

# Mapping the threat: invasive alien species and pathogen risks across Europe

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Invasive alien species (IAS) impact on biodiversity and related ecosystem services, and host pathogens that may spillover to wildlife and humans. There is a need to reduce the risk of an outbreak occurring at all: Prevention-Preparedness- Response triad [1].

**Aim:** identifying areas of pathogenic spillover risk:

1. establishment of IAS of Union concern (IAS of UC [2])
2. spatial distribution of infections agent's prevalence
3. risk factors of spillover and disease cases

## 1. Establishment (Figure 1)\*

- 46 IAS of UC are established (24 animals, 22 plants, 21 freshwater);
- hotspots at higher latitudes, e.g. Northern and Western Europe.

## 2. Infections agents' distribution (Figures 2, 3)\*\*

- 893 agents were identified in 46 IAS of UC (Figure 2a);
- Carnivora have a higher diversity of agents (Figure 2b);
- 11 out of 46 IAS of UC host 54 regulated [4] infections agents;
- 20% of areas in EU are characterized by 25% prevalence (Figure 3).

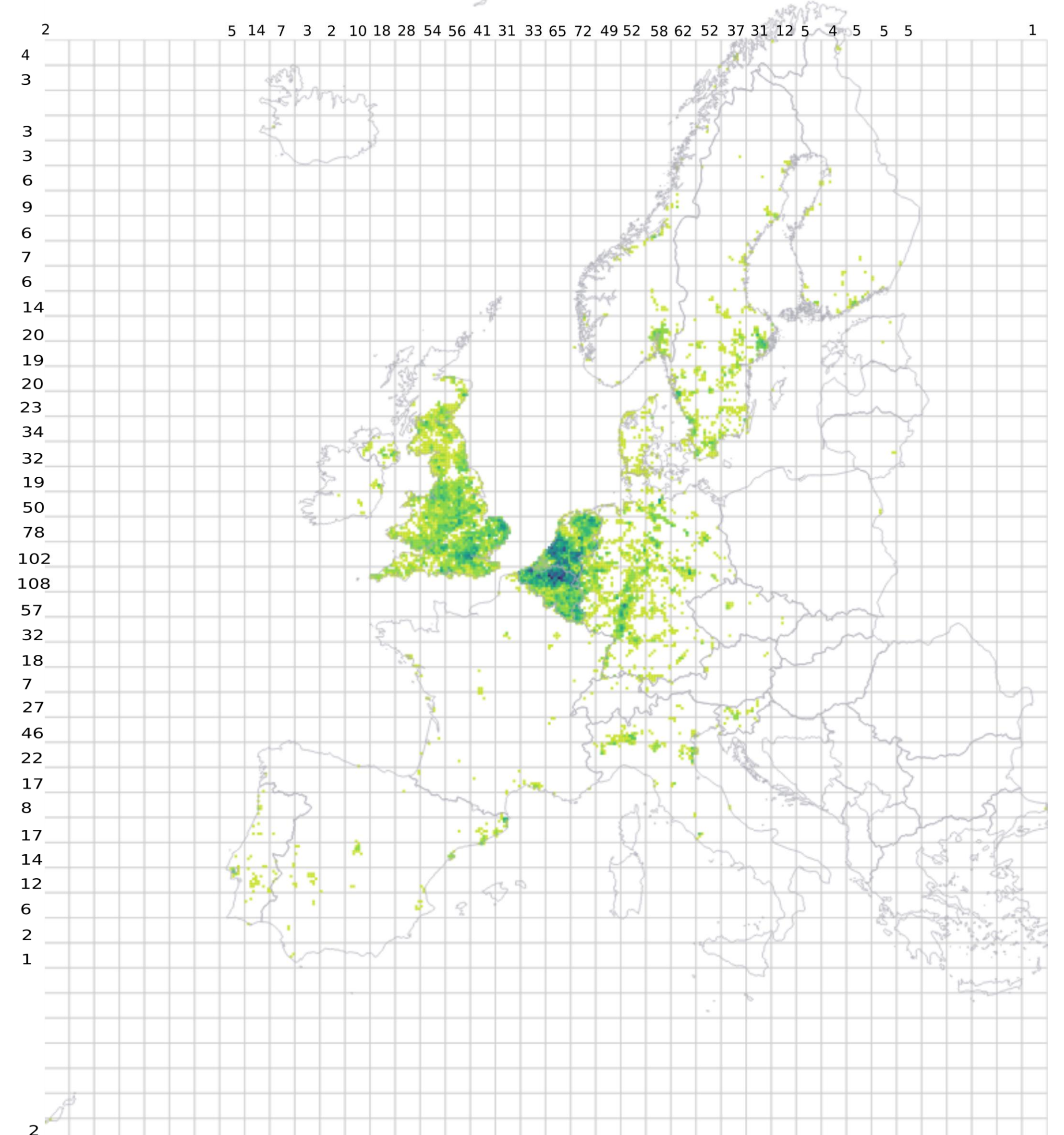


Figure 1. Establishment of IAS [3].

