



## ***Introduction to the Shared Island Biosecurity and Invasive Species Initiative and the new Invasive Species Work Plan***



**NPWS**

An tSeirbhís Páirceanna  
Náisiúnta agus Fiadhúlra  
National Parks and Wildlife  
Service



**Shared Island  
Initiative**

## Some terms and definitions

**Non-Native Species** are outside their normal / native range because of people.

Non-native Species becoming a problem are called 'invasive'.

NNS can also be called 'non-indigenous' (NIS) or 'alien' species (IAS: Invasive Alien Species)



Images Top Row: *Acartia tonsa*, Moira Galbraith (CC) BY-NC-SA 4.0; *Asterocarpa humilis*, © J Bishop, MBA; *Aplidium* cf. *glabrum*, © B Lynam; *Ammothea hilgendorfi*, © J Bishop, MBA; *Botrylloides diegensis*, © J Bishop, MBA; *Bugula neritina*, © J Bishop, MBA.  
 Left Hand Side: *Caulacanthus okamurae*, © Matt Slater, CWT; *Ciona robusta*, © J Bishop, MBA; *Amphibalanus amphitrite*, © J Bishop, MBA.  
 Bottom Row: *Codium fragile*, © www.aphtomarine.com; *Corella eumyota*, © J Bishop, MBA; *Dyspanopeus sayi*, © Museo di Storia Naturale di Venezia; *Didemnum vexillum*, © S Brown, C2W; *Diadumene lineata*, © J Bishop, MBA; *Eriochel sinensis*, © Phil Crabb, NHM.  
 Right Hand Side: *Ficopomatus enigmaticus*, © J Bishop, MBA; *Undaria pinnatifida*, © Crown copyright 2009, Kathryn Birch, CCW; *Mnemiopsis leidyi* © LJ Hansson.

# Role of the National Biodiversity Data Centre

## *Invasive Species*

Support data and information needs for coordinated action to mitigate the threat of invasive species across the island of Ireland

- Maintain an updated knowledge base on invasive species.
  - Education and resources : <https://invasives.ie/>
  - National Invasive Species Database : <https://maps.biodiversityireland.ie>
- Provide alerts for new invasive species arrivals.
- Support public bodies with EU Invasive Alien Species Regulation implementation and reporting





Home

Maps

Dataset

Species

About

Help

# Biodiversity Maps

*Mapping Ireland's Wildlife*

Biodiversity Maps is a national portal that compiles biodiversity data from multiple sources and makes it freely available on-line.

Number of records  
**6,907,286**

Number of species  
**18,437**

Number of datasets  
**191**

Last updated  
**04/04/2025**



## Protected Species

Records: 953,521  
Species: 364



## Threatened Species

Records: 870,481  
Species: 1,433



## Invasive Species

Records: 91,688  
Species: 174



## Flowering plant

Records: 1,678,685  
Species: 2,720



## Bird

Records: 1,429,548  
Species: 542



## Insect - moth

Records: 1,516,666  
Species: 1,530



## Terrestrial mammal



## Insect - butterfly



## Marine mammal

### Species Search

Species name

Search

### Recently updated datasets

Records  
added

Bees of Ireland	1,471
Dublin Port Seal Survey of Dublin Bay	58
Nephrops (Nephrops norvegicus) Underwater TV Surveys Ireland	4,821
All Ireland Non-Marine Molluscan Database	307
Citizen Science Harvestman records for Ireland	106
Butterflies of Ireland post 2021	31
Ladybirds of Ireland	379
Therevidae of Ireland	39
Birds of Ireland	9
Explore Your Shore	732

**Open Access Data - Free to Download!**

## **INVASIVE SPECIES IN IRELAND**

**Prepared for  
Environment & Heritage Service and  
National Parks & Wildlife Service**

**by**

**Kate Stokes, Kate O'Neill & Robbie McDonald**



***Quercus* project QU03-01**  
Quercus is a partnership between  
Environment & Heritage Service, Northern Ireland and  
Queen's University, Belfast  
[www.quercus.ac.uk](http://www.quercus.ac.uk)



Statutory Rules of Northern Ireland

2019 No. 159

EUROPEAN UNION  
ENVIRONMENTAL PROTECTION  
WILDLIFE

The Invasive Alien Species (Enforcement and Permitting) Order (Northern Ireland) 2019

