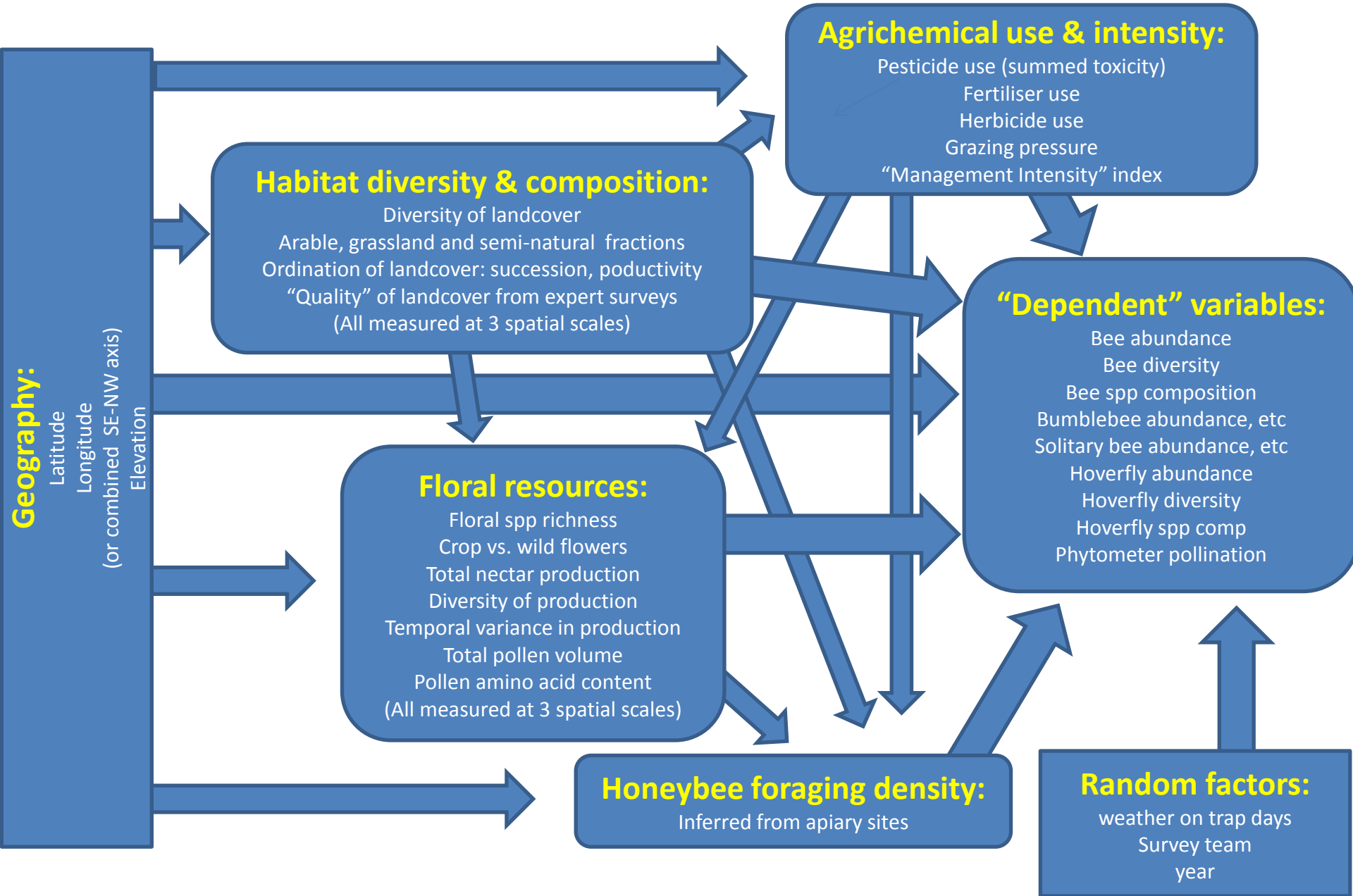
Current analyses



Additional variables to test



Planned analyses



Explore impact and application

- National Pollinator Strategy (NPS)
  1. Evidence gathering on pollinator status and impacts of pressures
  2. Priority policy actions
  3. Commitment to review & refresh Strategy as evidence arises

