

APEM Group

Design of an invasive species surveillance and monitoring programme for the island of Ireland

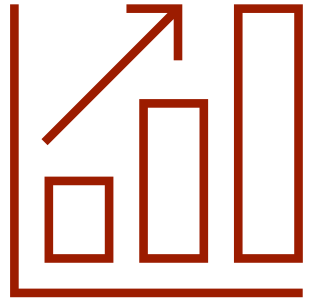
Shared Island Invasive Species Stakeholder Forum, 4th November 2025

Hannah Tidbury, APEM Ltd



Background

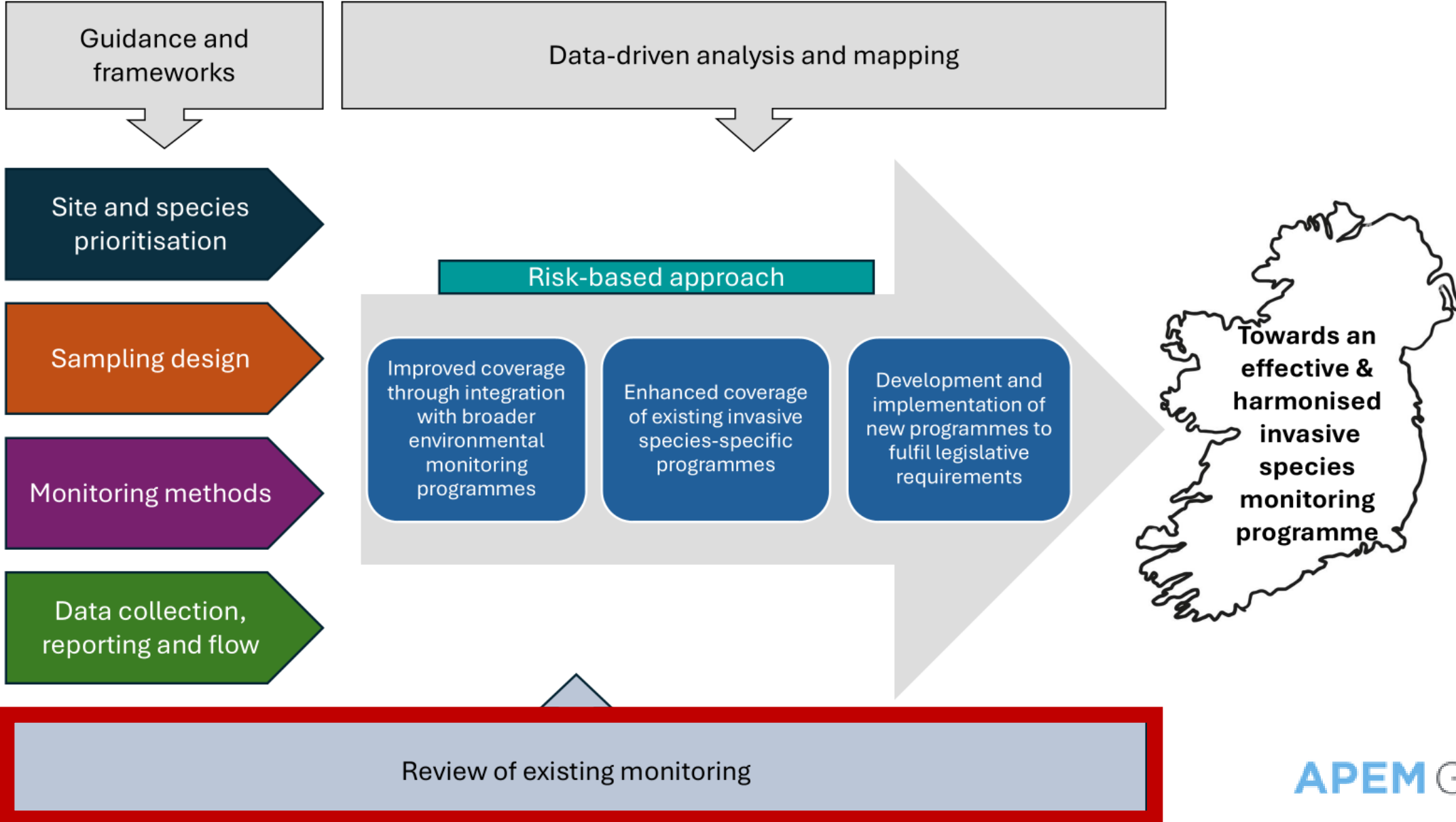
- Invasive species surveillance and monitoring is required to
 - ❖ Understand presence, abundance, distribution
 - ❖ Track temporal and spatial changes
 - ❖ Assess progress towards management targets
 - ❖ Comply with legislation and policy
- Currently, invasive monitoring across the island of Ireland is seemingly fragmented and patchy across temporal and spatial scales.
- An opportunity to work towards something better...