Made: 13th August 2019  
Coming into operation: 1st December 2019

Statutory Instruments

S.I. No. 374 of 2024

EUROPEAN UNION (INVASIVE ALIEN SPECIES) REGULATIONS 2024

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266

267

268

269

270

271

272

273

274

275

276

277

278

279

280

281

282

283

284

285

286

287

288

289

290

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

314

315

316

317

318

319

320

321

322

323

324

325

326

327

328

329

330

331

332

333

334

335

336

337

338

339

340

341

342

343

344

345

346

347

348

349

350

351

352

353

354

355

356

357

358

359

360

361

362

363

364

365

366

367

368

369

370

371

372

373

374

375

376

377

378

379

380

381

382

383

384

385

386

387

388

389

390

391

392

393

394

395

396

397

398

399

400

401

402

403

404

405

406

407

408

409

410

411

412

413

414

415

416

417

418

419

420

421

422

423

424

425

426

427

428

429

430

431

432

433

434

435

436

437

438

439

440

441

442

443

444

445

446

447

448

449

450

451

452

453

454

455

456

457

458

459

460

461

462

463

464

465

466

467

468

469

470

471

472

473

474

475

476

477

478

479

480

481

482

483

484

485

486

487

488

489

490

491

492

493

494

495

496

497

498

499

500

501

502

503

504

505

506

507

508

509

510

511

512

513

514

515

516

517

518

519

520

521

522

523

524

525

526

527

528

529

530

531

532

533

534

535

536

537

538

539

540

541

542

543

544

545

546

547

548

549

550

551

552

553

554

555

556

557

558

559

560

561

562

563

564

565

566

567

568

569

570

571

572

573

574

575

576

577

578

579

580

581

582

583

584

585

586

587

588

589

590

591

592

593

594

595

596

597

598

599

600

601

602

603

604

605

606

607

608

609

610

611

612

613

614

615

616

617

618

619

620

621

622

623

624

625

626

627

628

629

630

631

632

633

634

635

636

637

638

639

640

641

642

643

644

645

646

647

648

649

650

651

652

653

654

655

656

657

658

659

660

661

662

663

664

665

666

667

668

669

670

671

672

673

674

675

676

677

678

679

680

681

682

683

684

685

686

687

688

689

690

691

692

693

694

695

696

697

698

699

700

701

702

703

704

705

706

707

708

709

710

711

712

713

714

715

716

717

718

719

720

721

722

723

724

725

726

727

728

729

730

731

732

733

734

735

736

737

738

739

740

741

742

743

744

745

746

747

748

749

750

751

752

753

754

755

756

757

758

759

760

761

762

763

764

765

766

767

768

769

770

771

772

773

774

775

776

777

778

779

780

781

782

783

784

785

786

787

788

789

790

791

792

793

794

795

796

797

798

799

800

801

802

803

804

805

806

807

808

809

810

811

812

813

814

815

816

817

818

819

820

821

822

823

824

825

826

827

828

829

830

831

832

833

834

835

836

837

838

839

840

841

842

843

844

845

846

847

848

849

850

851

852

853

854

855

856

857

858

859

860

861

862

863

864

865

866

867

868

869

870

871

872

873

874

875

876

877

878

879

880

881

882

883

884

885

886

887

888

889

890

891

892

893

894

895

896

897

898

899

900

901

902

903

904

905

906

907

908

909

910

911

912

913

914

915

916

917

918

919

920

921

922

923

924

925

926

927

928

929

930

931

932

933

934

935

936

937

938

939

940

941

942

943

944

945

946

947

948

949

950

951

952

953

954

955

956

957

958

959

960

961

962

963

964

965

966

967

968

969

970

971

972

973

974

975

976

977

978

979

980

981

982

983

984

985

986

987

988

989

990

991

992

993

994

995

996

997

998

999

1000

Department of the Environment  
www.doe.gov.ie

An Invasive Alien Species Strategy for Ireland 2023-2030

Riailtas na hÉireann  
Government of Ireland

Ireland's 4th Biodiversity Strategy 2023-2030

Riailtas na hÉireann  
Government of Ireland

Ireland's Draft Biodiversity Strategy Part 1: Prevention, Control, and Eradication of Invasive Alien Species

Article 8, 9 and 10

Authors: Prof. Dr. David O'Connell, Dr. David O'Connell

epaResearch

Risk assessment of invasive alien species, Ireland: including inland waters

The Centre for Environmental Research  
Department of Natural Sciences  
Ireland (NMNI) and the Department of Agriculture, Food and the Marine (DAFM)

Ireland's invasive alien species: Trends in introductions

EMF Operational Programme 2014-2020  
Blue Growth & Marine Spatial Planning Scheme

Marine Non-Indigenous Species in Ireland

A review of the most currently available information on marine Non-Indigenous Species (NIS) in Ireland and best practice surveillance and monitoring programme

Report on the Recommendations and Calls to Action of Citizens' Assembly and Children and Young People's Assembly on Biodiversity Loss

June 2024

Prepared by the National Parks and Wildlife Service  
gov.ie

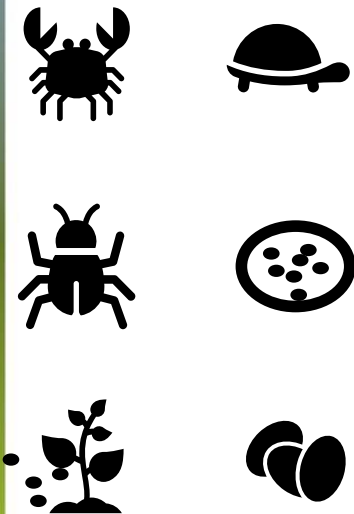
Report on the Recommendations and Calls to Action of Citizens' Assembly and Children and Young People's Assembly on Biodiversity Loss