Explore impact and application

- National Pollinator Strategy (NPS)
  1. Evidence gathering on pollinator status and impacts of pressures
     a. Develop & test a pollinator monitoring framework
     b. Improve data standards for volunteer recording schemes
     c. Expand pool of taxonomic expertise & capacity for pollinator ID
     d. Improve volunteer recruitment for monitoring
     e. Long-term specimen storage
     f. Research relationship between pollinators & crop pollination
     g. Research ecology of pollinator/wild plant interactions
     h. Assess indirect benefits and value of pollinators to the public
     i. Determine effects of neonicotinoid pesticides on pollinators & impacts on farmers' crop & mgmt choices
     j. Review risks posed by commercial Bumblebee production for other pollinators

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- Need for pollinator (and pollination) monitoring to know if pollinators are declining, and to measure whether policy works
- AgriLand shows it's possible to sample at a national scale with finite resources

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- Need for pollinator (and pollination) monitoring to know if pollinators are declining, and to measure whether policy works
- AgriLand shows it's possible to sample at a national scale with finite resources
- Recent Defra contract to design an NPPMS

defra
Department for Environment Food and Rural Affairs

CEH Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

UNIVERSITY OF LEEDS

University of Reading

The Open University

Hymettus

Bumblebee Conservation Trust

iSpot

BWARS
Bees, Wasps & Ants Recording Society

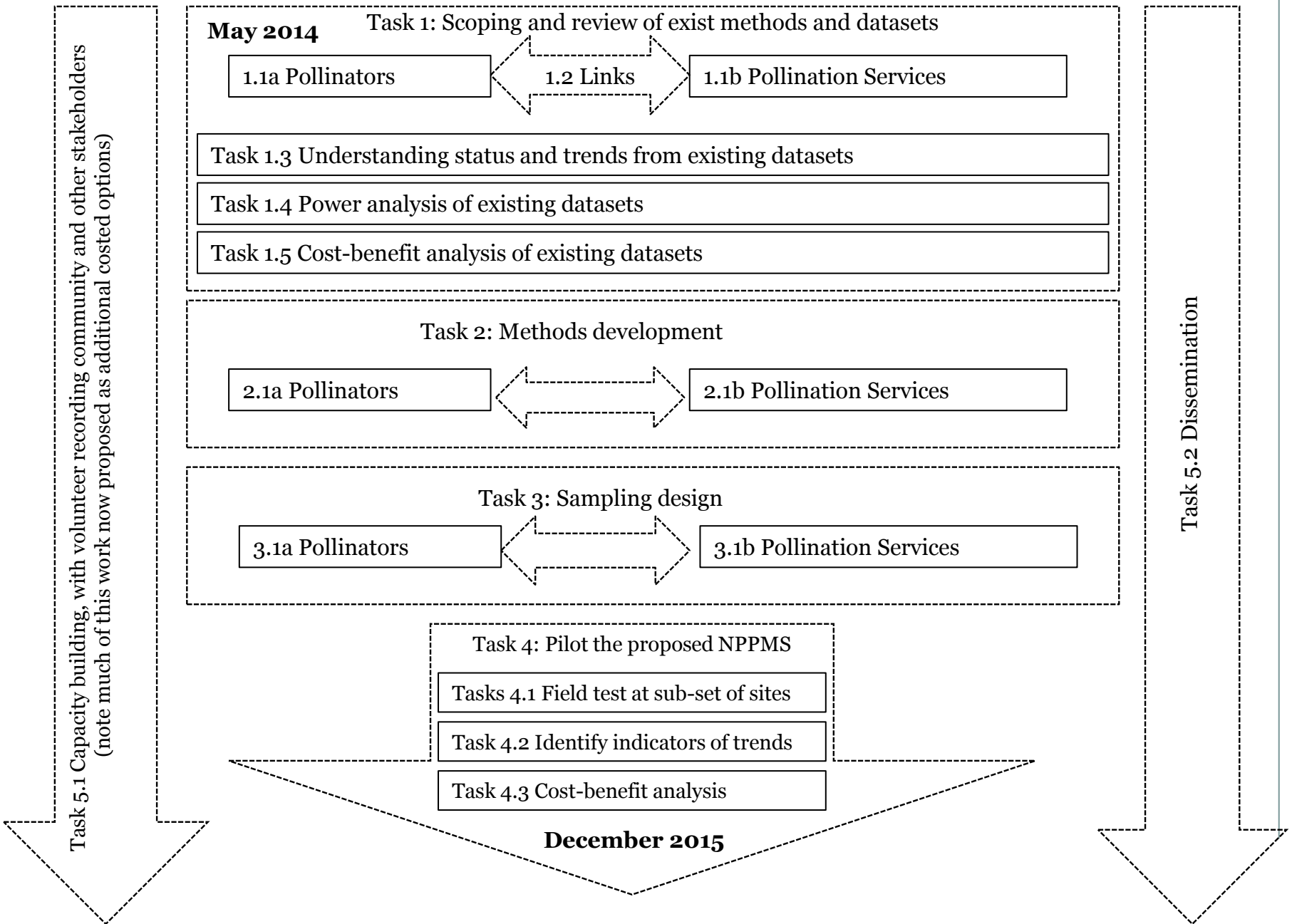
