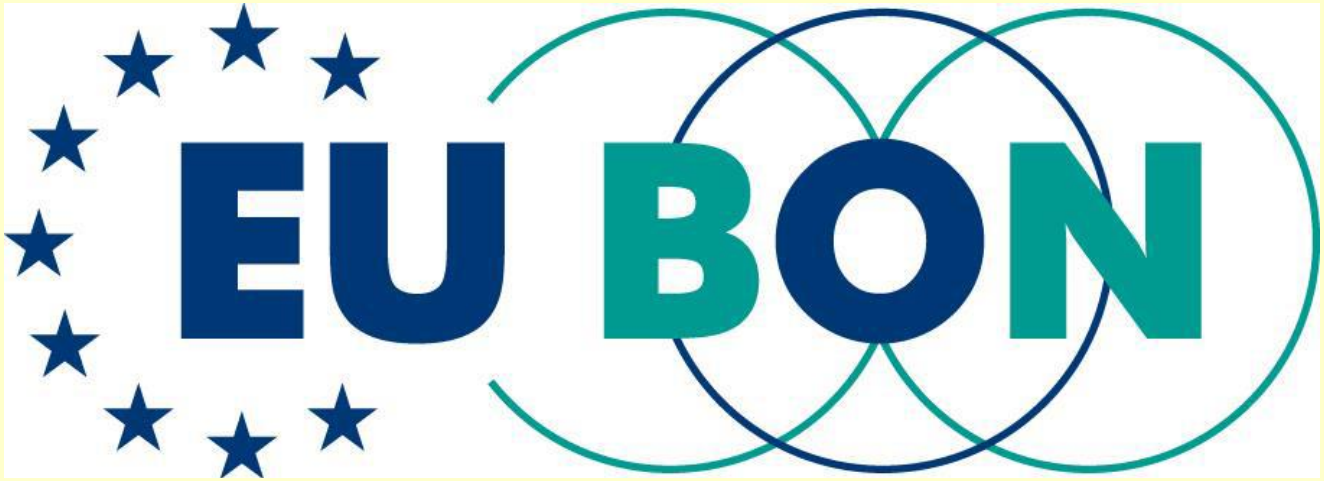


Biodiversity science and policy: progress and future plans

William Sutherland, Conservation Science Group, Department of Zoology, University of Cambridge


sky NEWS HD
BURROWBRIDGE, SOMERSET
LIVE
CENTRAL LONDON


DREDGE
OUR
RIVER
PA


STOP THE FLOODING - DREDGE THE RIVERS!
AFP

Community secretary Eric Pickles

"We made a mistake, there's no doubt about that and we perhaps relied too much on the Environment Agency's advice."

Asked if the prime minister should also apologise, Mr Pickles said:
"I'll apologise. I'll apologise unreservedly.
"I am really sorry that we took the advice … we thought we were dealing with experts."

theguardian

David Cameron takes personal control as flooding crisis worsens

Prime minister leads meeting of Cobra emergency committee after criticism of official response to floods

Flooded land near Burrowbridge on the Somerset Levels. Photograph: Toby Melville/Reuters

Lessons

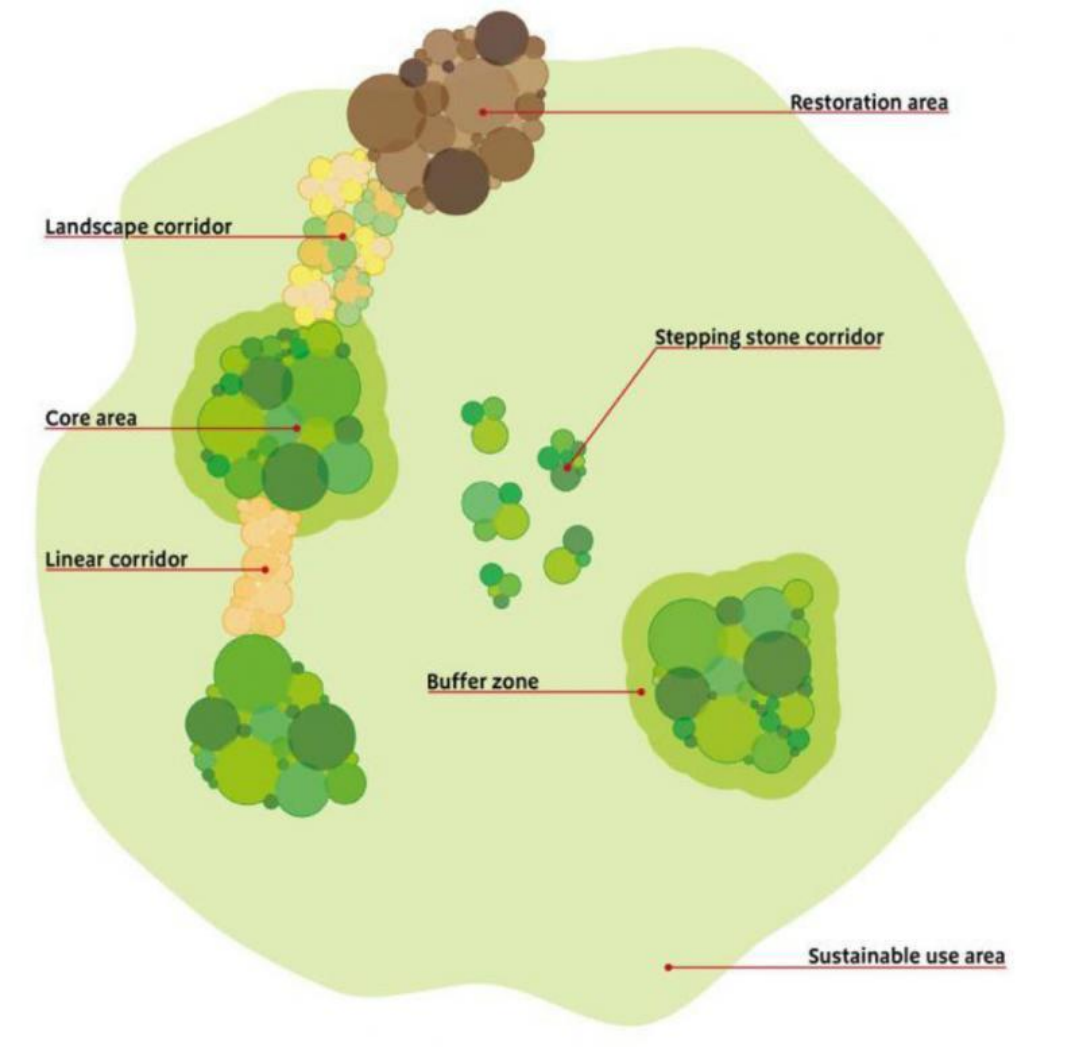
Should be:

- Identify likely problems
- Identify options ahead of time
- Collate evidence
- Don't invent policy on hoof – deal with real problem
- Provide information

Actual lessons:

Take wellies on flood-related photoshoots

Lawton Review



more, bigger, better and more connected areas

~~Ecological Restoration Zones~~

Nature Improvement Areas

GLOBAL

DEVELOPMENTS UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY
CONVENTION ON MIGRATORY SPECIES OF WILD ANIMALS
IUCN WORLDS PARK CONGRESS
UN FRAMEWORK CONVENTION ON CLIMATE CHANGE
THE INTERNATIONAL ARRANGEMENT ON FORESTS
THE RAMSAR CONVENTION ON WETLANDS
SEABED MINING
THE POST-2015 DEVELOPMENT AGENDA AND THE SUSTAINABLE DEVELOPMENT GOALS
MARINE GEO-ENGINEERING

EUROPE

FITNESS CHECK OF NATURA 2000
EUROPEAN UNION 2020 BIODIVERSITY STRATEGY
LINKING NATURAL AND CULTURAL CAPITAL
TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP
ENDOCRINE DISRUPTING CHEMICALS
GENETICALLY MODIFIED CROPS
CLIMATE AND ENERGY
COMMON FISHERIES POLCY

UNITED KINGDOM

DEREGULATION BILL
INFRASTRUCTURE BILL
IMPLEMENTATION OF CAP REFORM
NURSE REVIEW OF THE RESEARCH COUNCILS
LICENCE DECISIONS FOR SECREATRY OF STATE DETERMINATION

BES BULLETIN
VOL 46:1 / MARCH 2015

ENVIRONMENTAL LEGISLATION

What are the forthcoming legislative issues of interest to ecologists and conservationists in 2015?

