

KEY FACTS												
2,721 non-native species living in England, of which the majority (1,798 or 66%) were plants.												You will need to copy links in to search engine to view
The annual cost of invasive non-native species to the economy is estimated at £1.3 billion in England and £125 million in Wales												
The biggest cost is to agriculture, estimated at over £910 million in England and Wales												
PLANTS	Synonyms	Date arrived	Native range	Where it invades	Main problem	Control	Law	ID	ID	ID	Similar species	Useful Links
Giant Hogweed <i>(Heracleum mantegazzianum)</i>		1828 Middlesex	SW Asia	Broad range, mainly riverine habitats and waste ground	Plants can produce 20,000 seeds/year Heavily phytotoxic (sap contains photosensitizing furanocoumarins, which in contact with human skin and combined with UV radiation cause severe reaction)	Root cutting Removal of contaminated soil Cutting plants over multiple years Herbicide on new leaves Grazing appears to work	A Species of Special concern Schedule 9 EU Regulation (1143/2014)	Sharply divided leaves with bristles on underside	Blotchy hollow stems with bristles. Plants up to 5m	Inflorescences up to 80cm	Hogweed, less sharply divided leaves and plants up to 2m (inflorescent 15cm) Hemlock has red blotches but is finer and more feathery.	https://www.nonnatIVESPECIES.ORG/assets/Uploads/ID_Heracleum_mantegazzianum_Giant_Hogweed-2.pdf
Himalayan Balsam <i>(Impatiens glandulifera)</i>	Indian Balsam	1839 - introduced 1855 - found in wild	Western & Central Himalaya	Favours riversides but capable of then spreading into terrestrial habitats	Forms dense monoculture stands Seeds spread fast (explosive), esp. along waterways As they are annual, when they dieback they leave bare ground, prone to erosion May attract pollinators to detriment of other species	Small numbers - pulling Larger stands -mowing (below lowest node) Seeds persist for possibly up to 3 years so must be follow-up Herbicide Catchment-wide management	A Species of Special concern Schedule 9 EU Regulation (1143/2014)	Fast growing annual with stout reddish hollow stem, up to 2.5m	Toothed leaves in whorls, each tooth has a minuscule gland on top	Pink flowers with deep bodies and frouncy side petals	Touch-me-not Balsam (smaller yellow flowers), Orange Balsam (orange flowers)	https://invasivespeciesireland.com/wp-content/uploads/2012/01/Himalayan-Balsam-BPM.pdf
American Skunk Cabbage <i>(Lysichiton americanus)</i>	Western Skunk-cabbage	1901 - introduced 1947 - found in wild near Haslemere in Surrey.	North America	Moist habitats, woodland, pond edges	Large leaves eventually outcompete other vegetation	Herbicide Pulling up, if soil lose enough to avoid leaving rhizome fragments	Species of Special Concern EU Regulation (1143/2014) IAS	Long-lived perennial with large leathery upright leaves	Yellow spiked flower-stalk (spadix) emerging from hooded leaf (spathe)		Lords-and-Ladies (smaller with purple spadix) and Asian Skunk-cabbage (white spathe)	https://www.invasivespecies.scot.nhs.uk/ame
Japanese Knotweed <i>(Reynoutria japonica)</i>	Fallopia japonica	First recorded in wild 1886	East Asia	Riversides, roads and railways, waste ground. Tolerates wide range of conditions	Aggressive coloniser, with extensive network of roots (7m out, 3m down). Roots can damage infrastructure	Chemical (glyphosate), mechanical (excavation and mulch mats), biological (<i>Aphalara itadori</i> , the Japanese knotweed psyllid)	Schedule 9	Slightly arching hollow stems with red spots, forming dense stands 3-4m. Dead stems vaguely resemble bamboo	Broad ovate leaves with truncated bases	Creamy flowers in upright racemes		https://www.nonnatIVESPECIES.ORG/assets/Uploads/ID_Fallopia_japonica_Japanese_knotweed.pdf