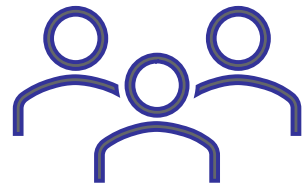
Project Aim

*To support the design of a **Shared Ireland surveillance and monitoring** approach for **invasive species** across the **terrestrial, freshwater and marine** environments, which effectively and efficiently captures relevant data.*

The Approach



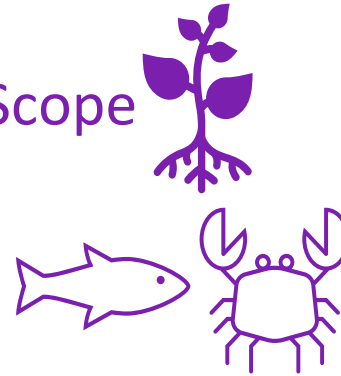
Review of Existing Monitoring



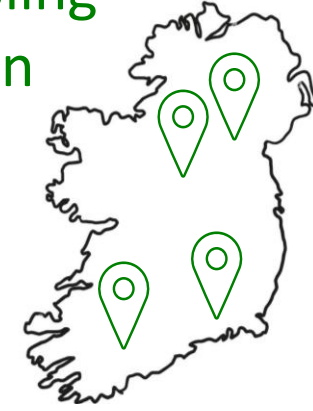
Drivers



Scope



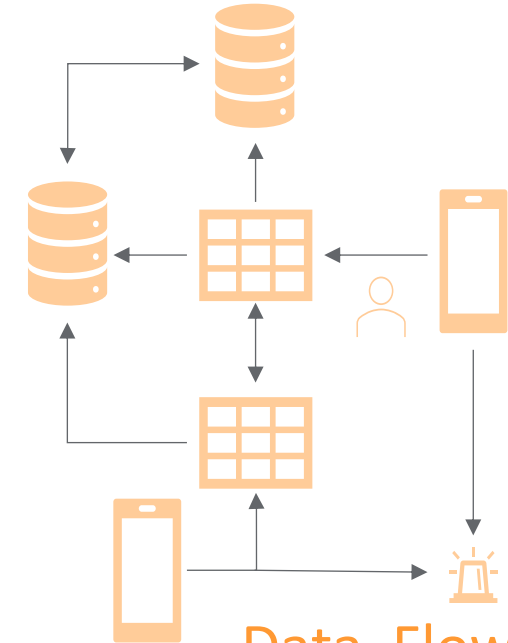
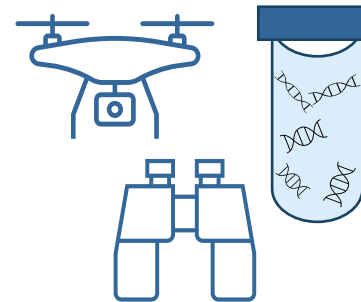
Sampling Design



