

# Take home lessons

- Policy advice dominated by simple, transparently presented ideas (R.M. May, 1936-2020; UK Govt CSA 1995-2000)
- Reduce the problem to something they can work through themselves (A.R. McLean, current Govt CSA)
- An enormous amount of work to generate 3 simple numbers
  - R – number
  - Growth rates
  - Exceedance probabilities (probability cases rise above level X)

HOME: NEWS

# Publishing SAGE advice led to abuse of scientists, Covid inquiry told

Members of the government's Scientific Advisory Group on Emergencies needed counselling and security advice

[Laura Oliver](#)



The Independent

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## Boris Johnson's decision-making over Covid was 'bipolar', Sir Patrick Vallance warned

Story by Ella Pickover and Andy Gregory • 1w

Imbalanced presentation of govt advice

Lack of scientific expertise at heart of government

"Poor understanding of risk"



NEWS COMMENT IN DEPTH PROFESSIONS EVENTS RESOURCES  
Security & Defence Economy Education Energy & Environment Foreign

## Covid Inquiry: Requests for science advice 'chaotic and poorly formulated'

"The formulation of science commissioning from the centre got quite chaotic for quite some time," former GO-Science chief says

# Scientist as “Strategic Policy Advisor”

Moving outside of your comfort zone

BBC



The Policy Advisor is a bit like Percy

Generation  
of  
Knowledge  
from the  
Scientific  
Community



Enactment  
of  
Government  
Initiatives

# Defra Science Advisory Council

Independent Public body - Support Defra Chief Scientific Advisor and provide independent scientific advice

The objectives of the SAC are to:

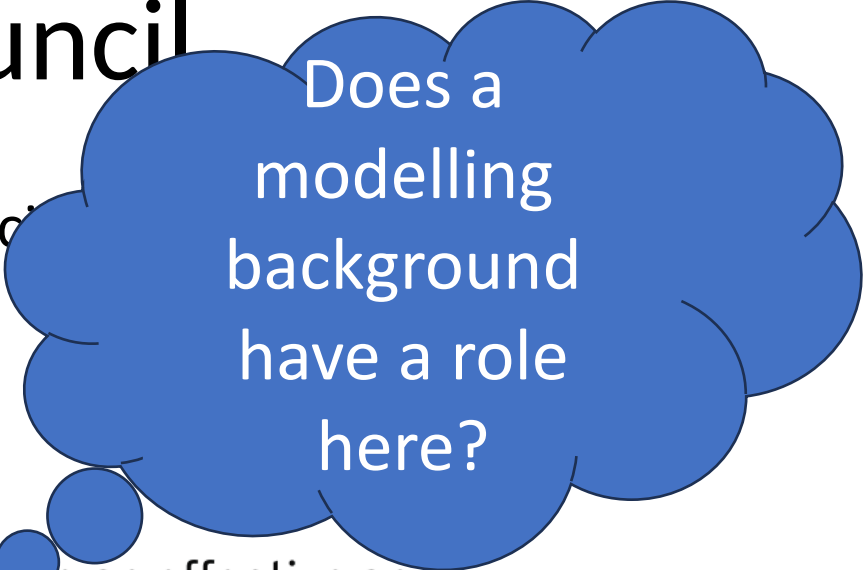
- advise and support Defra on developing and implementing an effective and efficient strategy for obtaining and using evidence and scientific advice
- advise on and provide assurance on the process for evidence gathering
- provide strategic oversight and assurance on how evidence is used in policy, providing targeted support where necessary
- provide constructive challenge on Defra's evidence
- identify sources of additional expert external advice to input to Defra evidence

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Does a  
modelling  
background  
have a role  
here?



## More than 50,000 wild birds in UK killed by avian flu - double previous estimates

H5N1 bird flu may lead to extinction of species as data revealed by Guardian shows worst losses in decades



National Trust rangers clear dead birds from one of the Farne Islands off Northumberland, where at least 6,000 birds have died from avian influenza. Photograph: Owen Humphreys/PA

## Alarm as HPAI kills almost 9,000 sea creatures in Chile

Mark Clements: Over 8,887 sea creatures have been recorded dead on the Chilean coast so far this year due to infection with the highly pathogenic avian influenza (HPAI) virus.