BRC Biological Records Centre

NBN National Biodiversity Network

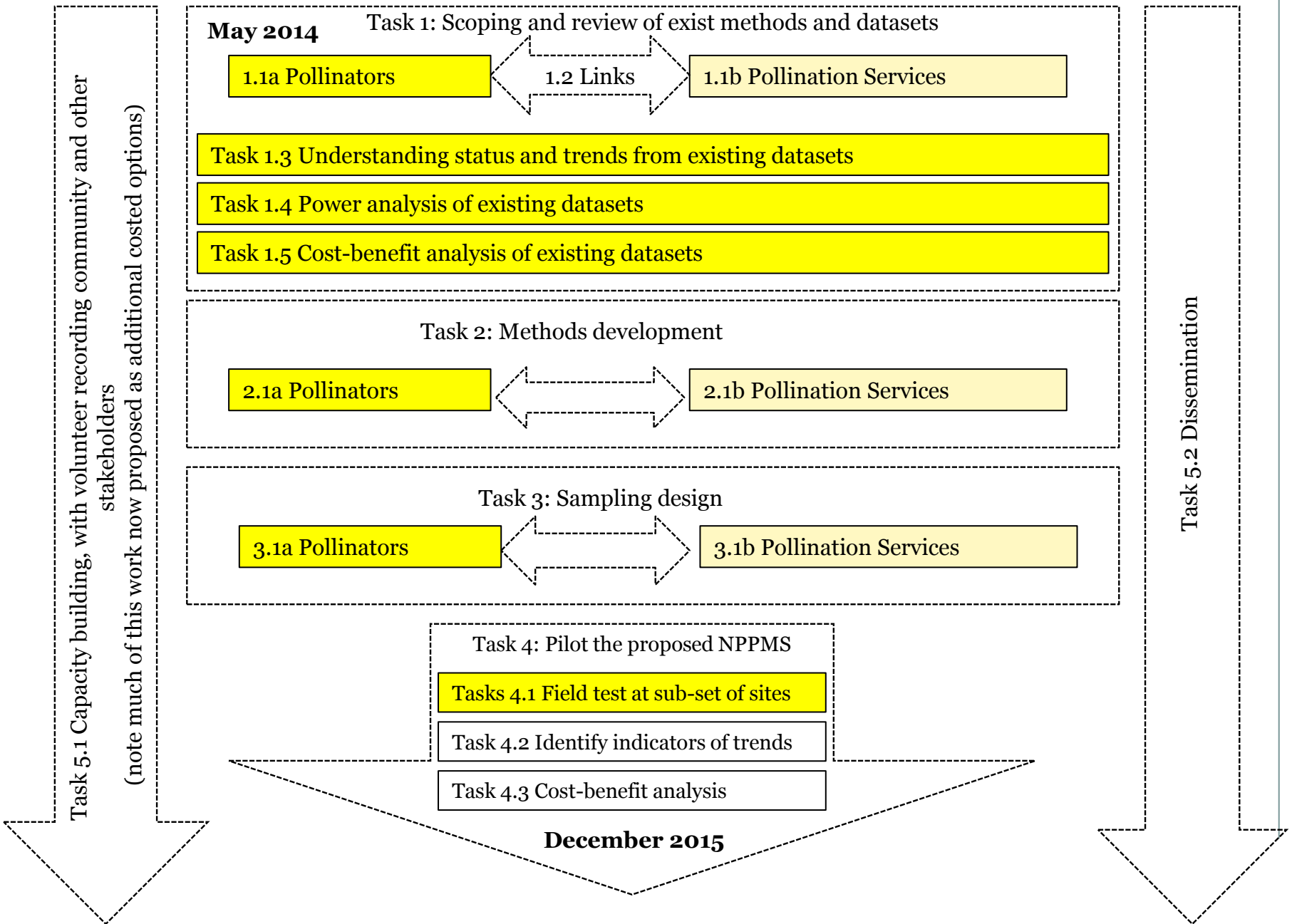
Butterfly Conservation

BTO Looking out for birds

NPPMS overview of tasks and objectives



NPPMS overview of tasks and objectives



Explore impact and application

- National Pollinator Strategy (NPS)
  1. Evidence gathering on pollinator status and impacts of pressures
  2. Priority policy actions
     a. Develop & publish a “Call to Action”
     b. Inclusion of pollinator issues in CAP reform
     c. Develop farm-based pollinator events
     d. Improving and sharing IPM practices
     e. Policy & practice for urban pollinators
     f. Improve & implement honeybee pest control methods
     g. Improve & encourage floral resource plantings
     h. Improve knowledge sharing between scientists, NGOs & practitioners

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Inclusion of pollinator issues in CAP reform

- Ongoing discussions with Defra, Natural England
- With CAP reform, existing Stewardship programs are being re-drafted…
- Pollinator conservation likely to be a key component of a farmland wildlife package
- AgriLand results are already helping shape that package…
- More impact likely as analyses are finalised

Inclusion of pollinator issues in CAP reform

Our original variables	Our (tentative) findings
• Floral resources (+?)	• (weakly +) • Resource DIVERSITY (+)
• Habitat diversity (+?)	• + (but only at fine & medium scales)
• Pesticides (–?)	• (weakly –) • Fertilisers (–)
• Honeybees (–?)	• (+! Apiaries set in good sites?)

Improve & encourage floral resource plantings

- Floral plantings: popular components of Agri-enviroment schemes, urban landscaping and volunteer activities