Timeframe

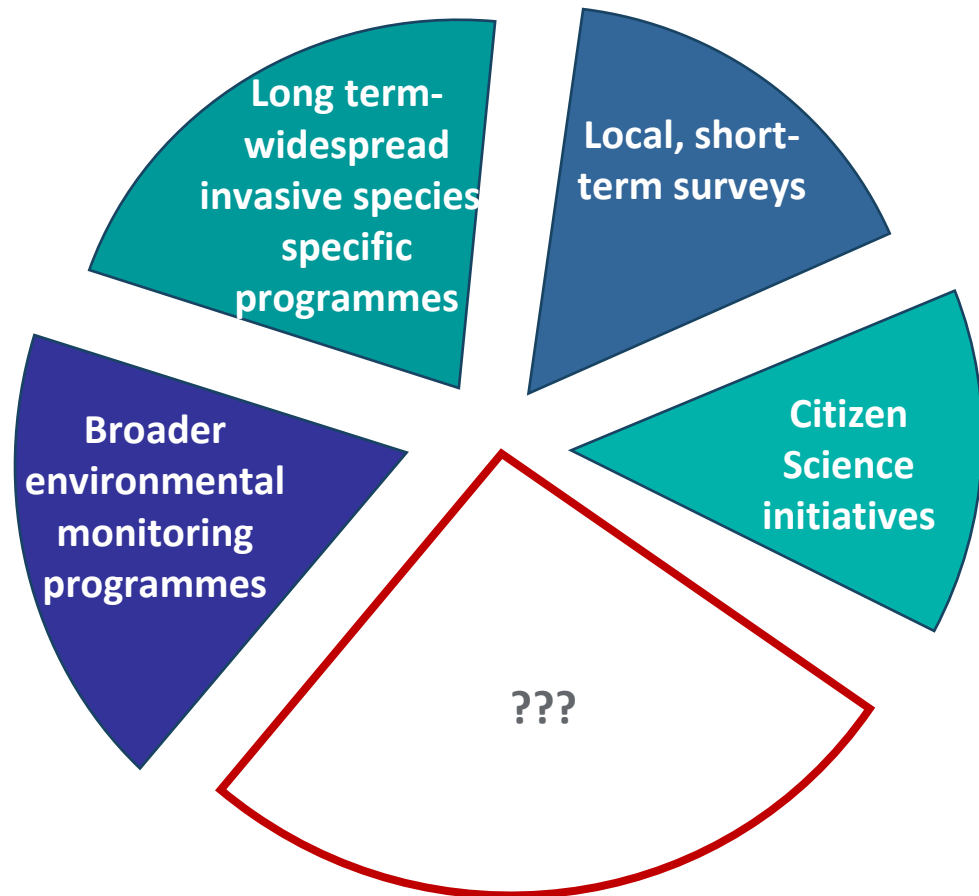


Methods



Data Flow

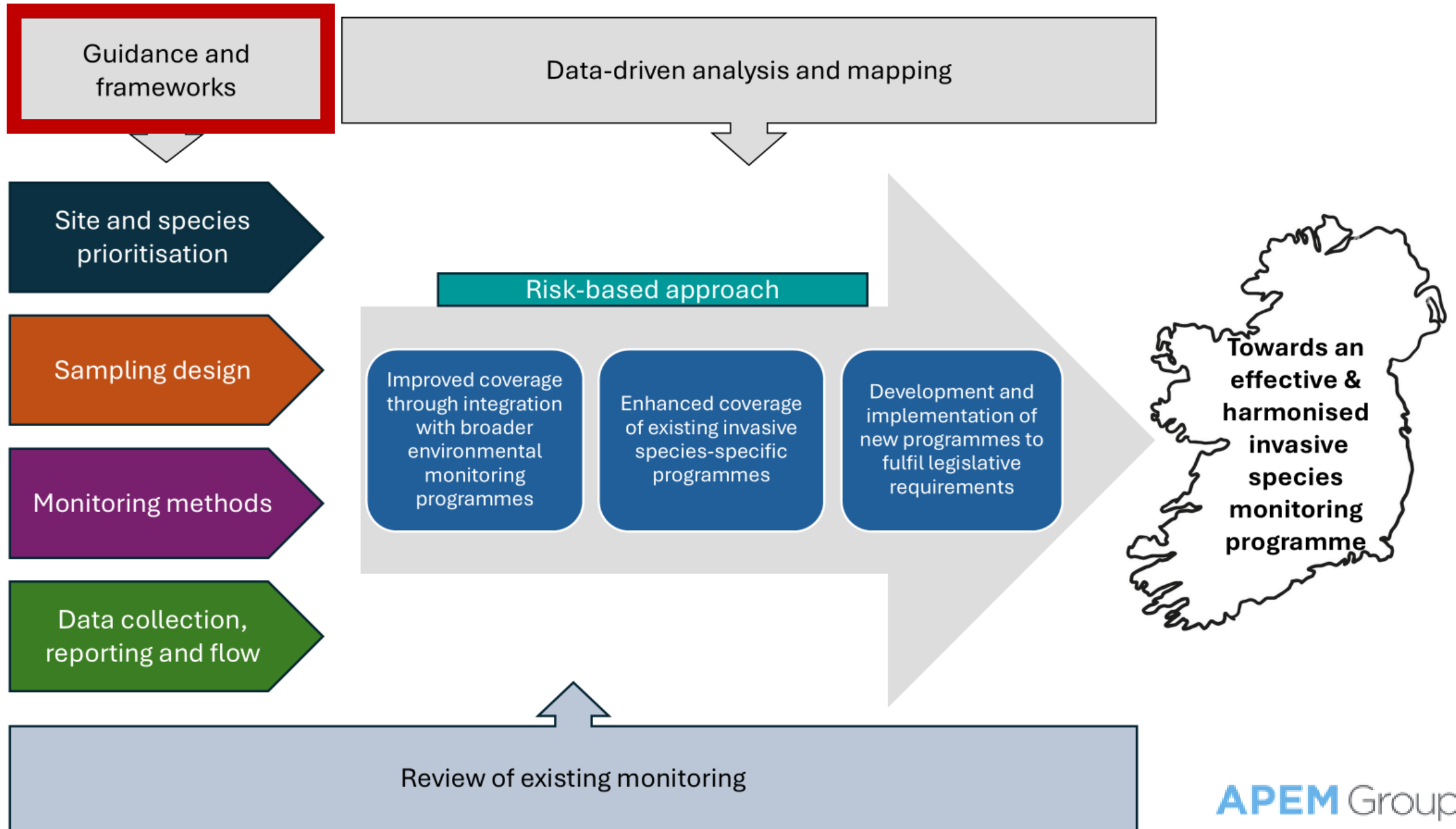
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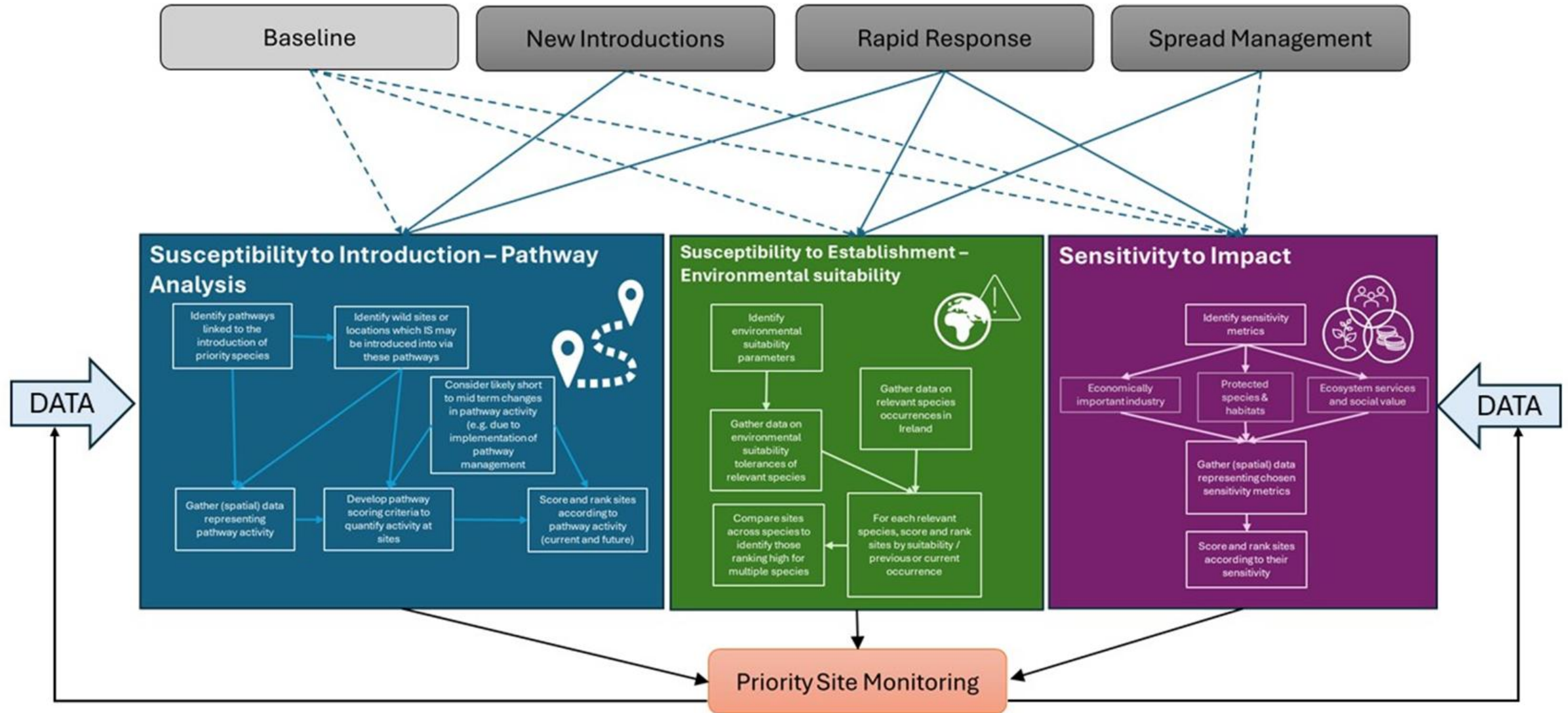
But....gaps and limitations identified