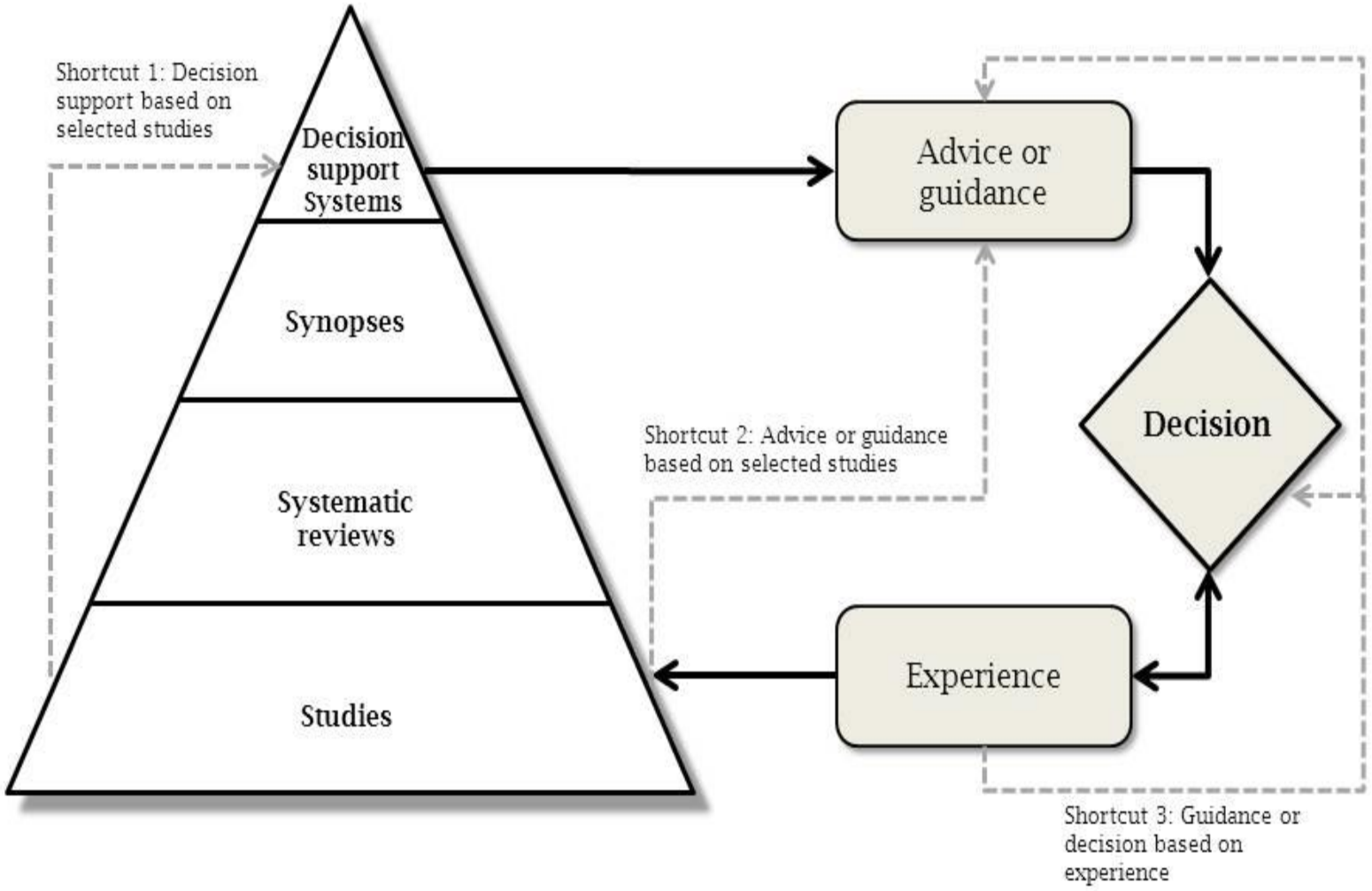
William J. Sutherland, Andy Clements, Richard Benwell, Eleanor Burke, Ben Connor, John Martin, Kathryn A. Monk, Katharina Rogalla von Bieberstein, and Des B.A. Thompson.

ENGLAND
BADGERS AND BOVINE TB
NATIONAL POLLINATOR STRATEGY
PUBLIC FOREST ESTATE MANAGEMENT ORGANISATION

SCOTLAND
LAND REFORM BILL
AGRI-ENVIRONMENT CLIMATE SCHEME
2020 CHALLENGE FOR SCOTLAND'S BIODIVERSITY

WALES
THE WELL-BEING OF FUTURE GENERATIONS (WALES) BILL
ENVIRONMENT (WALES) BILL
PLANNING (WALES) BILL
NATURE RECOVERY PLAN AND INVASIVE ALIEN SPECIES
WELSH GOVERNMENT NATURE FUND
WELSH NATIONAL MARINE PLAN
WATER STRATEGY FOR WALES
FLOOD AND COAST INVESTMENT PROGRAMME
REVIEW OF THE EXISTING POLICY ON DISPOSAL OF HIGHER ACTIVTY RADIOACTIVE WASTE

NORTHERN IRELAND
HABITAT REGULATIONS
REFORM OF PUBLIC ADMINISTRATION
MARINE CONSERVATION ZONES DESIGNATIONS
RIVER BASIN MANAGEMENT PLANS REVISED 2016-2020
DRAFT FLOOD RISK MANAGEMENT PLANS



Dicks et al 2014 Trends in Ecology and Evolution. Open access

Available from all good bookshops

Or free as pdf from Conservationevidence.com

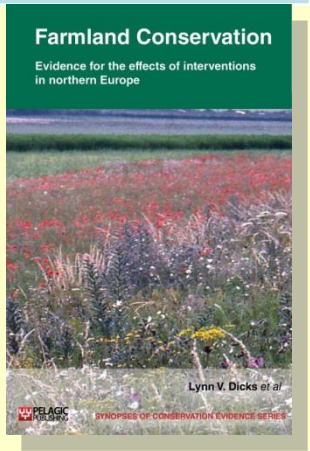
Or search for the interventions on ConservationEvidence.com


Bird Conservation
Evidence for the effects
of interventions
Bee Conservation
Evidence for the effects
Farmland Co
Evidence for the effects
in northern Europe
Amphibian Conservation
Evidence for the effects
of interventions
Rebecca K. Smith & William J. Sutherland
PELAGIC PUBLISHING
SYNOPSES OF CONSERVATION EVIDENCE SERIES
& John D. Altringham
CONSERVATION EVIDENCE SERIES

Evidence for CAP reform

Compulsory greening payment element	Relevant intervention for which compiled evidence was assessed by experts	Number of studies	Certainty of knowledge (%)	Proportion of experts who said 'yes this benefits wildlife'
Retain permanent grassland	Revert arable land to permanent grassland	9	20	0
Crop diversification	Increase crop diversity	5	9	0
Ecological Focus Areas	Increase the proportion of semi-natural habitat in the farmed landscape	5	22	0.2
- Hedges	Manage hedgerows to benefit wildlife	20	50	0.7
- Buffer strips	Plant grass buffer strips/margins	74	69	0.9
	Create uncultivated margins around intensive arable or pasture fields	52	67	1
	Provide buffer strips alongside water courses	7	17	0.1
- Land left fallow	Provide (or retain) set-aside areas in farmland	58	68	0.9

Transparent, traceable, repeatable



Dicks et al 2013 Cons Lett

Greening guidance

- • Cutting but not grazing will be permitted on EFA buffer strips.
  • Nitrogen Fixing Crops will count as EFA if:
  - there is no harvesting before August 1, in order to protect ground-nesting birds;
  - they are surrounded by an EFA field margin where adjacent to the edge of a field;
  - there are two different Nitrogen Fixing Crops on the EFA area, to extend the flowering period for pollinators, with the main crop covering no more than 75 per cent of the total area of Nitrogen Fixing Crop declared as EFA.

