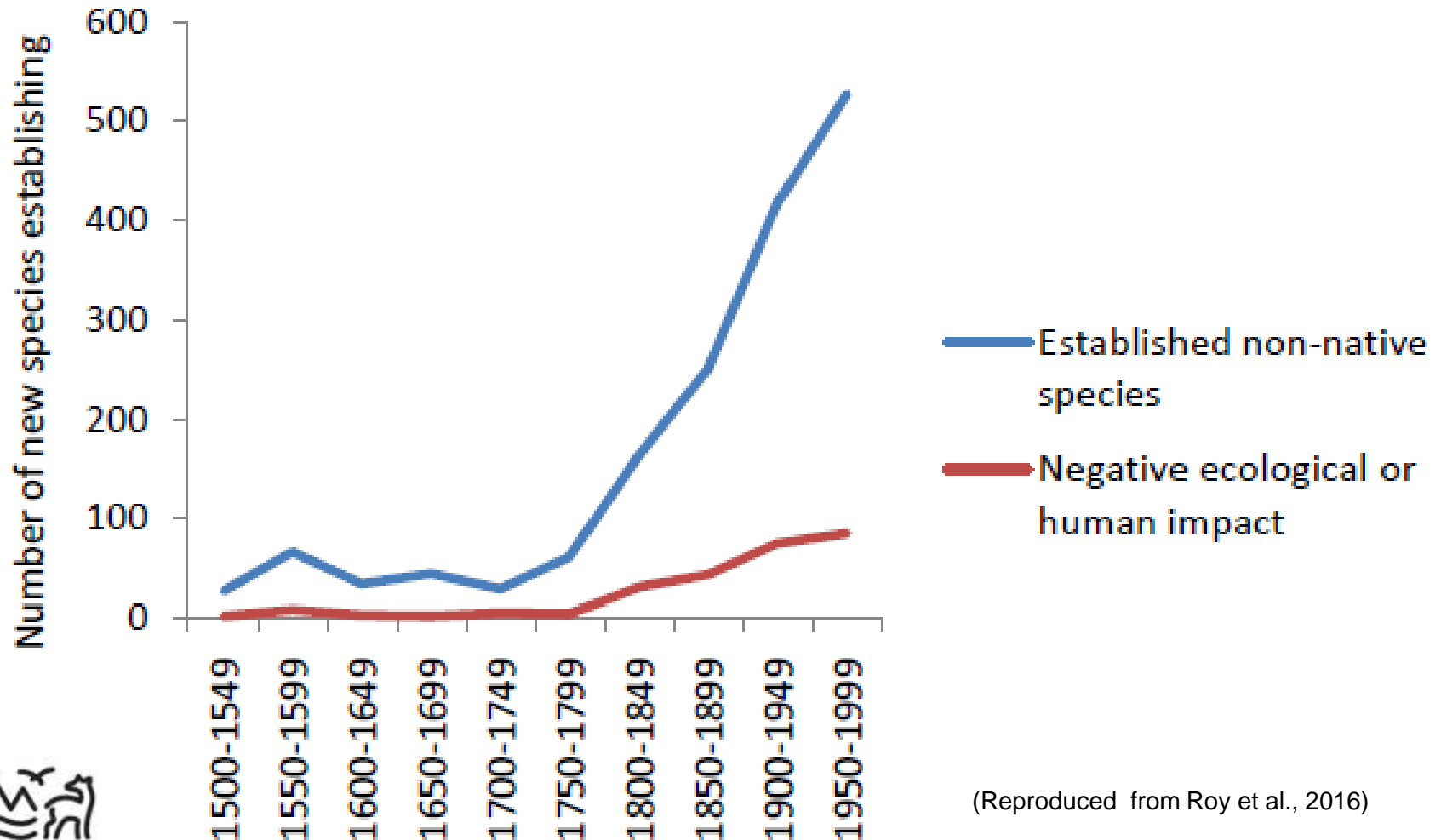


## Highland and NE Scotland INNS forum – national update



Stan Whitaker, Non-Native Species Adviser  
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**The problem:** rate of invasion of NNS is increasing, and so are the associated costs to society, the economy and biological diversity



(Reproduced from Roy et al., 2016)

# Impacts on biodiversity



# CBD guiding principles on INNS



# Prevention List

- Species not yet established in Scotland but likely to arrive and become invasive