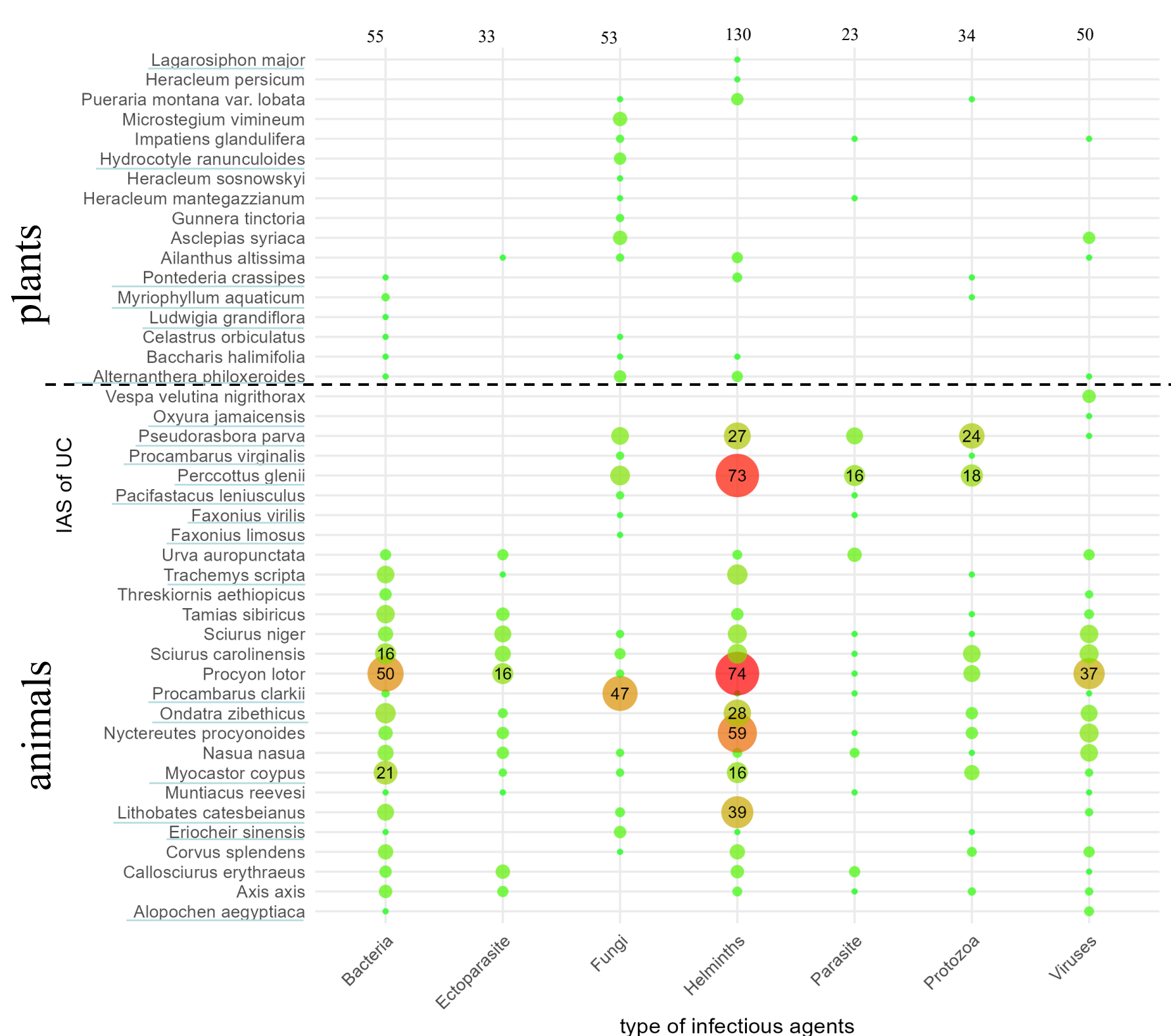


Figure 2 a,b. Infectious agents' distribution

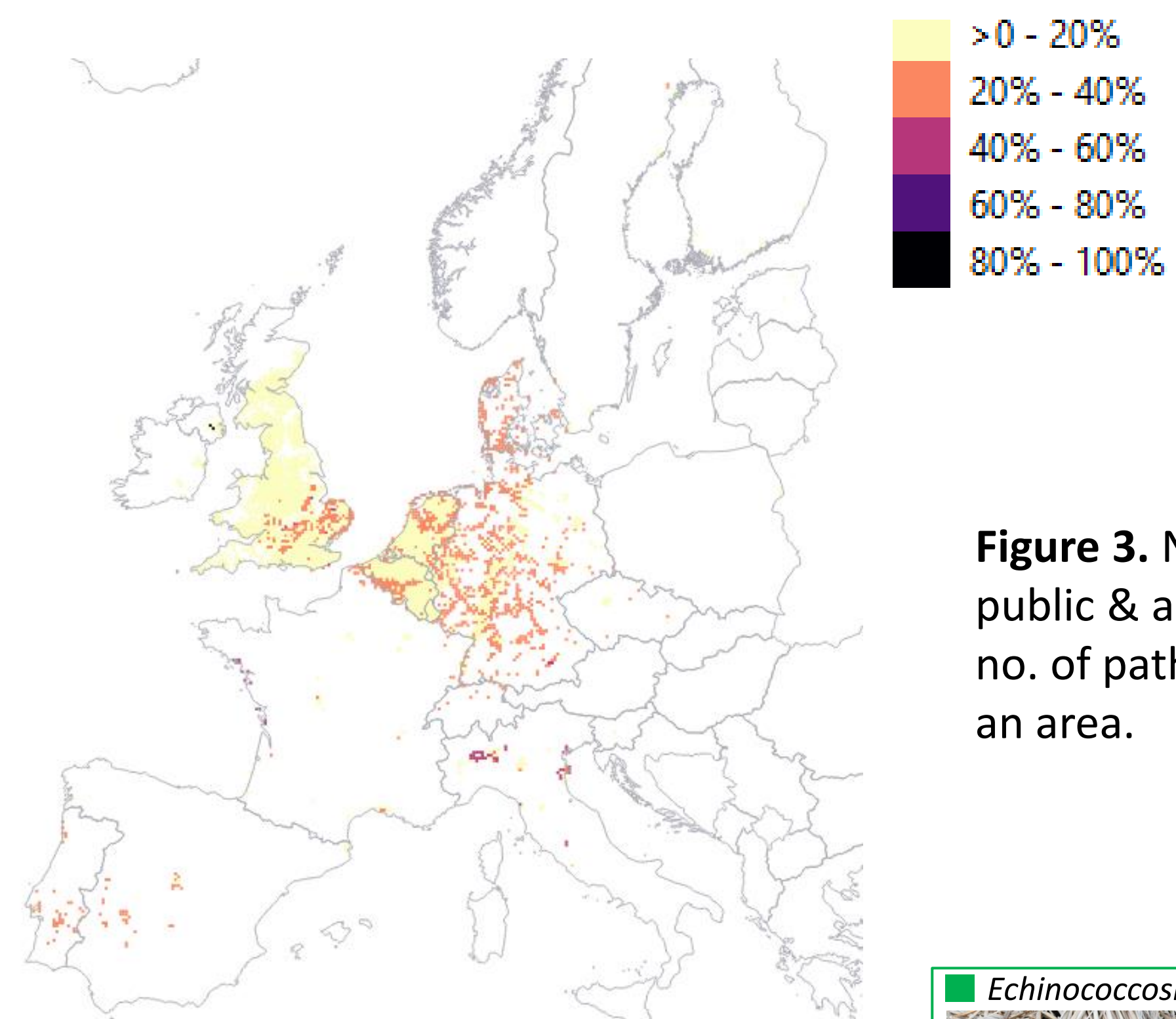
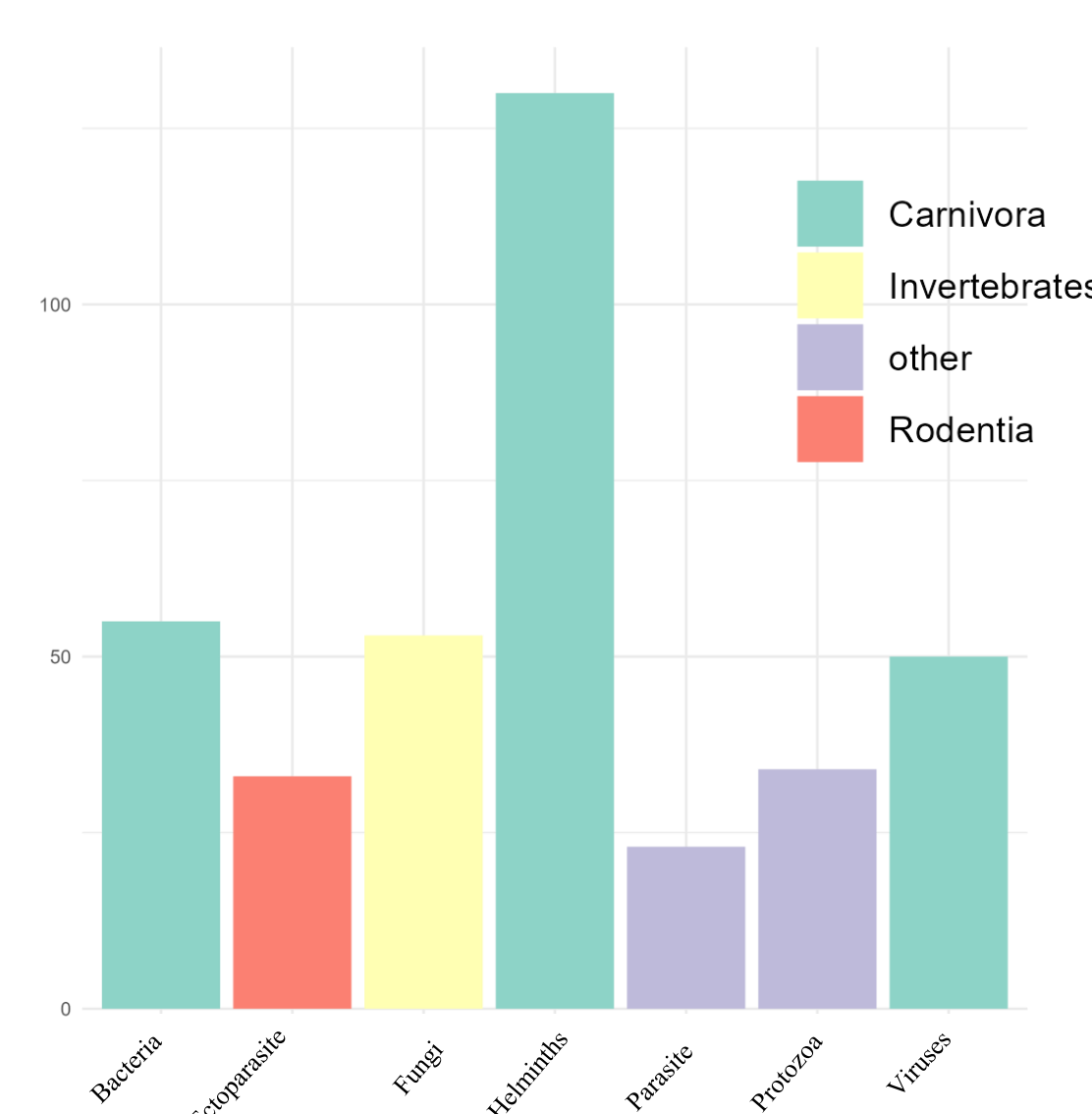


Figure 3. Number of pathogens of public & animal importance over no. of pathogens hosted by IAS in an area.

## 3. Risk factors of spillover: confirmed cases (Figure 4) \*\*\*

- Putting together risk factors of host-infections agents that drive spillover and disease cases to confirm infections agents' prevalence;
- 529 confirmed cases of human echinococcosis in 2021, corresponding to an EU notification rate of 0.15 per 100,000 population (EFSA [5], Table 1);
- Agents of Echinococcosis hosted by: *Myocastor coypus*, *Nyctereutes procyonoides*, *Ondatra zibethicus* (Figure 4).

## Challenges:

- **Data availability:** IAS establishment, confirmed & reported cases of diseases linked to animals or humans, risk factors of spillover.
- **Surveillance of infectious agents hosted by IAS of UC** to complement ongoing surveillance for zoonoses.



Figure 4. Distribution (green) of hosts of *Echinococcus granulosus* and *E. multilocularis* in established population of IAS of UC (red).

Table 1. Member States reporting information on *Echinococcus* infections in humans.

Country	No. of reported cases
DE	160
FR	75
NL	53
BE	17
FI	9