- Until now largely *ad-hoc*: easy-to-grow flowers that look attractive… with little evidence of their value to pollinators

- AgriLand: Importance of floral diversity: traits, timing…
- Our floral resource database will help optimise plantings: high resource spp, across the season
- Plans to keep database growing: publish the protocols, allow addition of more wild & garden spp

Questions for future research

- Some surprising patterns in historical re-surveys – e.g. exploring the importance of edge habitats for pollinators
- Field campaign results also raising interesting & little-studied questions: role of floral diversity, fertiliser, grazing pressure, trees as floral resources.
- Questions from your break-out sessions…

In summary

- Pollinator research and conservation requires a Landscape-scale approach
- The research is still on-going, but already some strong patterns are emerging
- Growing evidence that both historical shifts in land use, and current land management have had big effects on pollinator populations and communities
- Potential applications to pollinator monitoring, floral plantings and Agri-environmental programs.

In summary

- We set out to do something ambitious, that nobody had ever attempted before: to survey pollinators, floral resources and land management at a landscape scale across all of Britain.
- We've largely succeeded – thanks to the efforts and ideas of researchers, field assistants, land-owners and public bodies across the country.
- The job isn't done yet, but it's been an exciting and rewarding journey!

THANK YOU, and have a good trip home

http://www.natureconservationimaging.com/images/Anthophora-plumipes-flight.jpg