

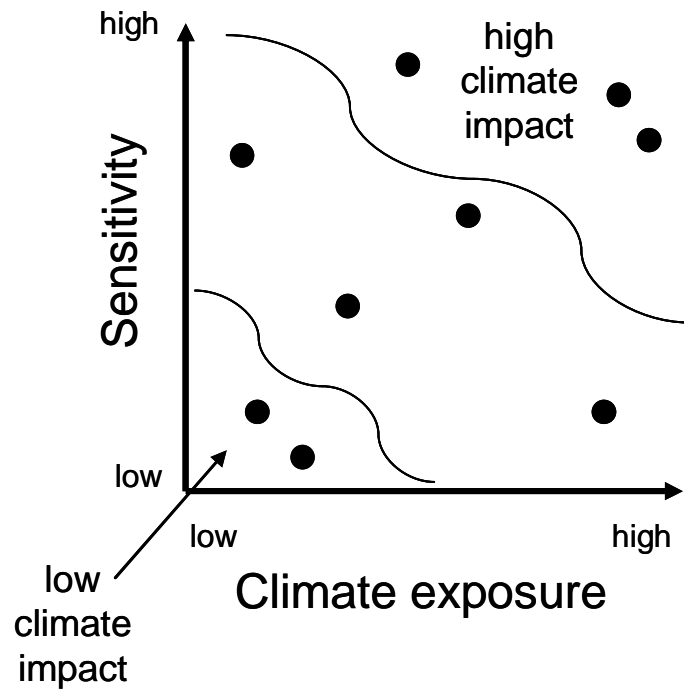


# Assessing the vulnerability of biodiversity to climate change

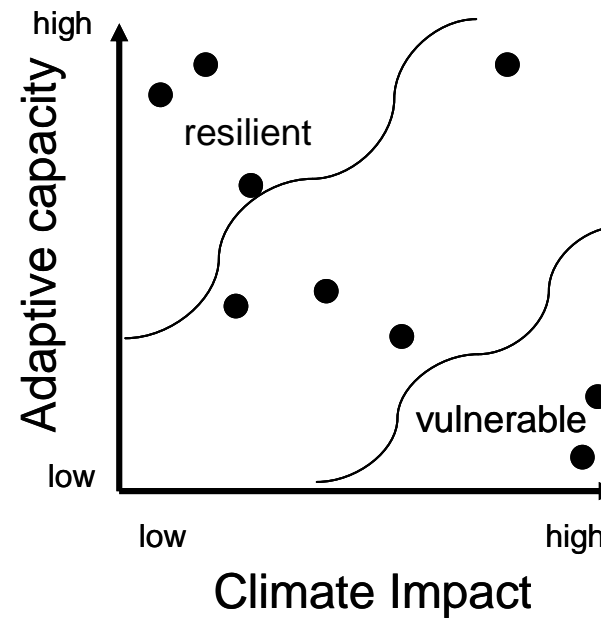
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# Impact and vulnerability assessment framework