- spatial & temporal coverage
- hotspot locations
- priority species
- legislative requirements
- data flow and access





Guidance and Frameworks – Site Prioritisation



Guidance and Frameworks - Species Prioritisation

Scientific Name	Common Name	Group	M	FW	T	Category	SoUc	IFSS	Schedule 9	Horizon	WSS	Alert NI	Alert IE	Recorded in NI	Recorded in IE
<i>Acacia mearnsii</i>	Black wattle	Flowering plant			Y	T Terrestrial plant	Y (2025 update)								
<i>Acacia saligna</i> (<i>Acacia cyanophylla</i>)	Golden wreath wattle	Flowering plant			Y	T Terrestrial plant	Y								
<i>Acridotheres cristatellus</i>	Crested myna	Bird			Y	T Diurnal - flying	Y (2025 update)								
<i>Acridotheres tristis</i>	Common myna	Bird			Y	T Diurnal - flying	Y								
<i>Agrilus anxius</i>	Birch borer	Insect - beetle			Y	T Invertebrates - supraterranian				Y					
<i>Agrilus planipennis</i>	Emerald ash-borer	Insect - beetle			Y	T Invertebrates - supraterranian				Y					
<i>Ailanthus altissima</i>	Tree of heaven	Flowering plant			Y	T Terrestrial plant	Y								Y
<i>Allium triquetrum</i>	Three-cornered leek	Flowering plant			Y	T Terrestrial plant			Y					Y	Y
<i>Alopochen aegyptiacus</i>	Egyptian goose	Bird		Y	Y	T Diurnal - flying	Y					Y		Y	Y
<i>Alternanthera philoxeroides</i>	Alligator weed	Flowering plant		Y		FW Aquatic - Emergent and Submerged	Y								
<i>Ameiurus melas</i>	Black bullhead catfish	Bony fish (Actinopterygii)		Y		FW Mobile vertebrate pelagic	Y								
<i>Amphibalanus improvisus</i>	Bay barnacle	Crustacean	Y			M Sessile/Fouling - pelagic larvae			Y					Y	Y
<i>Andropogon virginicus</i>	Broomsedge bluestem	Flowering plant			Y	T Terrestrial plant	Y								
<i>Anser anser</i>	Greylag goose	Bird		Y	Y	T Diurnal - flying			Y					Y	Y