June 2024

Report on the Recommendations and Calls to Action of Citizens' Assembly and Children and Young People's Assembly on Biodiversity Loss

June 2024

# How do non-native species get here?



Angling



Horticulture & plant trade



Water sports



Exotic pet trade



Boating & Sailing



Movement of soil & spoil



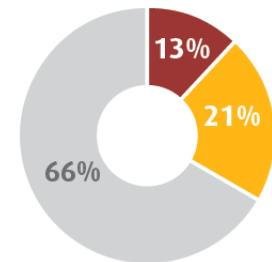
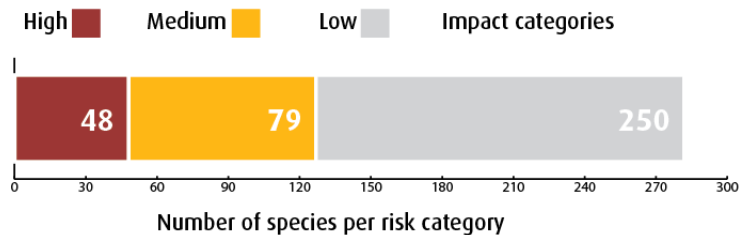
Aquaculture



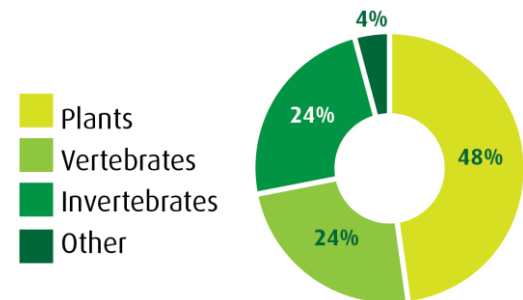
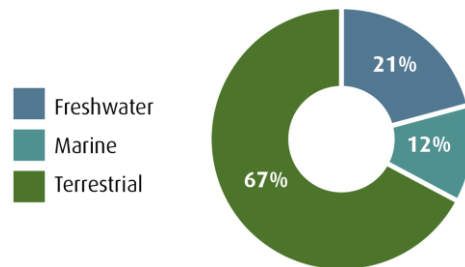
Aquarium trade

Once here, natural dispersal, escape, release...

# Do all non-native species become invasive?



Of the High and Medium impact invasive species recorded in Ireland:





# Impacts

- Species interactions – predation



North American mink preying a gannet chick in the Firth of Forth, Scotland. © BirdLife International

# Impacts

- Species interactions – predation



Australian flatworm  
(*Geoplana sanguinea*)

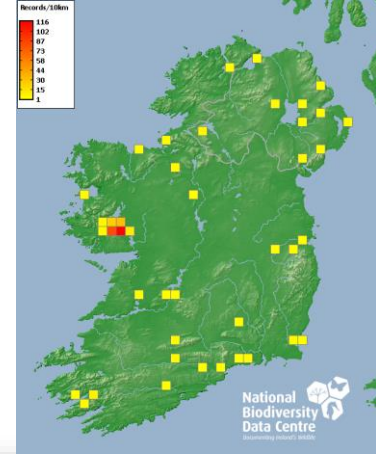


New Zealand flatworm  
(*Arthurdendyus triangulatus*)



# Impacts - alter habitats and ecosystems

- Curly waterweed (*Lagarosiphon major*) forms dense mats blocking light from the water column impacting submerged native plants



Rinneroon Bay, Lough Corrib pre-*Lagarosiphon major*

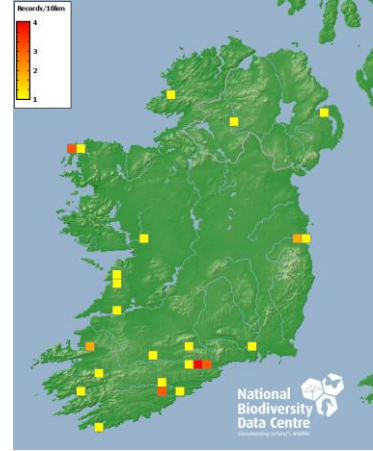
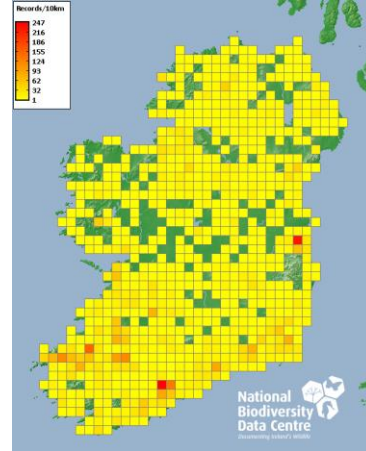
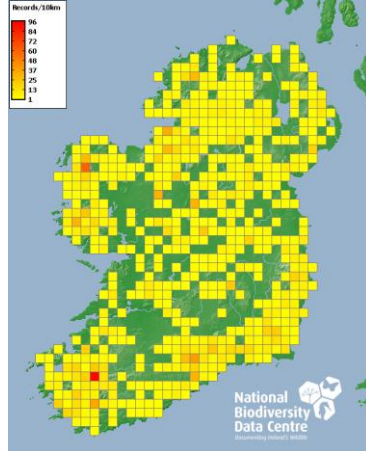