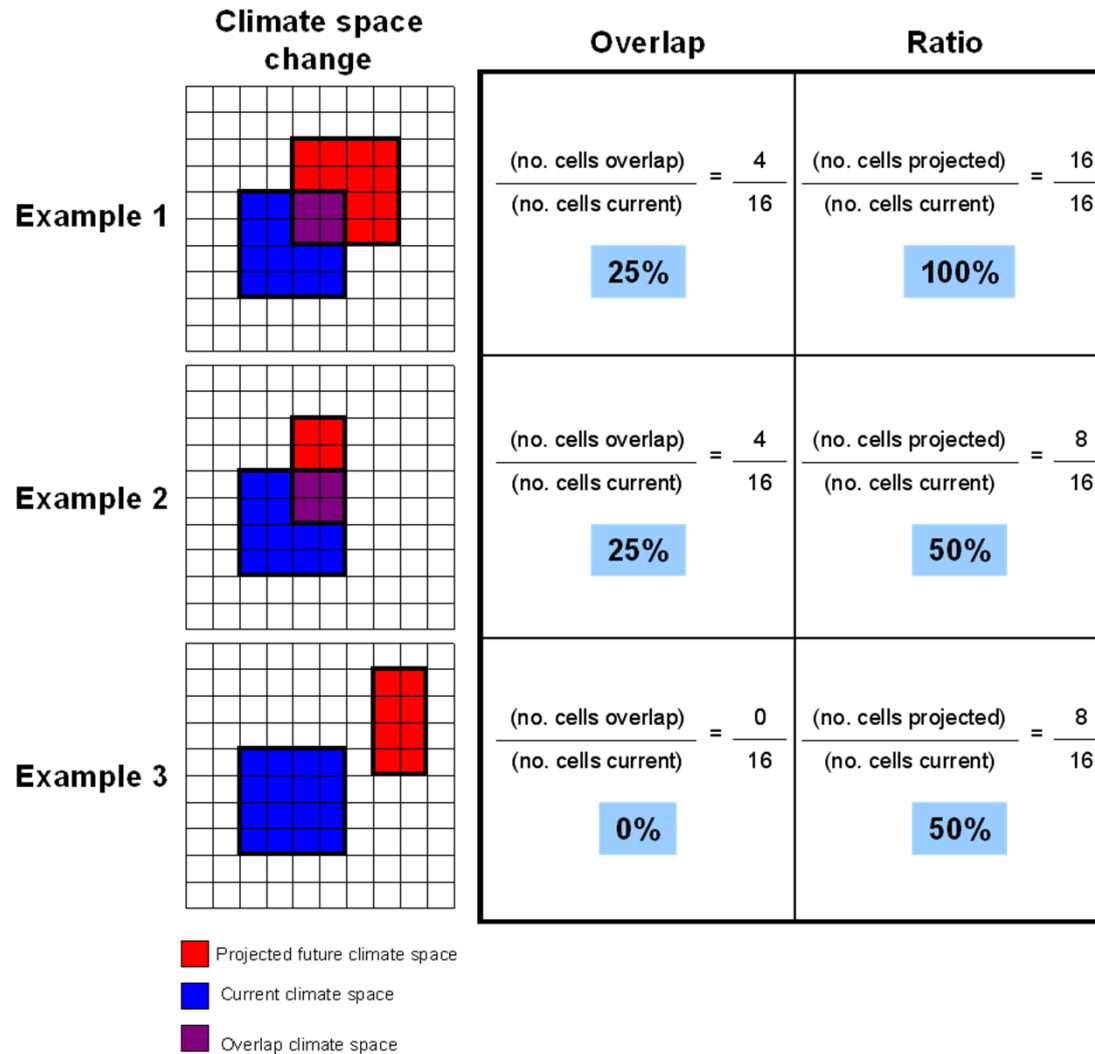
a) Impact assessment



b) Vulnerability assessment



# Changes in climate space – overlap and ratio



# Impact categories

	Overlap and ratio values defining the impact category				
	<30%	30-50%	50-70%	70-100%	>100%
<b>Overlap impact category</b>	Very high	High	Moderate	Low	NA*
<b>Ratio impact category</b>	Very high (< in climate space)	High (< in climate space)	Moderate (< in climate space)	Low (< in climate space)	> in climate space

## Adaptive capacity constraints - Article 17 data

Article 17 assessment category	Adaptive capacity constraint	Description
<b>Unfavourable bad</b> <b>Unknown*</b>	<b>High</b>	<b>High level of constraint on adaptive capacity (i.e. habitat limited in extent to which it can adapt to climate change)</b>
<b>Unfavourable inadequate</b>	<b>Medium</b>	<b>Medium level of constraint on adaptive capacity (i.e. habitat partially limited in extent to which it can adapt to climate change)</b>
<b>Favourable</b>	<b>Low</b>	<b>Low level of constraint on adaptive capacity (i.e. habitat able to adapt fairly easily to climate change)</b>

# Vulnerability categories

	Climate impact category			
Adaptive capacity constraint	Low	Moderate	High	Very high
High	High	Very high	Critical	Extremely critical
Medium	Moderate	High	Very high	Critical
Low	Low	Moderate	High	Very high