Pathway category	Pathway subcategory	All	Alert						
			SoUc	IFSS	HS	WSS	Alert IE	Alert NI	
Unaided	Natural dispersal across borders	78	58	37	18	12	10	13	
Escape from Confinement	Pet/aquarium/terrarium species (including live food for such species)	47	36	23	11	5	5	3	
Escape from Confinement	Ornamental purpose other than horticulture	27	14	15	0	4	0	0	
Transport - Contaminant	Contaminant on animals (except parasites, species transported by host/vector)	25	9	13	2	0	3	2	
Transport - Contaminant	Transportation of habitat material (soil, vegetation)	24	14	6	3	5	3	4	
Transport - Stowaway	Ship/boat ballast water	21	4	11	7	0	3	3	
Corridor	Interconnected waterways/basins/seas	20	10	11	5	2	5	6	
Transport - Stowaway	Hitchhikers on ship/boat (excluding ballast water and hull fouling)	20	9	16	5	5	2	2	
Escape from Confinement	Botanical garden/zoo/aquaria (excluding domestic aquaria)	19	15	8	2	2	3	2	

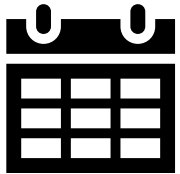
Guidance and Frameworks – Sampling Design



Number of sites



Site selection (risk focus)



Sampling frequency



Method sensitivity

Detection Success

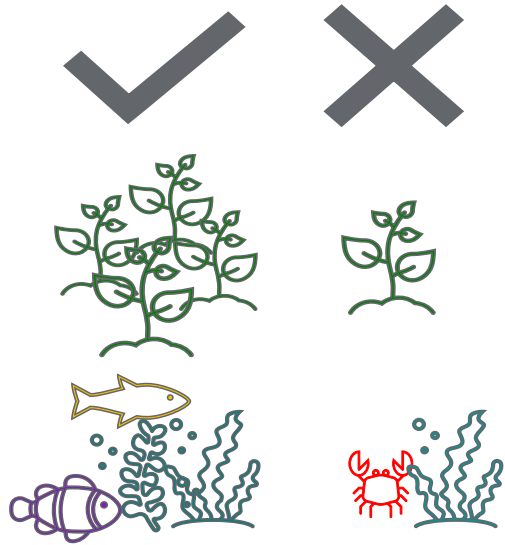
Time to detection

Probability of detection

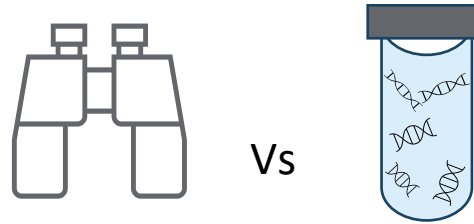
Power to detect
statistically significant
trend