## Freshwater

Black bullhead  
Topmouth gudgeon  
Pikeperch (zander)  
Ponto-caspian gobies  
Fathead minnow  
Asian / Asiatic clam  
Zebra / quagga mussel  
Chinese mitten crab  
Ponto-Caspian shrimps  
Crayfish  
Floating pennywort  
Parrot's feather  
Floating water-primrose  
South American waterweed  
American spongeplant  
Water chestnut

## Terrestrial

Raccoon  
Muntjac  
Siberian chipmunk  
Raccoon dog  
Ruddy duck  
African sacred ibis  
Indian house crow  
American bull frog  
Asian hornet  
Buff-tailed bumblebee  
Argentine ant  
Sea myrtle  
Lizard tail  
Japanese stiltgrass  
Dwarf serviceberry  
Candle-berry tree  
Grey goldenrod

## Marine

Ponto-Caspian gobies  
Ponto-Caspian shrimps  
Chinese mitten crab  
American lobster  
Slipper limpet  
Veined rapa whelk  
Window shell  
Japanese sting winkle  
*Schizoporella errata* (a bryozoan)  
Rough agar weed



# Rapid response



© SNH

Raccoon



© Environment Agency

Floating pennywort



© Jean Haxaire

Asian hornet



© Scottish Canals

Zebra mussel

Quagga mussel



# Contingency plans



© NNSS

Raccoon



© Andy Rouse/2020VISION

Stoat



© NNSS



Muntjac