Rhododendron <i>(Rhododendron ponticum)</i>		19th century	Iberian peninsula and Far East.	Sandy and peaty acidic soils, esp. heathland and woodland. Severe threat to Atlantic woodlands	Suckers heavily, and produces abundant wind-dispersed seeds. Pollen is toxic. Host to <i>Phytophthora</i> (sudden Oak disease)	Felling and stump treatment	Schedule 9	Densely branched evergreen spreading shrub 6-8m	Dull green oblong elliptic leaves, pale undersides 6-20cm, forming spiral at end of stems	Large flowers in bunches, usually pink sometimes white. Dark brown slightly messy upright seed pods	Cherry Laurel	https://www.nonnatIVESPECIES.ORG/assets/Uploads/ID_Rhododendron_ponticum_Rhododendron.pdf
Cherry Laurel <i>(Prunus laurocerasus)</i>		1886	Central Europe and Asia (Black Sea)	As above	Spread by birds through droppings, similar rapid colonisation to Rhododendron. Very 'wet' wood making chainsawing difficult Poisonous seeds and leaves (cyanide)	Felling and stump treatment		Shiny oblong leaves with toothed margins	White flowers forming clusters on spikes	Plump berries, ripening to black colour	cf Bay Laurel	https://www.dorsetcouncil.gov.uk/documents/35024/283707/Rhododendron_20ponticum_20v3b.pdf/e39f14a0-86b9-962a-ba9f-a808831fb4f
Water fern <i>(Azolla filiculoides)</i>		1886 recorded in wild (Middlesex) 1906 starts spreading	Americas	Ponds, lakes, canals, ditches and slow flowing rivers	Forms floating mats (up to 30cm), excludes light from water column and prevents animals reaching surface Propagates from minute fragments and spores at start of winter <i>Stenopelmus rufinusus</i> , a weevil	Remove with nets, or use floating booms Clear before winter sporing period	Banned from sale in 2014 Schedule 9	Floating rosettes of scaly leaves, continuously breaking into smaller sections. Black/brown roots	Become deep red late in season (symbiotic association with the alga <i>Anabaena azollae</i>)	It harbors the diazotrophic organism, Nostoc azollae, in specialized leaf pockets, allowing it to fix nitrogen		https://www.nonnatIVESPECIES.ORG/assets/Uploads/ID_Azolla_ficuloides_Water_Fern-1.pdf
New Zealand Pigmyweed <i>(Crassula helmsii)</i>	Swamp Stonecrop Australian Swamp-stonecrop <i>Tillaea recurva</i> <i>Tillaea helmsii</i>	1911 as pond plant 1956 - found in wild in Essex	Australia and New Zealand	Ponds, lakes, reservoir, ditches and damp mud on margins	Propagates from small (2mm) vegetative fragments, which can float Shades out and de-oxygenates water	Mechanical removal Black polythene for 3 months Increase shading Fluctuate water levels <i>Aculus crassulae</i> mite	Banned from sale in 2014 (1st ban!) Schedule 9	Succulent perennial with opposite narrow pale-green leaves	Grows both on mud and water, forming mats up to 0.5m deep		Very young plants can look like spindly Marsh Bedstraw, but has whorl of leaves rather than pairs. Water Starworts have non fleshy strap-like leaves and typically float on surface	https://www.nonnatIVESPECIES.ORG/assets/Uploads/ID_Crassula_helmsii_New_Zealand_pigmyweed.pdf

Floating Pennywort (<i>Hydrocotyle ranunculoides</i>)		1990 - Essex	Americas	All water bodies, especially canals and slow flowing rivers. Main area north of London into Norfolk	Outcompetes other plants and hinders navigation Can grow up to 20cm per day	Mechanical or hand-pull, ensuring no fragments are spread.	Banned from sale in 2014 Schedule 9 EU Regulation (1143/2014) IAS	Fleshy stems with kidney-shaped lobed leaves.	Forms mats, with fine roots emerging from stem nodes		Hydrocotyle vulgaris - native, leaves smaller, round and undivided	https://www.nonnatIVESpecies.org/assets/Uploads/ID_Hydrocotyle_ranunculoides_Floating_Pennywort-1.pdf