Guidance and Frameworks – Data Collection, Flow & Reporting

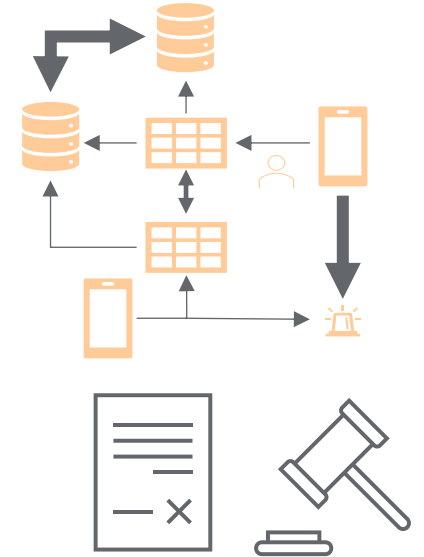
Data Types



Methodology considerations

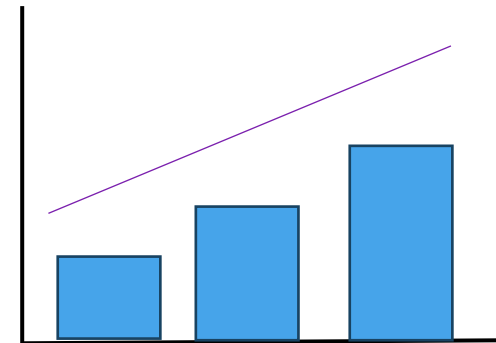
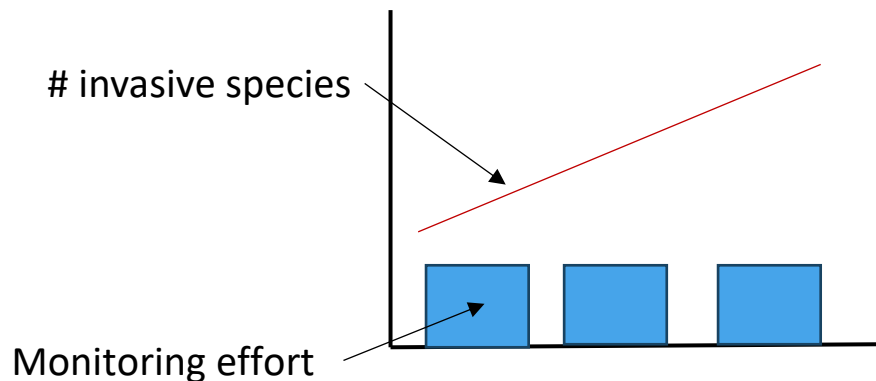


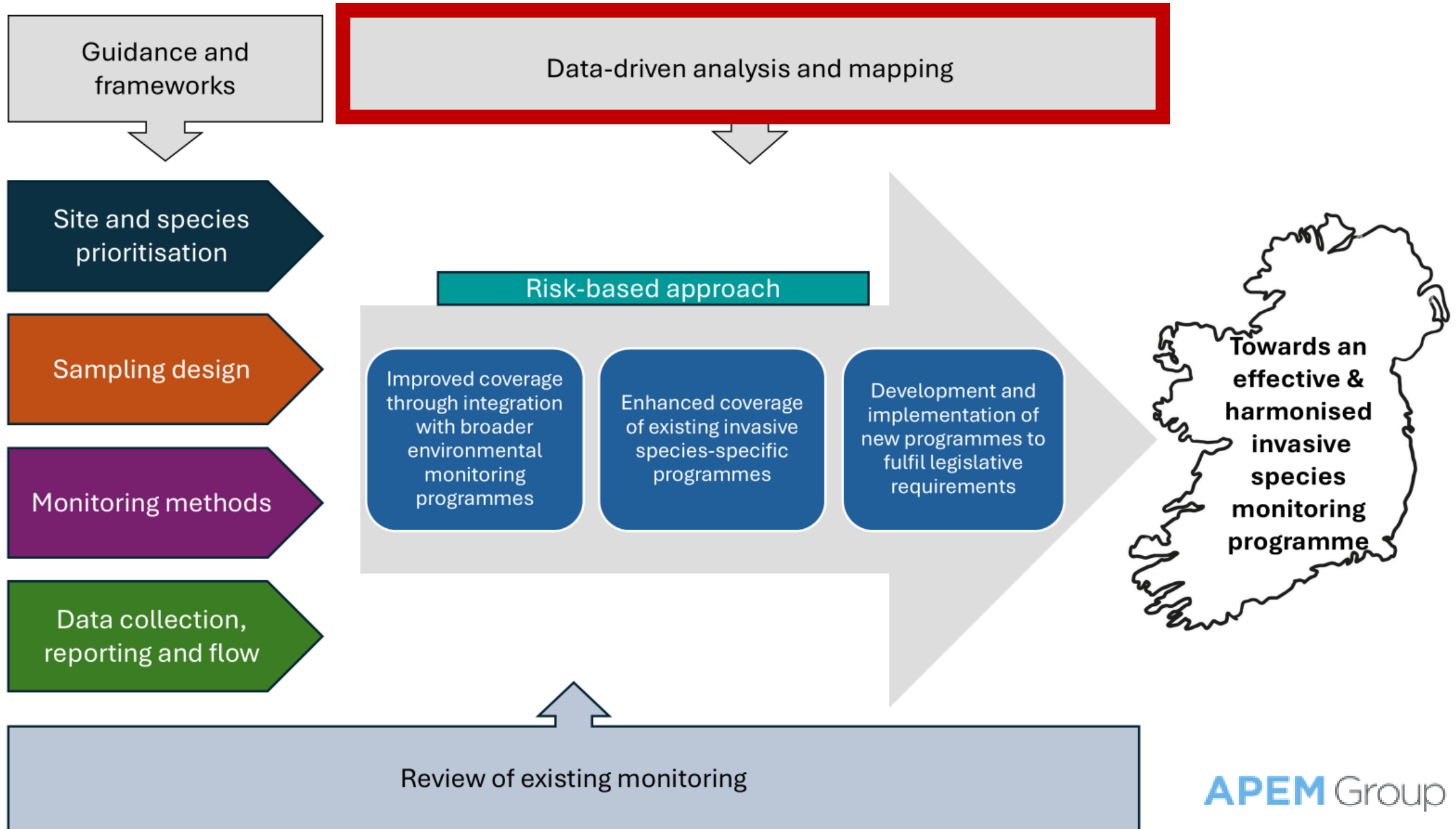
Data flow



Monitoring effort

$\frac{\text{Detection}}{\text{Monitoring effort}}$ - disentangle **actual trends** from **artefacts in data**