*Lagarosiphon major* in Rinneroon Bay, Lough Corrib



# Impacts

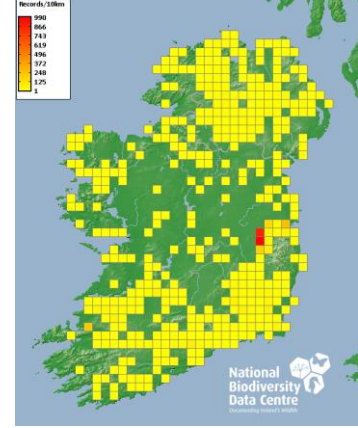
- Habitat change





# Impacts

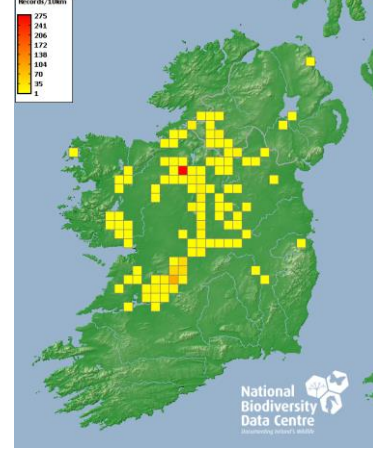
- Ecosystem functioning & services – destabilize riverbanks, exacerbate flooding, change soil fertility and nutrient cycling, affect water quality....





# Impacts

- Zebra mussel driving ecological change







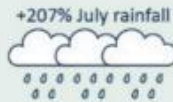


# Lough Neagh Catchment

W → E  
Prevailing wind direction



**Surface waters**  
*Microcystis aeruginosa*\*  
*Actinobacteria* spp.  
*Candidatus Methylophilum* spp.  
*Candidatus Fonsibacter ubiquis*  
*Limnolobus* spp.



+207% July rainfall



Climate change

River Maine

Flooding



Industrial poultry farming

Urbanisation



Industry

Six mile water

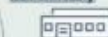
Forestry



Dead animals



Commerical Eel fishery



Eels

Slurry & Fertilisers



Upland sheep grazing



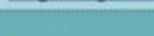
Ballinderry River



Lowland cattle grazing



Lough Neagh flies



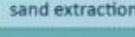
Increased water temperatures



Endangered pollan



Commercial sand extraction



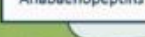
Recreational fishing



Wildfowl



**Toxins**  
MC-RR  
MC-LR  
Anabaenopeptins



Wastewater treatment works & combined sewer overflows



Crumlin River



Sedimentation



**Algal mats**

*Clostridium* spp.  
*Escherichia coli*  
*Pseudomonas* spp.  
*Yersinia* spp.  
*Klebsiella* spp.  
*Salmonella enterica*  
*Clostridium perfringens*



Invasive Zebra mussels



Legacy phosphorus



Chironomid larvae



Residential septic tanks



Ground water

## ARTICLE INFO

Handling Editor: Helen Greig

Received: 10 April 2024

Revised: 10 April 2024

Accepted: 10 April 2024

Published online: 10 April 2024

DOI: 10.1017/S0022278X24000000

© The Author(s), 2024

This is an open access article, distributed under the terms of the Creative Commons Attribution licence (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted re-use, distribution and reproduction in any medium, provided the original work is properly cited.

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

Abstract

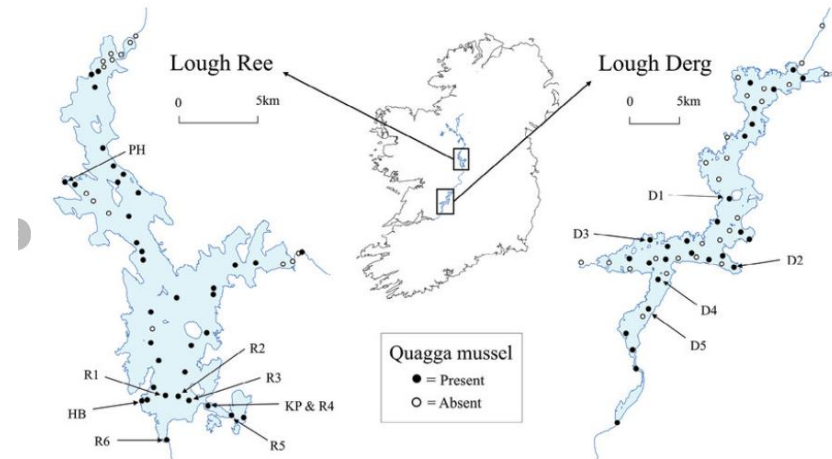
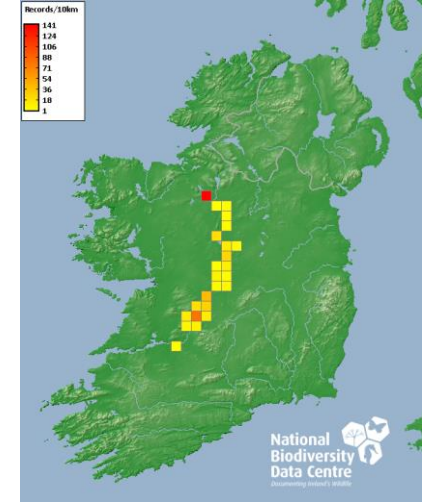
Abstract