Evidence buffer strips round fields shows…

- Nineteen studies from Finland, the Netherlands, Sweden and the UK (including seven replicated controlled studies of which two were randomized, and three reviews), found that planting grass buffer strips (some margins floristically-enhanced) increased arthropod abundance, species richness and diversity. A review found grass margins benefited bumblebees and some other invertebrates but did not distinguish between the effects of several different margin types.
- Nine studies from the UK (including seven replicated studies of which two were controlled, and two reviews) found that planting grass buffer strips (some margins floristically-enhanced) benefits birds, resulting in increased numbers, densities, species richness and foraging time.
- Seven studies from the Netherlands and the UK (all replicated of which four were controlled and two randomized), found that planting grass buffer strips (some margins floristically-enhanced) increased the cover and species richness of plants. A review found grass margins benefited plants but did not distinguish between the effects of several different margin types.
- Five studies from Finland and the UK (including two replicated, controlled trials and a review), found that planting grass buffer strips benefits small mammals: including increased activity and numbers.
- Six studies from the Netherlands and the UK (including three replicated, controlled trials) found that planting grass buffer strips had no clear effect on insect numbers, bird numbers or invertebrate pest populations. A replicated site comparison found sown grassy margins were not the best option for conservation of rare arable plants.

And riparian buffer strips…

- Three studies (including one replicated site comparison) from the Netherlands and the UK reported that the provision of riparian buffer strips had a positive influence on plant, invertebrate and bird diversity or abundance, and supported vegetation associated with habitats preferred by water voles.
- Two replicated site comparison studies from France and Ireland found that the provision of riparian buffer strips on farms did not result in an increase in the number of plant species when compared to farms without buffer strips.
- One replicated site comparison study found ground beetle diversity was higher in grazed riparian zones and narrow fenced strips than in wide riparian buffer strips. However the ground beetle assemblages in wide riparian buffer strips were more distinct from the adjacent pasture field assemblages than either the grazed riparian zones or narrow fenced strips.

And evidence for legumes in a crop rotation for soils...

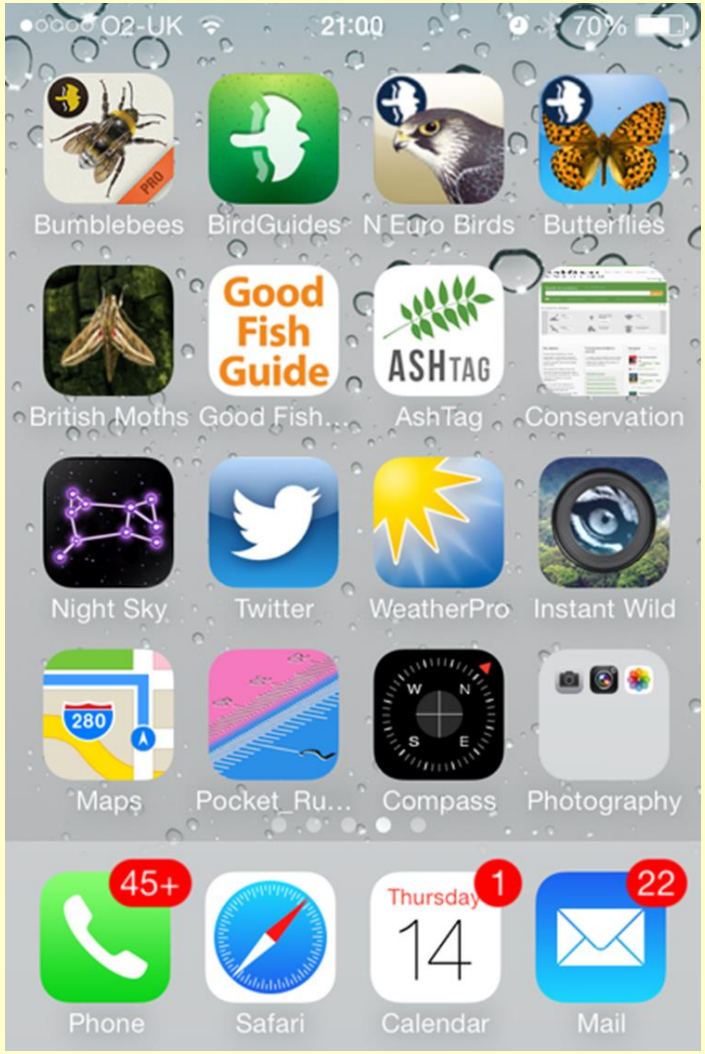
- **Biodiversity:** Four randomized, replicated trials from Canada, Portugal and Zambia measured the effect of including legumes in crop rotations and found the number of microbes and diversity of different soil animals increased.
- **Erosion:** One randomized, replicated trial from Canada found that including forage crops in crop rotations reduced rainwater runoff and soil loss, and one replicated trial from Syria showed that including legumes in rotation increased water infiltration (movement of water into the soil).
- **Soil organic carbon:** Four studies from Australia, Canada, and Denmark (including two controlled replicated trials and one replicated site comparison study), found increased soil organic carbon under crop rotation, particularly when some legumes were included.
- **Soil organic matter:** Three of five replicated trials from Canada, Portugal and Syria (one also randomized, one also controlled and randomized), and one trial from the Philippines found increased soil organic matter, particularly when legumes were included in the rotation. One study found lower soil organic matter levels when longer crop rotations were used. One randomized, replicated study found no effect on soil particle size

And impact legumes on bees…

- One study suggests a benefit to bumblebees from planting more beans, another study shows the effect on bumblebee numbers can only be detected during flowering.
- There is a clear but uncalculated risk to both bumblebees and solitary bees from fungicide and insecticide use on flowering peas and beans.
- There are no particular benefits to other wildlife, such as mammals, birds or plants, from planting peas and beans.
- Good evidence that increased area of some of the alternative suggestions for Ecological Focus Areas – semi-natural habitats – in farmed landscapes is associated with finding more bees (lots of evidence, agreement). These habitats also benefit other wildlife, including birds.

Did we really use this stuff in 2015?

New mobile technology



Basic steps:

1. Answer one or more questions on right by clicking checkboxes. It's okay to check multiple boxes. Then click any 'search' button.
2. Results appear on left. Click the 'simplify' button to get more questions.
3. Repeat steps 1 and 2, narrowing down the possibilities.
4. A 'COMPARE IMAGES' link appears on left when under 100 kinds match. Use this to compare kinds.

Click **Restart** to search again.
Click **Guides** to list other guides.
Click here if you're a new user.

834 kinds match:

Acanthomyops arizonicus [popup] female worker
Acanthomyops bureni [popup] female worker
Acanthomyops californicus [popup] female worker
Acanthomyops claviger [popup] female worker
Acanthomyops colei [popup] female worker
Acanthomyops coloradensis [popup] female worker
Acanthomyops creightoni [popup] female worker

Antenna segment number | Genus | Head main color | Thorax spine number | Waist bumps | Wings or wing scars present

Check boxes for all that apply. If uncertain, skip character or select several states. Then click on any search button.
Navigate with above index or scroll bar.
Number scored for a state is in green.