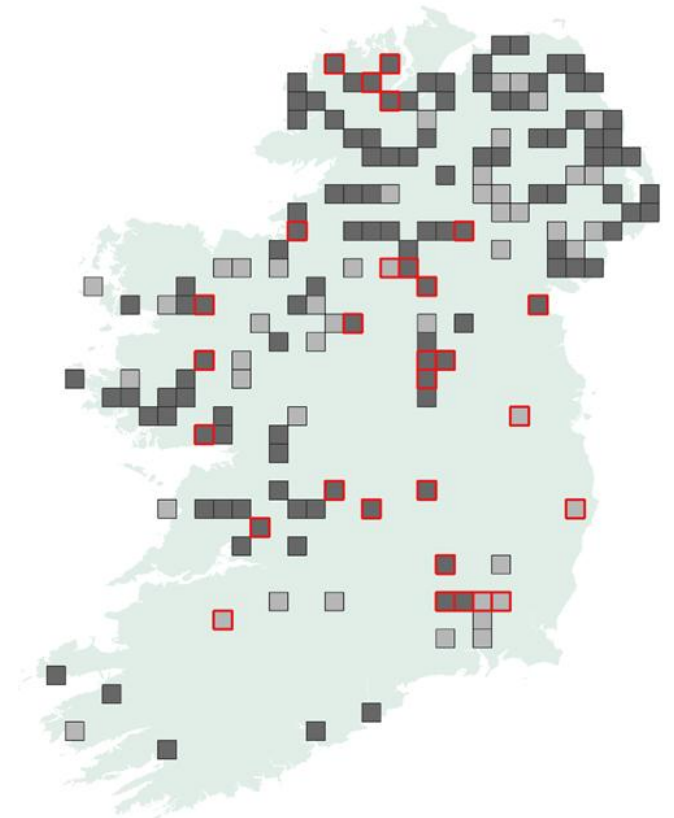
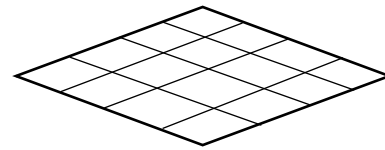
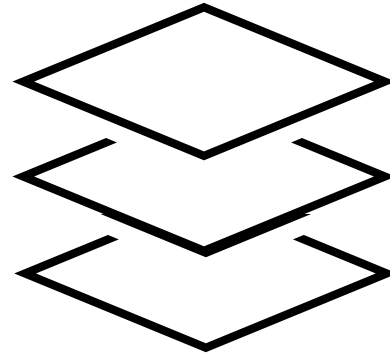


Improved coverage through integration with broader environmental monitoring programmes

Site vulnerable to introduction/spread

Sites sensitive to impacts

Sites covered broader programmes



Enhanced coverage of existing invasive species-specific programmes

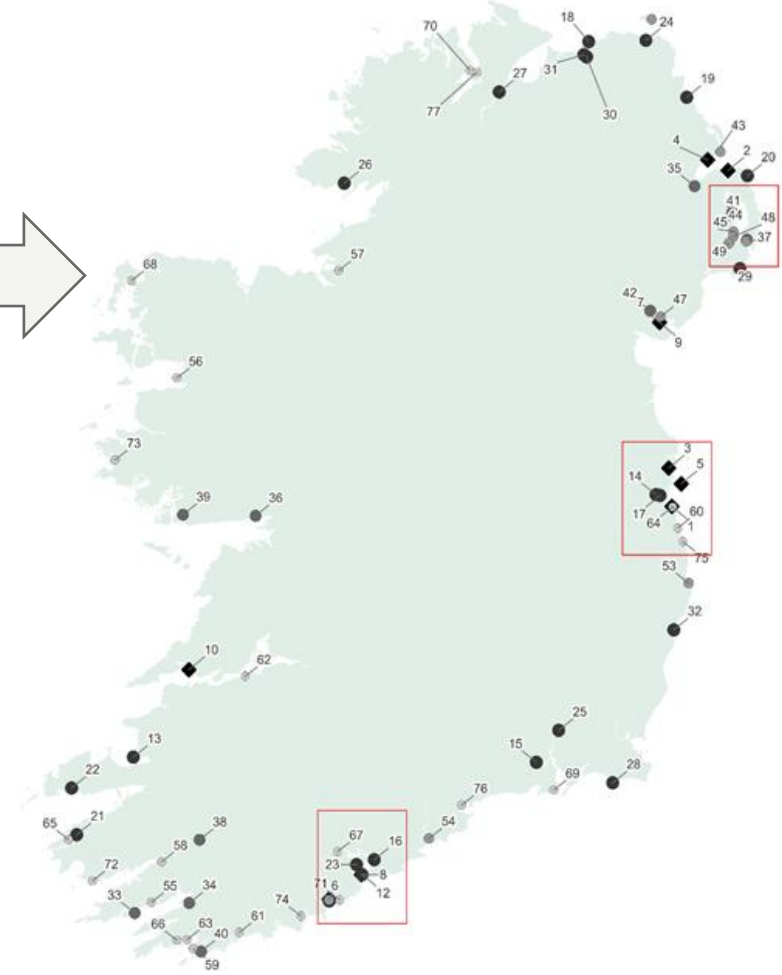
Sites covered by existing invasive species-specific programmes e.g. marinas