Abstract

Abstract

# Impacts – displace native species

- In invaded areas, quagga mussel (*Dreissena rostriformis bugensis*) can significantly reduce native plant, invertebrate and fish populations

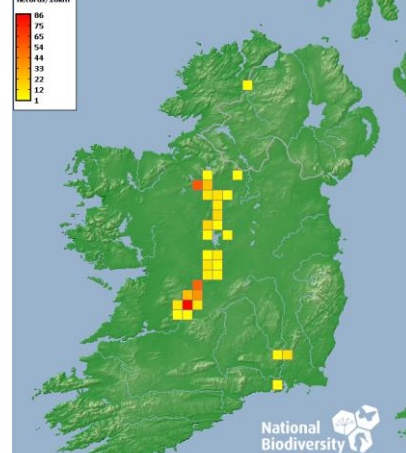




# Impacts

- Habitat change – change of substrate

*Asian clam (Corbicula fluminea)*





# Impacts

- Species interactions – introduction of parasites of pathogens



Spores survive  
in **damp**  
conditions for  
**21 days**

## Crayfish plague (*Aphanomyces astaci*)

The plague infects and kills the protected White-clawed crayfish



# Killer shrimp (*Dikerogammarus villosus*)

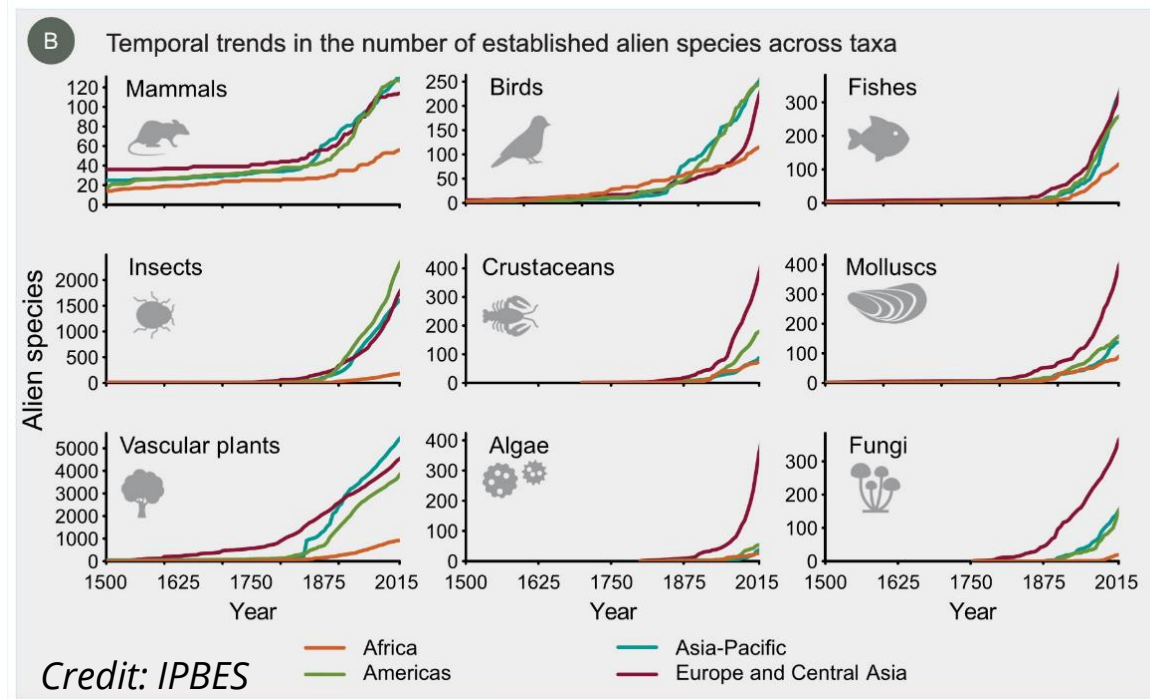


# Economic Impact

- UK Economy: £1.9 billion per year (2023)
- Northern Ireland: £46.5 million per year (2013)
- Impact on economic sectors
  - Agriculture and horticulture
  - Forestry
  - Aquaculture
  - Tourism and recreation
  - Construction, development and infrastructure
  - Transport
  - Utilities
  - Human health
- Excludes plant pest pathogens



# Threats from invasive alien species are increasing significantly in every region





# Invasive alien species and other drivers of change have complex interactions

*Credit: IPBES*

Climate change will be a major cause of future increases in the risk of invasive species