1. **Waist bumps** search

173 ☐ 1 point | 9 ☐ 1 join | 108 ☐ 1 round | 17 ☐ 1 flat | 14 ☐ 1 square | 150 ☐ 2 close | 346 ☐ 2 stalk

2. **Antenna segment number** search

1 ☐ 4 | 42 ☐ 6 | 1 ☐ 7 | 1 ☐ 8 | 4 ☐ 9 | 24 ☑ 10 | 88 ☐ 11 | 662 ☐ 12

3. **Thorax spine number** search

341 ☐ 0 | 17 ☐ 1 | 357 ☑ 2 | 7 ☐ 4 | 6 ☐ Over 4

4. **Head main color** search

68 ☐ Black | 517 ☐ Brown, red | 292 ☐ Yellow

Click simplify to refine search.

simplify

COMPARE IMAGES

19 kinds match:

Camponotus sexguttatus [popup] female minor worker
Cerapachys davisi [popup] female worker
Formica scitula [popup] female queen
possible inquiline ant
Monomorium emersoni [popup] female worker
Myrmica lobicornis [popup] female worker
Pheidole lamia [popup] female minor worker
Pyramica apalachicolensis [popup] female worker
Solenopsis abdita [popup] female worker
Solenopsis globularia [popup] female worker
Solenopsis krockowi [popup] female worker
Solenopsis nickersoni [popup] female worker
Solenopsis pilosula [popup] female worker
Solenopsis puncticeps [popup] female worker

Abdomen main color | Antenna scape hair, except tip | Antenna scape length, to head top | Antenna socket, at lip edge | Antenna tip, number larger segments | Body length mm | Eye size, times scape maximum width | Genus | Head main texture | Head top shape | Subfamily | Thorax main color | Thorax top erect hair density | Waist bumps | Waist petiole number | Wings or wing scars present | **Selected:** Antenna segment number | Thorax spine number

1. **Genus** search

1 Camponotus 1 Cerapachys 1 Formica 1 Monomorium 1 Myrmica 1 Pheidole 1 Pyramica 8 Solenopsis 1 Tapinoma 2 Temnothorax 1 Tetramorium

2. **Subfamily** search

1 Cerapachyinae 1 Dolichoderinae 2 Formicinae 14 Myrmicinae

3. **Waist petiole number** search

4 1 15 2


4. **Wings or wing scars present** search

16 No 2 Yes



5. **Antenna socket, at lip edge** search

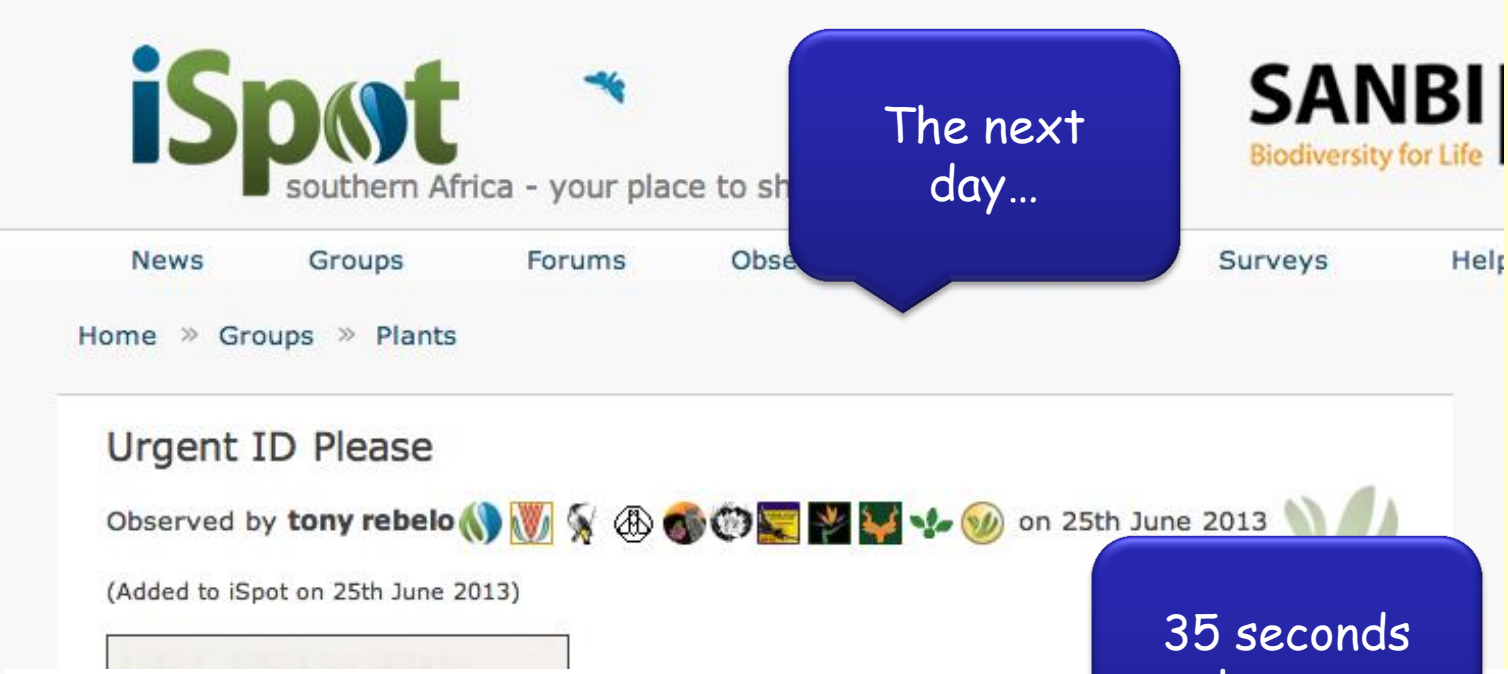
1 Above 18 Yes


Urgent ID Please

Observed by **tony rebelo** on 25th June 2013

(Added to iSpot on 25th June 2013)

Some children in Zululand have eaten these seeds and are very ill. Need an ID if possible.


iSpot
southern Africa - your place to sh
SANBI
Biodiversity for Life
The next day…
News
Groups
Forums
Obse
Surveys
Help
Home » Groups » Plants
Urgent ID Please
Observed by tony rebelo on 25th June 2013
(Added to iSpot on 25th June 2013)
35 seconds later…
Identifications
Physic Nut Tree (Jatropha curcas) by Cassine at 10:47 am
likely ID
25/06/13
Confidence: It's likely to be this, but I can't be certain.
ID agreements ( ): 2 people agree with this identification.
Search Wikipedia for Jatropha curcas
Search Encyclopedia of Life for Jatropha curcas
Search Red List of South African Plants for Jatropha curcas

iSpot
southern Africa - your place to sh

The next day…

SANBI
Biodiversity for Life

Update:

27 June 2013 - 12:52am — tony rebelo

by email (Wed 2013/06/26 17:12):

Thank you all for your participation in identification of those seeds.

I'm happy to report that although those 5 kids presented with violent vomiting yesterday, all their blood tests came back normal and they rapidly recovered and settled down quite nicely last night.
They spent an uneventful night in hospital and were discharged this morning completely recovered.

It's not the first time we've had kids come in having eaten these seeds and it's really helpful to now know what they are and what we're up against.