Site risk assessment, ranking and prioritisation

Improved sampling approach

Complementary methods

Data



Development and implementation of new programmes
to fulfil legislative requirements

Sites for which
monitoring is
required under
legislation i.e. ports

Site risk assessment,
ranking and
prioritisation

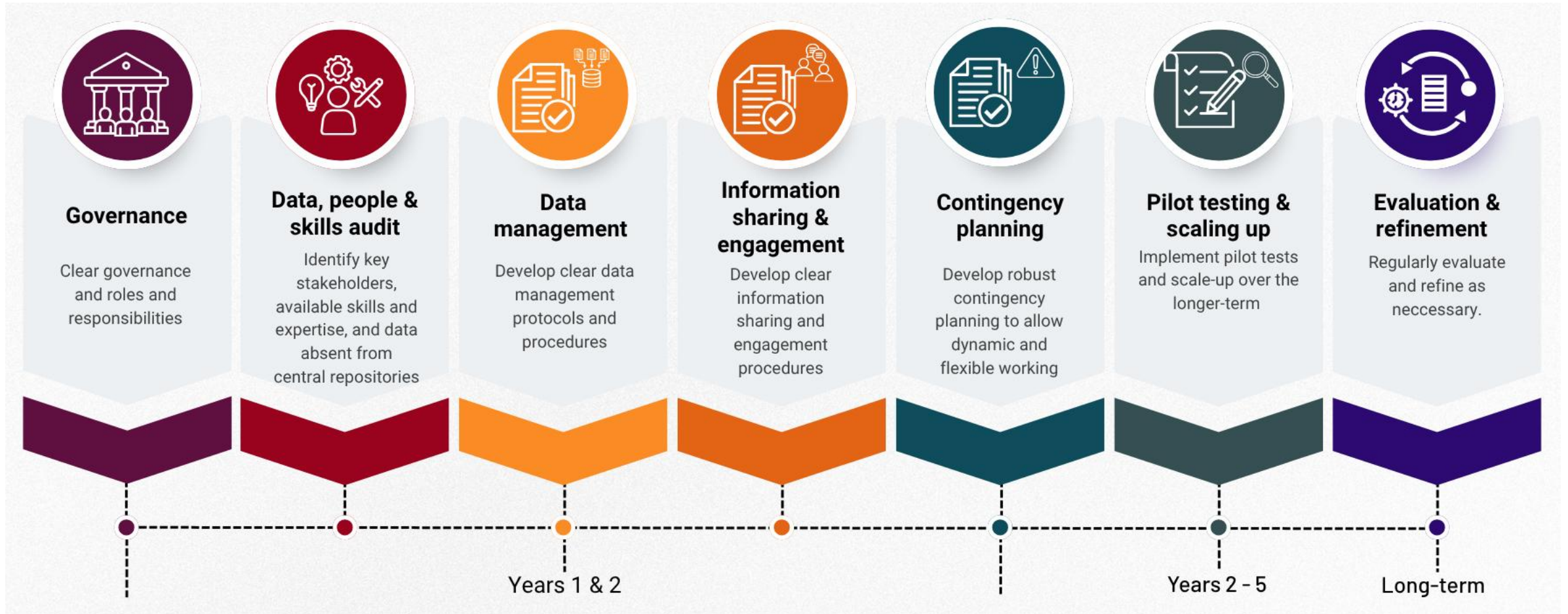


Methods

Data

Sampling
Approach

Implementation Roadmap



Thank you
Project funders
NBDC
Stakeholders
APEM project team



NPWS

An tSeirbhís Páirceanna
Náisiúnta agus Fíadhúlra
National Parks and Wildlife
Service



Northern Ireland
Environment
Agency



Shared Island
Initiative



Funded by
An Chomhairle Oidhreachta
The Heritage Council

APEM Group