Other drivers of change such demographic, economic, and land- and sea-use change are increasing and can amplify the threats and impacts of invasive species







**NPWS**

An tSeirbhís Páircenna  
Náisiúnta agus Fiadhúlra  
National Parks and Wildlife  
Service



**Shared Island  
Initiative**



**An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreacht**  
Department of Housing,  
Local Government and Heritage



Funded by

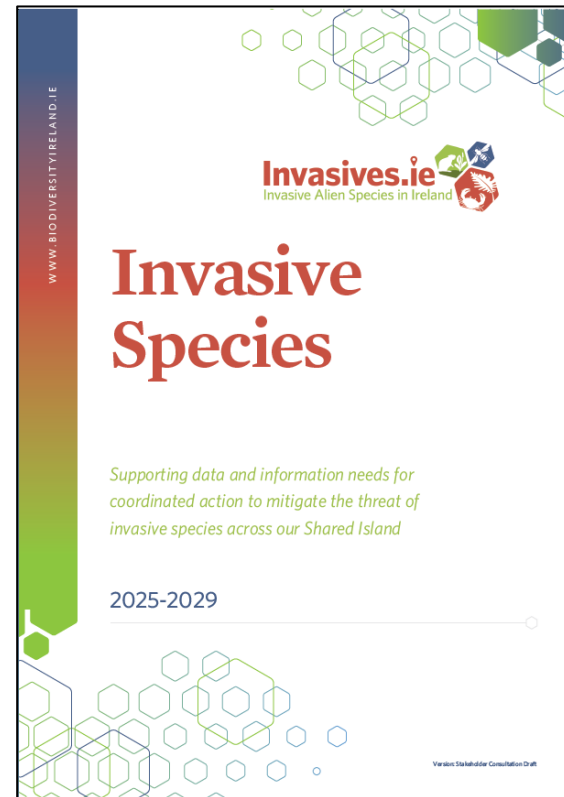
**An Chomhairle Oidhreacht**  
**The Heritage Council**

Shared  
Island

Marine non-  
indigenous  
species

Engagement

Core Data  
Centre






# Vision

*Our shared island will have access to comprehensive information on invasive species, enabling a coordinated and proactive response to the threats and impacts they pose.*

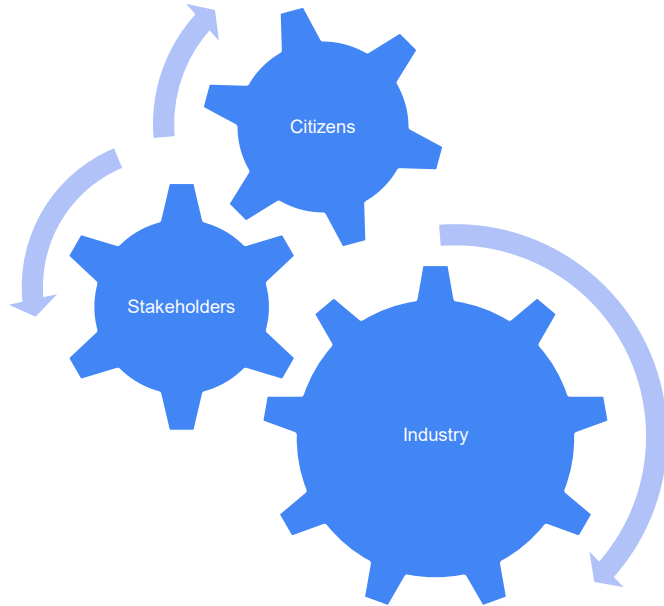
*By fostering collaboration and informed action, we will safeguard our biodiversity, ecosystems, and economies for future generations.*





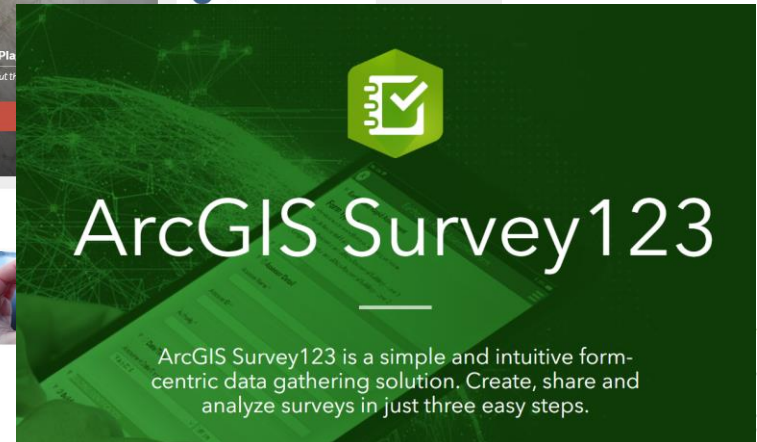
# Workstream 1, Objective A: Framework for invasive species