Mark Clements  
May 30, 2023

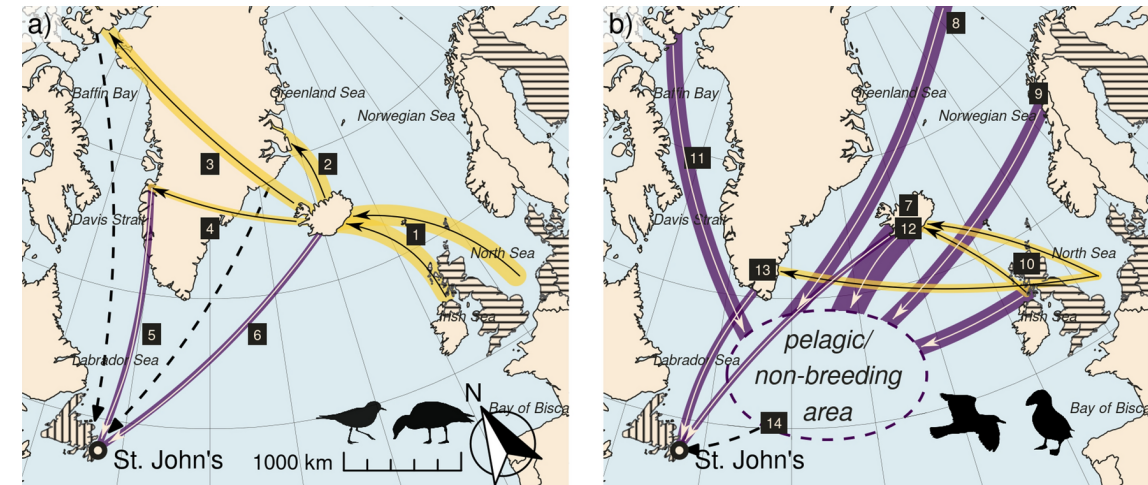
## Highly Pathogenic Avian Influenza – A Global Animal Pandemic



## Bird flu: H5N1 virus in Brazil wild birds prompts animal health emergency

Health declaration to last 180 days, as world's biggest exporter of chicken meat detects virus for first time ever

## Transatlantic spread of highly pathogenic avian influenza H5N1 by wild birds from Europe to North America in 2021



■ spring ■ autumn H5N1 detected ▨ spring/summer 2021 ▧ November 2021

## The UK's largest avian flu outbreak has left millions of birds dead - and scientists extremely concerned



2022 has seen a deadly and highly pathogenic new strain of H5N1 bird flu make a cataclysmic impact on captive and wild bird populations. Conservationists and scientists are counting the cost.

## Record avian flu outbreak sees 48m birds culled in UK and EU



SAC-ED, augmented by additional external experts as needed, advised on four specific issues:

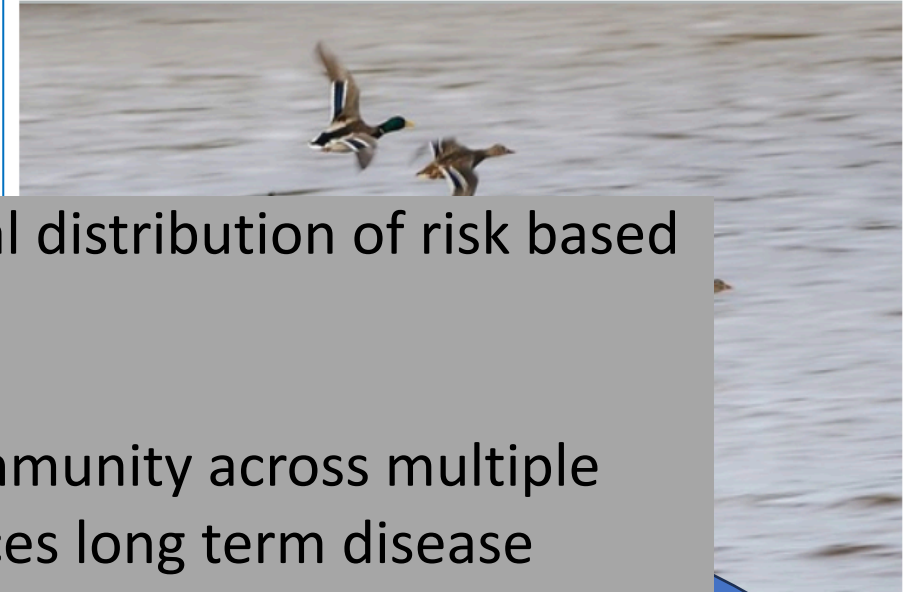
1. the host range of the current virus and the potential roles of non-avian hosts
2. the possibility of interventions to reduce the impact of HPAI on wild birds
3. the potential to supplement current approaches to control with vaccination
4. the potential to model the expected



30 March 2023 — Independent report  
**Highly pathogenic avian influenza  
in Great Britain: evaluation and  
future actions**

An independent scientific evaluation of evidence around highly pathogenic avian influenza (HPAI) in Great Britain.