## IPCC SRES GHG emissions scenarios

- **A1FI:** 'high' scenario, +4.0°C (2.4-6.4°C) by 2100
- **A2:** 'medium-high' scenario, +3.4°C (2.0-5.4°C) by 2100
- **B2:** 'medium-low' scenario, +2.4°C (1.4-3.8°C) by 2100
- **B1:** 'low' scenario, +1.8°C (1.1-2.9°C) by 2100

## Vascular plants

Vascular plants								
Vulnerability Category	B2/2050		A1F1/2050		B2/2080		A1F1/2080	
	n	%	n	%	n	%	n	%
Extremely Critical	0	0%	0	0%	0	0%	0	0%
Critical	0	0%	0	0%	0	0%	0	0%
Very High	0	0%	0	0%	1	4%	2	8%
High	2	8%	2	8%	2	8%	10	38%
Moderate	3	12%	8	31%	7	27%	9	35%
Low	17	65%	13	50%	12	46%	5	19%



## Breeding birds

Breeding birds		
Vulnerability Category	B2/2070-2099	
	n	%
Extremely Critical	2	1%
Critical	24	16%
Very High	51	34%
High	41	28%
Moderate	22	15%
Low	8	5%

## 'Exemplar' Natura 2000 habitats

Habitat type	2050s		2080s	
	A1F1	B1	A1F1	B1
Western Taiga	High	High	Very high	Very high
Bog woodland	High	Moderate	Very high	High
Pannonic woods with <i>Quercus petraea</i> and <i>Carpinus betulus</i>	Low	Low	Moderate	Low
Euro-Siberian steppic woods with <i>Quercus spp.</i>	Low	Low	Low	Low
Illyrian <i>Fagus sylvatica</i> forests ( <i>Aremonio-Fagion</i> )	Low	Low	Moderate	Low
Acidophilous <i>Picea</i> forests of the montane to alpine levels ( <i>Vaccinio-Piceetea</i> )	Moderate	Moderate	Very high	High
Alpine <i>Larix decidua</i> and/or <i>Pinus cembra</i> forests	Moderate	Moderate	Very high	High
Subalpine and montane <i>Pinus uncinata</i> forests	Very high	High	Critical	Very high

# Norfolk Coast study: impact assessment of arable farmland

AONB's habitats & representative species <sup>1</sup> (incl. data sources for each species <sup>2</sup> )	Impacts <sup>3</sup> of increasing air temperature & related effects on species <sup>4,5</sup>			Overall habitat sensitivity <sup>5,7</sup> to current climate	Main climate-related impacts on habitat integrity caused by exposure <sup>8</sup> to changing temperatures, rainfall patterns, sea levels & weather extremes <sup>9,10</sup>				
	1.5°C	3°C	4.5°C		Soil moisture decrease	Water quantity decrease	Water temp increase	Sea level rise (SLR)	Species gains & losses
<b>ARABLE FARMLAND</b> (20,770ha)									
<i>Arable field margins</i>				Low	Low	-	-	Mod	Low
Field poppy (B)	↔	↔	↔	Away from areas likely to be affected by SLR, market conditions and loss of farm subsidies will predominate over climate in determining changes in agricultural practices (REGIS).					
Small-flowered catchfly (M3B)	↔	↔	↔						
Corn bunting <i>Emberiza calandra</i> (M3)	↔	↔	↔						
Eurasian tree sparrow <i>Passer montanus</i> (B)	↔	↔	↔						
Grey partridge <i>Perdix perdix</i> (B)	↔	↔	↓						
Linnet <i>Carduelis cannabina</i> (M3B)	↔	↔	↔						
Turtle dove <i>Streptopelia turtur</i> (M1M3B)	↔	↔	↔						
Brown hare <i>Lepus europaeus</i> (B)	↔	↔	↓						
Skylark <i>Alauda arvensis</i> (M3B)	↔	↔	↓						

## References and contact details

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