- Key Action 6: Marine invasive species



# Workstream 1, Objective A: Framework for invasive species

- Key Action 7a and 7b





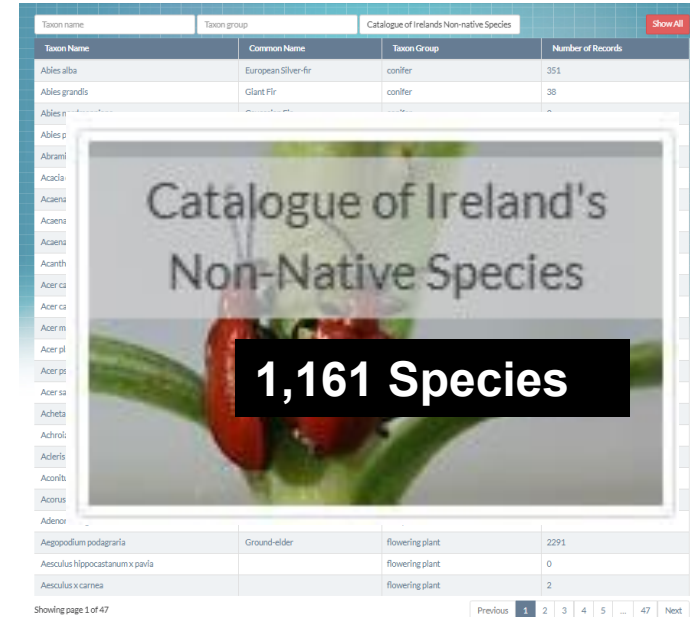
## Workstream 2, Objective B: Support a unified approach to risk assessment, biosecurity, and management

- **Key Action 8: Risk assessment**

- Governance
- Horizon scanning and prioritisation
- Decision support for emerging threats
- Risk assessment for underpinning potential listing in legislation, restriction and other requirements
- Risk management
- Training and communications

# Catalogue of Ireland's Non-native Species

- Database of non-native species known to be present on the island of Ireland.
- Data allow trends in species introduction to be identified, pathways examined, reported temporally and support prioritisation of future efforts.
- Potential mechanism to support reporting on Global Biodiversity Framework Target 6.



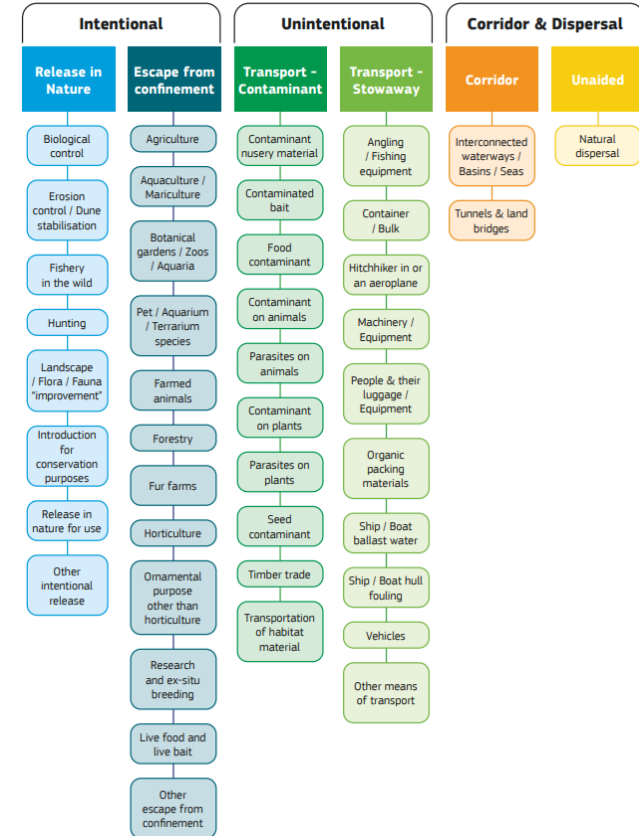
Taxon Name	Common Name	Taxon Group	Number of Records
Abies alba	European Silver-fir	conifer	351
Abies grandis	Grand Fir	conifer	38
Abies n...			
Abies p...			
Abram...			
Acacia...			
Acacia...			
Acacia...			
Acacia...			
Acanth...			
Acer ca...			
Acer ca...			
Acer m...			
Acer pl...			
Acer ps...			
Acer sa...			
Acheta...			
Achrois...			
Adiant...			
Aconit...			
Aconit...			
Adenor...			
Aegopod...	Ground-elder	flowering plant	2291
Aesculus hippocastanum x pavla		flowering plant	0
Aesculus x carnea		flowering plant	2