SAC-ED, augmented by additional external experts as needed, advised on four specific issues:



1. Ascertainment of the spatio-temporal distribution of risk based on limited, biased data.

1. the host range and the potential for spillover to other hosts

Understanding how trajectories of immunity across multiple spatially overlapping species influences long term disease trajectories

2. the possibility of interventions to reduce the impact of HPAI on wild birds

3. the potential to supplement current approaches to control with vaccination

4. the potential to model the expected

Generic relevant modelling skills:

Data Imputation

Large Scale Simulation

Bayesian Inference

Great

) in

# Some takeaway points

- Rapidly commissioned and executed summary report building upon **scientific expertise rather than analytical skills**
- Broad scope to evaluate evidence
- Draw upon wide ranging UK scientific expertise
- Provided recommendations that supported new policies and evidence gathering initiatives
- BUT – report publication pulled back 2x despite urgency

# Occam's Razor

“Among competing hypotheses, the one with the fewest assumptions should be selected.”

- Most testable
- In the absence of a weighting of assumptions, least likely to fail
- Easiest to understand the implications.



From [https://en.wikipedia.org/wiki/William\\_of\\_Ockham](https://en.wikipedia.org/wiki/William_of_Ockham)

# Bovine TB control policy since 1997 – to cull, or not to cull?

Year	Milestones and Policy Developments
1997	Krebs Report published calling for <b>field trials to establish efficacy of badger culling</b>
1998-2007	Independent Scientific Group (ISG) established to conduct <b>randomised badger culling trial</b> in England
2006	Introduction of pre-movement testing aims to reduce spread of bTB via cattle movements following <b>evidence of role of cattle movements</b> following FMD
2007	ISG final report concludes <b>badger culling can make no meaningful contribution</b> to cattle TB. The report is challenged by the King review, commissioned by government ministers which suggests <b>culling can work in certain circumstances</b>
2008	Government in England decides <b>not to allow culling, and pursue a vaccination policy</b>
2009 – 10	<b>proposed badger cull in Wales</b> , rejected following a judicial review
2010	Election of new coalition government with a <b>commitment to badger culling</b> and not vaccination.
2015	<b>Culling licences issues</b> to other areas in England
2021	Government announce <b>badger culling to be phased out in England; cattle vaccination trials begin.</b>
2023	<b>58 culling zones in place with cull target of maximum cull target of 53234 badgers.</b> Culling remains the subject of political dispute with an unclear future pending a general election in 2024.

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2007	ISG final report concludes <b>badger culling can work</b> but <b>contributes to cattle TB. The report is challenging the current vaccination policy which suggests</b>
2008	Government in England <b>reverts to vaccination policy</b>
2009 – 10	<b>proposed badger culling</b>
2010	Election of new coalition government with a <b>commitment to badger culling and not vaccination.</b>
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**“The failure to eliminate bovine TB from the English and Welsh cattle herd represents a long-term intractable policy failure.”**

**W. Grant, “Intractable Policy Failure: The Case of Bovine TB and Badgers” British Journal of Politics and International Relations (2011)**



In mid-1990s:

- Bovine TB 'almost' eradicated from GB by 1970s
- Badger TB found to be associated with areas of recrudescant TB risk
- Bovine TB had been eliminated in many other countries with good cattle controls

BUT

- "Dividing lines" between farmer/utilitarian and conservationist/mutualist views of wildlife already established

2010 Randomised Badger Culling Trial – largest ever scientific experiment? - established to

2015 "prove" efficacy of badger culling (one way or the other).

2021 Government announce **badger culling to be phased out in England; cattle vaccination trials begin.**

2023 **58 culling zones in place with cull target of maximum cull target of 53234 badgers.** Culling remains the subject of political dispute with an unclear future pending a general election in 2024.

# Occam's razor

- “Among competing hypotheses, the one with the fewest assumptions should be selected.”
  - In 1990s the simplest hypothesis was that control of TB in badgers plus existing cattle controls would result in TB eradication.
  - Uncertainty however was high (evidence mainly historical or from other countries)

In this case, were recommendations consistent with Bob May's Three Principles of Public Engagement?

- Transparency
- Broad consultation
- Explicit uncertainty



From [https://en.wikipedia.org/wiki/William\\_of\\_Ockham](https://en.wikipedia.org/wiki/William_of_Ockham)

# Summary

- Working with policy people helps to identify where the needs are
  - Establish relationships early
  - Working responsively can open doors for later
  - **BUT** don't let that stop you if you feel you have a 'great' result and haven't those contacts
- Reduce your results to simple messages
  - Where is the need?
  - Can the study result in **action**?
- Strong visualization is important
- Its not about being clever (though that helps)
- You will make a lot of mistakes (I continue to do so!)

**"When I left the dining room after sitting next to Gladstone, I thought he was the cleverest man in England.**

**But when I sat next to Disraeli, I left feeling that I was the cleverest woman."**



attributed to Jenni Jerome (Winston Churchill's mother)

**Illuminate the ideas – not yourself**