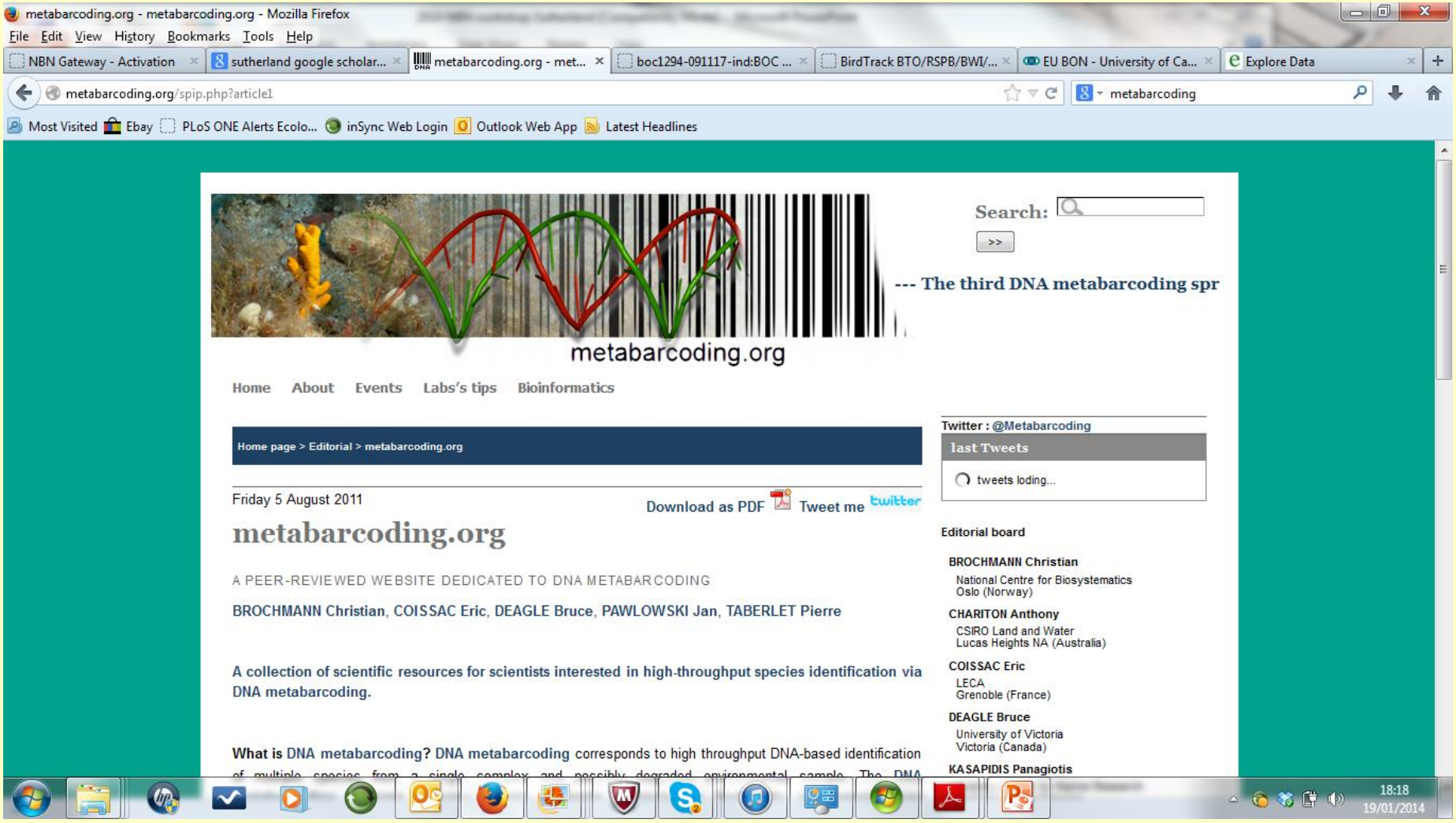
Thank you all so much once again, we really do appreciate it.

Kind Regards

Dr KR Gate
Medical Manager
Bethesda Hospital

Barbastelle (0.4% of total recordings)

metabarcoding



metabarcoding

Environmental DNA

“WISCONSIN appears to be in the driver’s seat en route to a win, as it leads 51-10 after the third quarter. Wisconsin added to its lead when Russell Wilson found Jacob Pedersen for an eight-yard touchdown to make the score 44-3….”

“Let’s just say that if UNLV wins, it’s going to be one of the biggest upsets of the season. Their QB, Caleb Herring, is definitely the player to watch. I mean, it’s not like he has no in-game experience, but it’s a little different coming on the road and playing in front of 80,000 screaming Wisconsinites…”

400,000 accounts in 2012, 1.5m in 2013

Sara's Kitchen Inc.

Weekly sales review and forecast
January 28, 2013

Highest Profit-Growth Menu Items: **Pancakes, Apple Pie, Potato Chips**

Highest Profit-Growth New Items: **Scones**

Top Growth Opportunities: **Chicken Sandwiches, Fruit Salad**

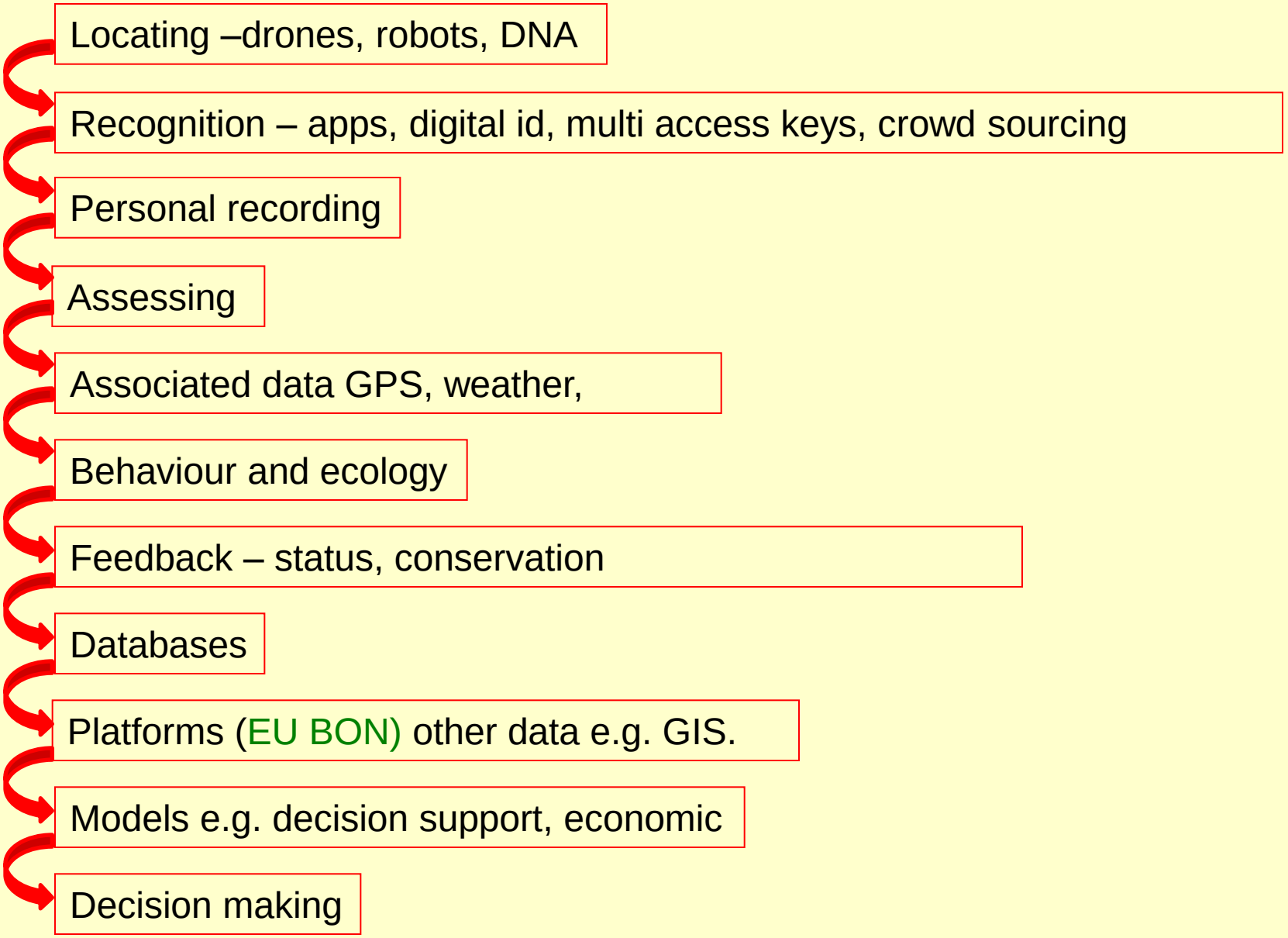
Christmas Holiday Pushes Sales Lower for the Week:

Sales slipped this week from the previous week due to a one-day closing for the Christmas holiday. Revenue declined 25%. Total revenue for the week was $40,716 from 7,990 transactions. Last week, the restaurant had sales of $54,332 on 10,820 transactions. Though sales are down this week, the decline was smaller than the 27% fall the store recorded during the same period a year ago. The restaurant's sales declined more than the region's, which dropped 17%.