Showing page 1 of 47

Previous 1 2 3 4 5 ... 47 Next

# Workstream 2, Objective B: Support a unified approach to risk assessment, biosecurity, and management

## ● Key Action 11: Pathways



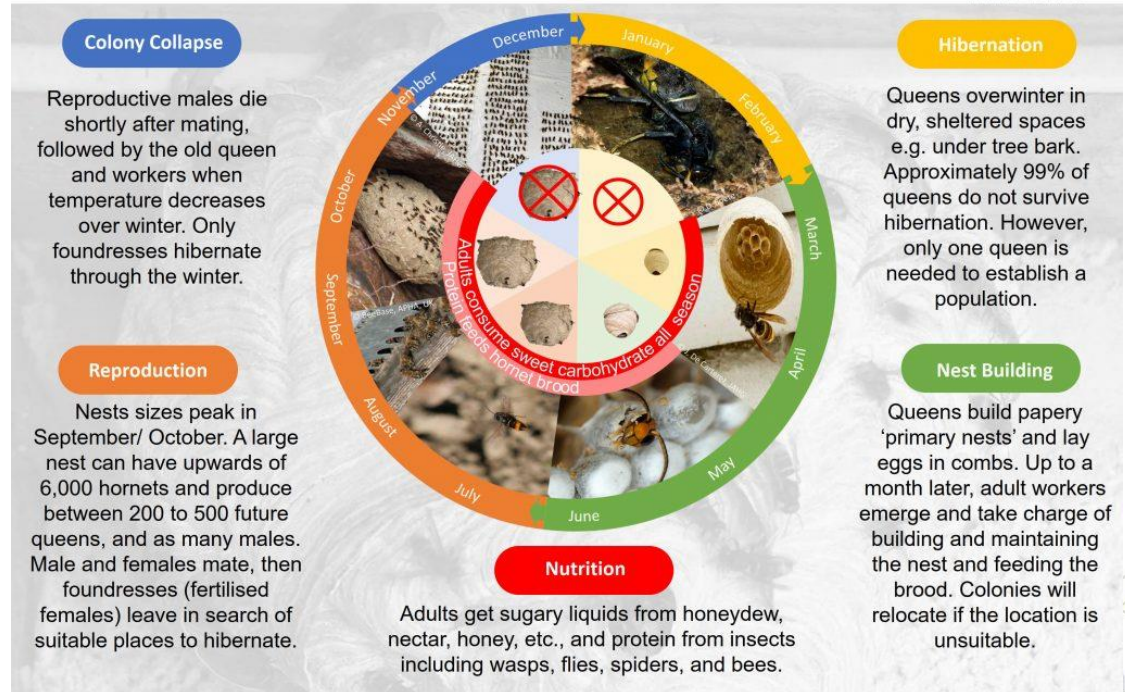


## Workstream 3, Objective C: Enhance data sharing, stakeholder coordination, and rapid response plans



### Life History of *Vespa velutina*

Estimations for Temperate Climate



## Workstream 4, Objective D: Strengthen collaboration on invasive species management



### Guarding European Waters from IAS (GuardIAS)

OVERVIEW

PARTICIPANTS



eDNA-sampling (photo INBO)

## Workstream 5, Objective E: Establish a cohesive communication framework

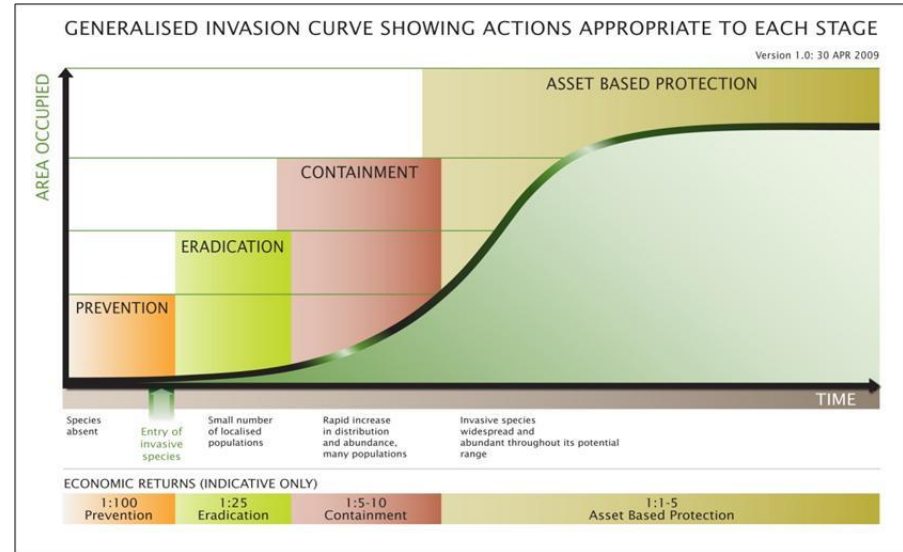


More information: <https://invasives.ie/biosecurity/>



# Biosecurity: Why is it important

- Once established, they're difficult to control and may harm local ecosystems.
- INNS can survive long periods in damp or wet conditions.
- Even small amounts of sediment or water on clothing can carry them.
- Legal obligation not to introduce or spread non-native species.



Source: Department of Primary Industries, Australia

# Workstream 6, Objective F: Ensure active stakeholder input in policy development

- **Key action 40:** The Forum







## Workstream 7, Objective G: Effective programme governance

- Shared Island Steering Committee
- Marine Non-Indigenous Steering Committee
- National Biodiversity Data Centre Management Teams

# Thank you for listening