© SNH

Rats

# Species Control Agreements



© Dan Minchin

*Didemnum vexillum*



© RPS Group plc

Rhododendron



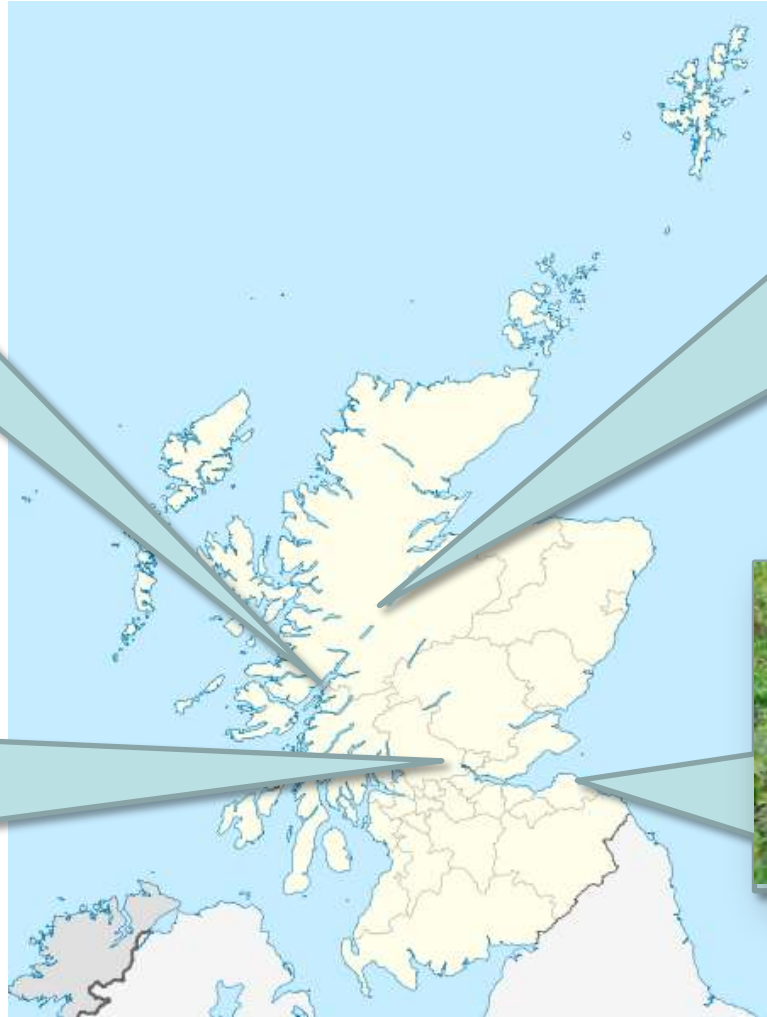
© NNSS

Giant hogweed



© NNSS

Black-tailed prairie dog

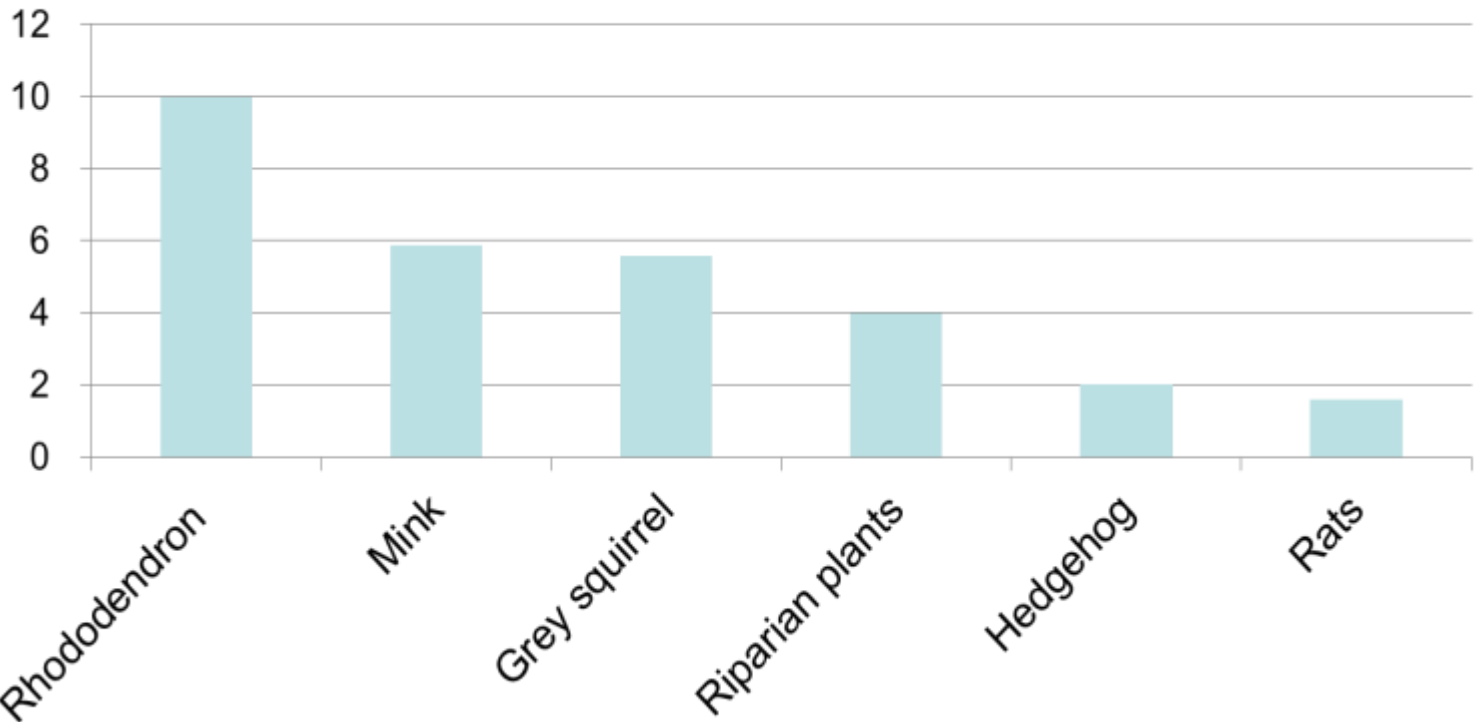




# The challenge of established INNS

- There is insufficient capacity to fully address the chronic pressure on biodiversity from established INNS

Estimated total spend to date (£ million)



# Management List

Strategic control at landscape or island scale can be cost-effective

- Restore degraded ecosystems
- Reduce pressure on vulnerable priority species

## **Landscape scale**

Grey squirrel

American mink

Invasive rhododendron

Invasive knotweeds

Giant hogweed

Himalayan balsam

American skunk cabbage

## **Islands**

Rats

Hedgehog

Stoat

Giant rhubarb



# Large scale eradication and long-term management

## Route Map priority projects:

- Atlantic oakwood restoration
- Scottish invasive species initiative
- Hebridean mink project
- Shiant Isles recovery project
- Saving Scotland's red squirrels

## Supporting actions

- National approach for invasive rhododendron