The most improved day of sales was Friday. Total revenue for that day was up 3% from last week at $8,019.

Sales growth was lowest on Monday. That day's total revenue of $5,717 was down 29% week over week.

A vision for monitoring



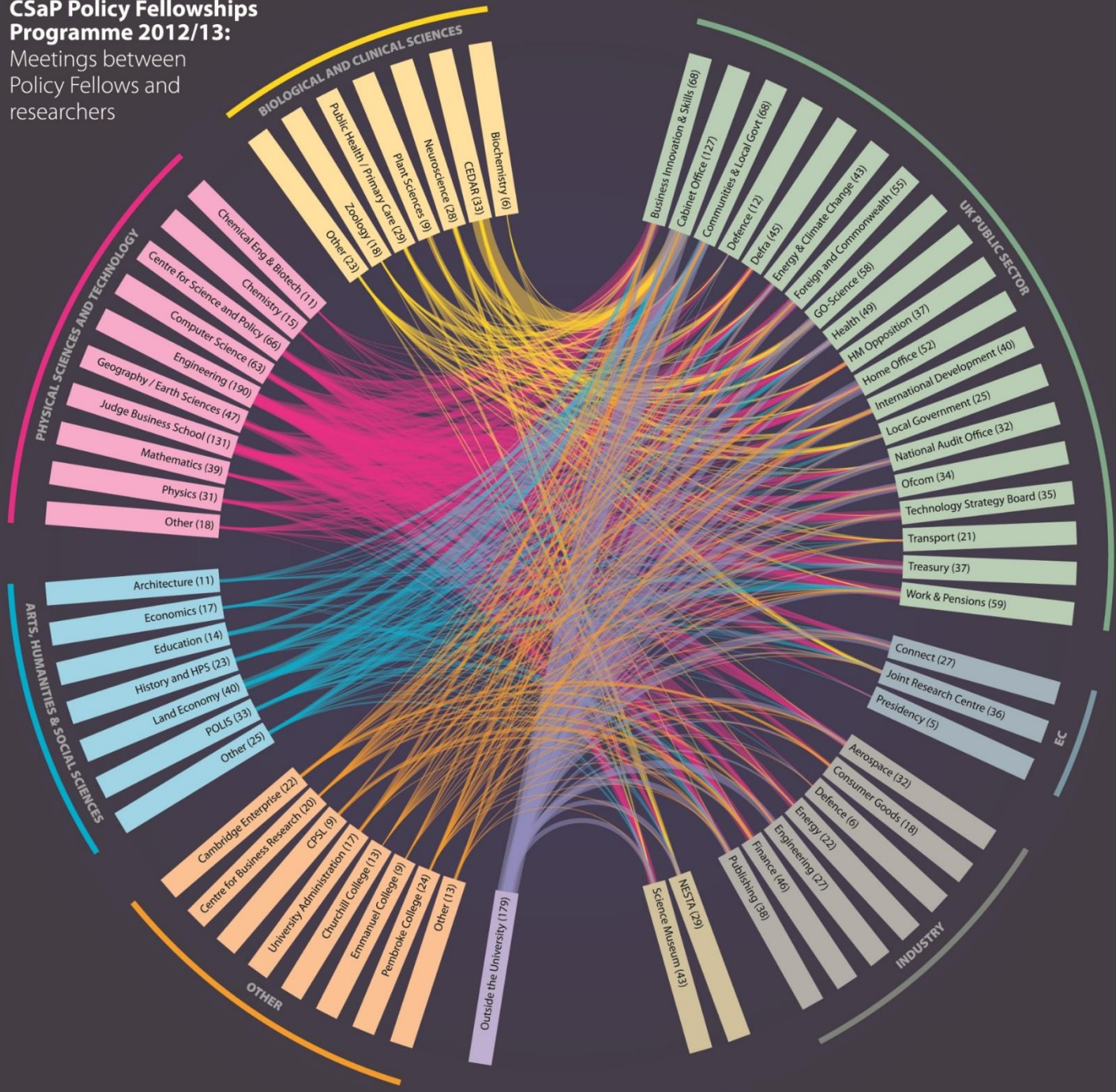
MPs tend to think they should put their principles ahead of controlled trials when deciding what should be done

Q. Which two or three, if any, of the following should politicians pay most attention to when deciding what should be done?

Base: 104 MPs (interviewed from 4 November to 19 December 2014)

Source: Ipsos MORI MPs survey

CSaP Policy Fellowships Programme 2012/13:
Meetings between Policy Fellows and researchers



CSaP – six years on

- Over 5000 meetings between academics and policy makers
- 200 Policy Fellows and over 1000 researchers
- Over 1900 people attended CSaP events so far in 2015
- CSaP's 2015 annual conference in partnership with *History & Policy*

  'how can government make better use of humanities expertise?'
- 7600 people receive CSaP's newsletter

CambridgeConservationInitiative

transforming the landscape of biodiversity conservation

Conservation campus: a hub for conservation research in the centre of Cambridge

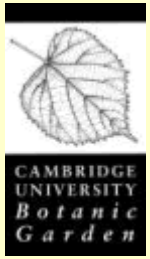

THE NATIONAL TRUST


UNEP
WCMC


UNIVERSITY OF
CAMBRIDGE


ENVIRONMENT
AFRICA TRUST


NATURA
INTERNATIONAL


CAMBRIDGE
UNIVERSITY
Botanic
Garden


BOU


SOCIETY OF
Biology


NATURAL
ENGLAND


JNCC
Joint Nature Conservation Committee


rspb
giving
nature
a home


Tropical
Agriculture
Association


FAUNA & FLORA
INTERNATIONAL


The Nature
Conservancy
Protecting nature. Preserving life.


TROPICAL BIOLOGY ASSOCIATION


British
Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

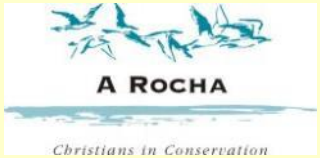

ARCOS
NETWORK


Department of
Zoology


arcus
FOUNDATION


amphibian and reptile
conservation


WWT
Saving wetlands
for wildlife & people


A ROCHA
Christians in Conservation


SCAR


CAMBRIDGE
UNIVERSITY PRESS


Tropical
Agriculture
Association


CAMBRIDGESHIRE
BIRD CLUB


CAMBRIDGE
PAST, PRESENT
& FUTURE
Formerly Cambridge Preservation Society


Bedfordshire
Cambridgeshire
Northamptonshire


BirdLife
INTERNATIONAL


buglife
The Invertebrate Conservation Trust


THE CHURCH
OF ENGLAND


THE COUNTRYSIDE
RESTORATION TRUST
CREATING A LIVING AND WORKING COUNTRYSIDE


IUCN


CAMBRIDGE
CITY COUNCIL


ResourceAfrica
Partnerships for Policy and Projects


TRAFFIC
the wildlife trade monitoring network

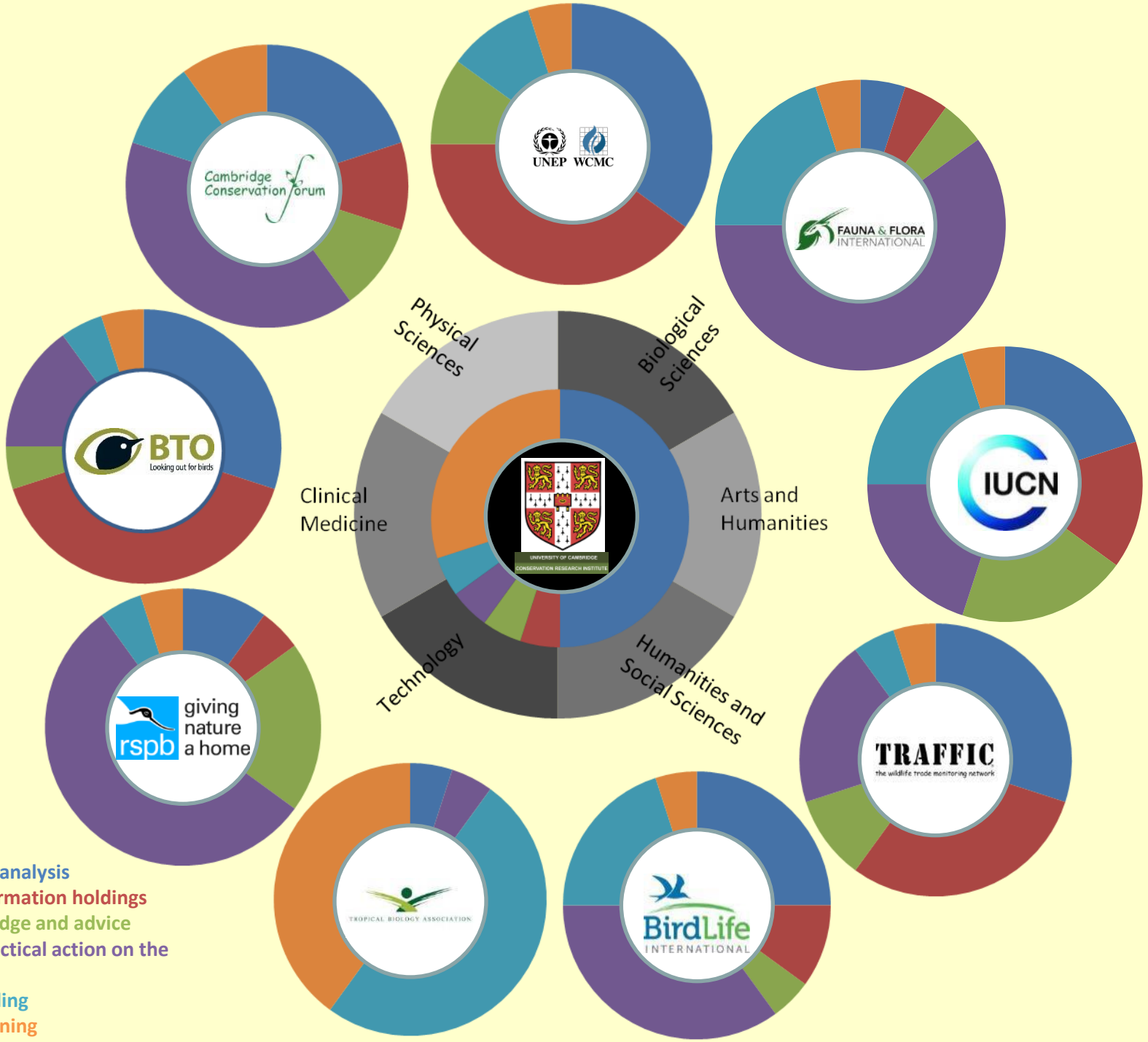

Lauterpacht Centre
for International Law

BIODIVERSITY

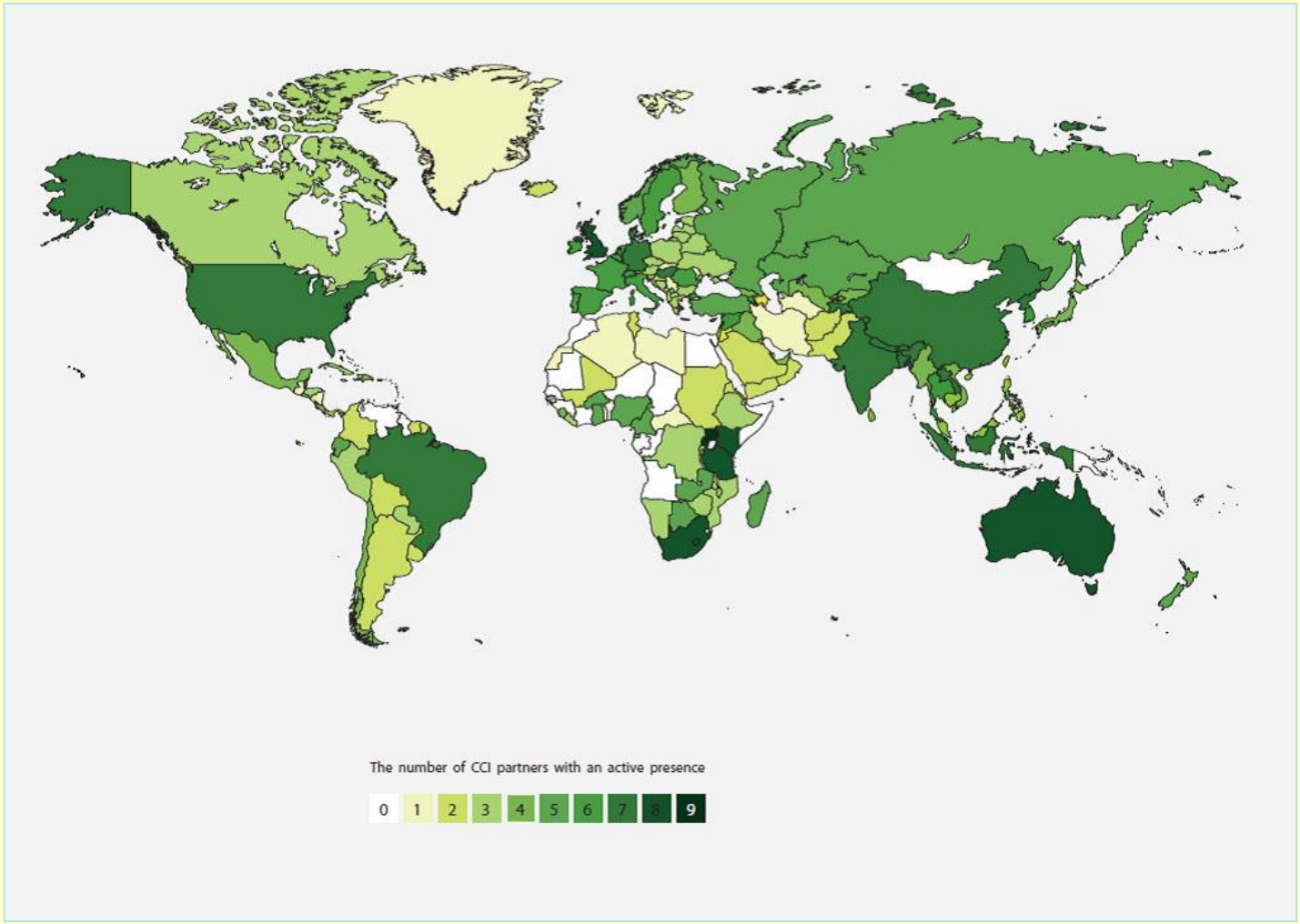
Butterfly
CONSERVATION EUROPE

Anglia Ruskin
University

BTO
Looking out for birds


Physical Sciences
Biological Sciences
Clinical Medicine
Arts and Humanities
Technology
Humanities and Social Sciences
UNEP WCMC
Cambridge Conservation Forum
FAUNA & FLORA INTERNATIONAL
BTO
Looking out for birds
IUCN
rspb
giving nature a home
TRAFFIC
the wildlife trade monitoring network
TROPICAL BIOLOGY ASSOCIATION
BirdLife INTERNATIONAL
Research and analysis
Data and information holdings
Policy knowledge and advice
Delivering practical action on the ground
Capacity building
Teaching/learning

Global network



Conservation Collaborations

- **Seed funded 31** projects ***(CCI Collaborative Fund)***
- Facilitated over **45 new collaborations**
- Published over **50 joint research papers**
- Disseminated more than **20 policy briefs**
- Impact on **CBD, UNGA, IPBES, EU Directives**
- **Masters in Conservation Leadership**
- **Horizon-scanning** for new conservation issues - annual publication
- Initiating new **conservation hubs** (e.g. habitat restoration, wildlife trade, China)

CENTRE FOR THE STUDY OF EXISTENTIAL RISK

UNIVERSITY OF CAMBRIDGE

CSER

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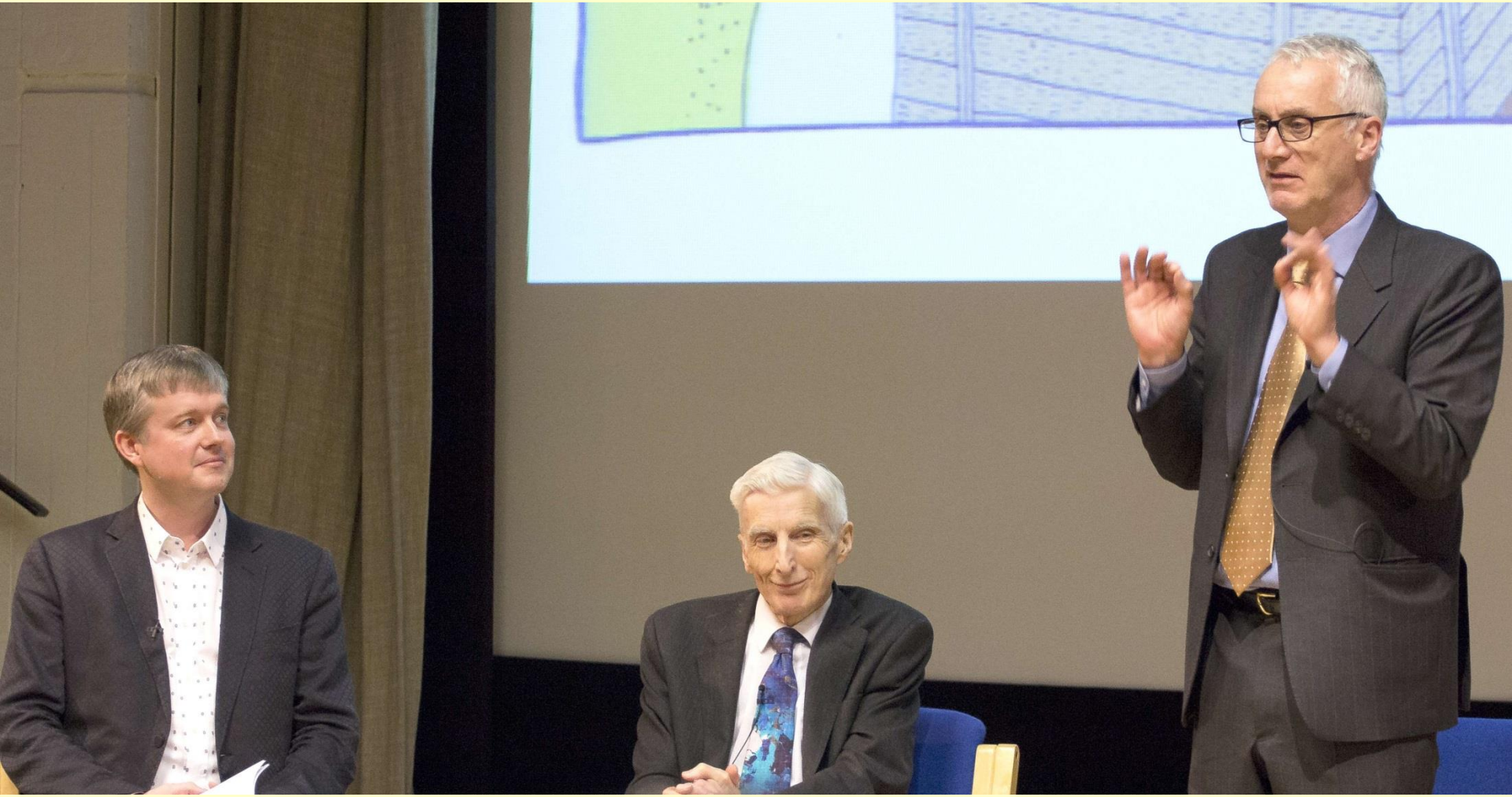
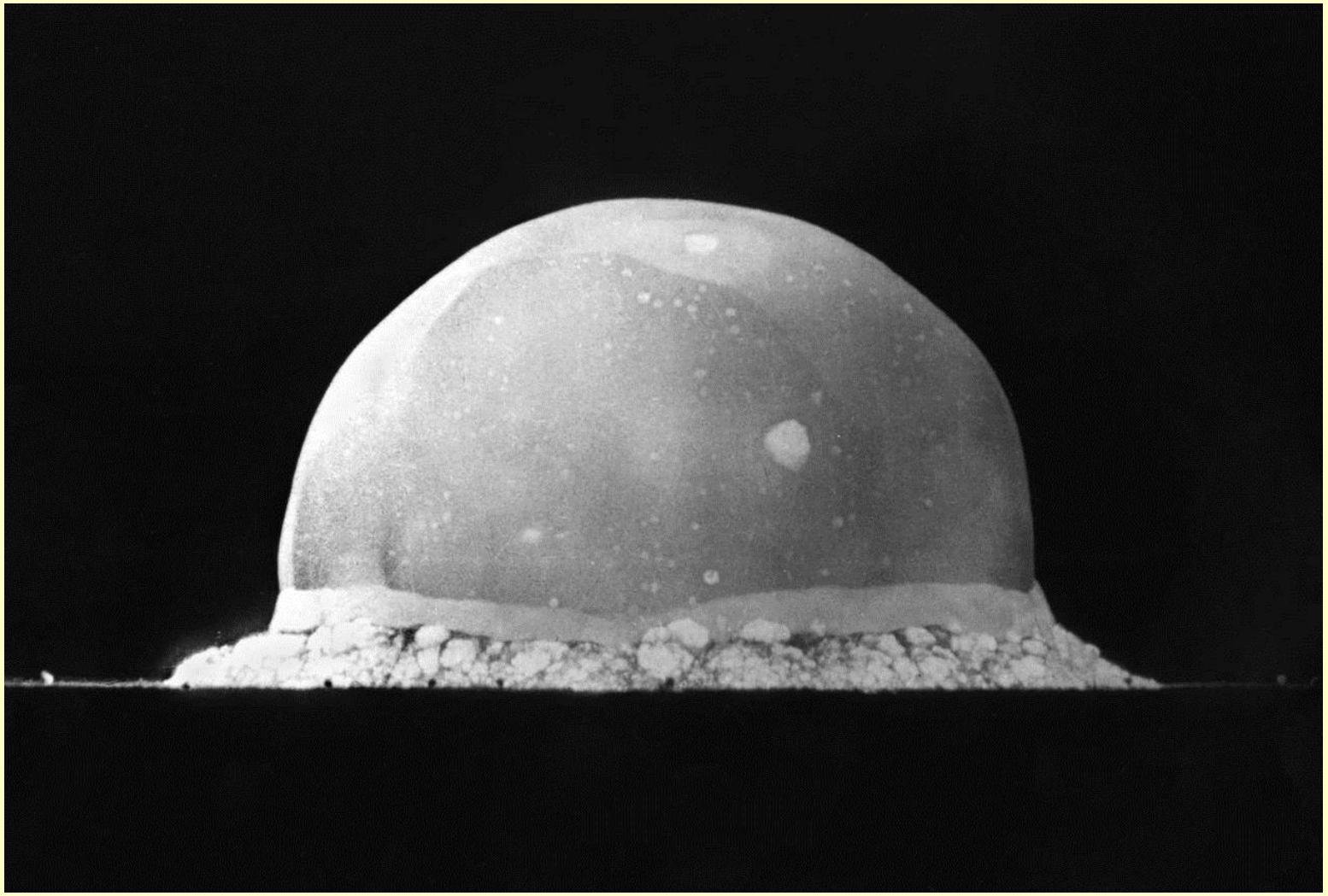
http://cser.org



“Earth is 45 million centuries old. But this century is the first when one species – ours – can determine the biosphere’s fate. ” Martin Rees



Trinity Test. Photo:
Berlyn Brixner