Water Primrose (<i>Ludwigia grandiflora</i>)	Similar to <i>Ludwigia peploides</i> and <i>Ludwigia uruguayensis</i> .	1998 - Middlesex	Central and South America	Ponds	Forms impenetrable mats which outcompete plants and block out light Spreads by broken off fragments	Cut and remove, continuously	Schedule 9 Banned from sale 2014 Species of Special Concern EU Regulation (1143/2014) IAS	Ascending to procumbent on water	Elliptic leaves, but can be more rounded when floating. Dark with visible light veins	Bright yellow 5-petalled flowers	Water Forget-me-not and Amphibious Bistort have similar leaves but very different flowers. Be aware of Hampshire Purslane in relevant parts of Britain.	https://www.nonnatIVESpecies.org/assets/Uploads/ID_Ludwigia_grandiflora_Water_Primrose-2.pdf
Parrot's feather (<i>Myriophyllum aquaticum</i>)	Parrot Feather Watermilfoil Brazilian water-milfoil Myriophyllum brasiliense Myriophyllum proserpinacoides.	1878 - first cultivated 1960 - recorded in wild (Surrey)	Central and South America	Ponds, canals, ditches and reservoirs, mainly in southern England	Forms dense mats and outcompetes plants Disrupts natural erosion processes	Mechanical Herbicide Regular cutting will weaken but not remove	Schedule 9 Banned from sale 2014 Species of Special Concern EU Regulation (1143/2014) IAS	Upright feathery stems with whorls of 4-6 finely-dissected leaves	All plants outside south America are female		Marginally similar to Water Milfoil, which is darker and lacks erect stems. Hornwort is more submerged and has forked leaves Mare's-tail lacks feathery leaves.	https://www.nonnatIVESpecies.org/assets/Uploads/ID_Myriophyllum_aquaticum_Parrots_feather.pdf
ANIMALS	Synonyms	Date arrived	Native range	Where it invades	Main problem	Control	Law	ID	ID	ID	Similar species	Useful Links
Rose-ringed Parakeet (<i>Psittacula krameri</i>)	Ring-necked Parakeet	1855 - some observations 1969 - current populations established	S. Asia and Central Africa	Urban parks, but expected to spread into countryside Expanding out from London, with separate populations in Manchester and Birmingham	Some evidence of competing for nest sites and food Noise Could become agricultural pest (already hitting vine yards)	Can be controlled if posing threat to native species, crops or air traffic	Schedule 9	Large all green with long tail and bright red bill	Call is a loud squawk		Other parakeets, rarely encountered in wild	
Asian Hornet (<i>Vespa velutina</i>)	Yellow-legged Hornet	2016 - Tetbury	Asia	Recorded from Kent to Lancashire	Aggressive predator of other pollinators, esp. honey bees	Locate nest, exterminate	EU Regulation (1143/2014) IAS	Dark brown to black, velvety body and abdomen	Legs with yellow tips	Slightly smaller and less brown than native hornet.	European Hornet	https://www.youtube.com/watch?v=c4DRki97wzg
Grey Squirrel (<i>Sciurus carolinensis</i>)	Eastern gray squirrel	1828	Eastern N. America	Wooded and urban environments - colonies along trellises	Competitive exclusion of native Red Squirrels Transmission of squirrel pox Damage to trees by bark stripping (leading to weakening & fungal infection) - £10million/year	Trapping Pine Marten may be acting as a natural control - early days	Schedule 9 EU Regulation (1143/2014) IAS	Grey body (usually) tail who several shades of grey and white 'halo'			Red Squirrel - uniformly red much bushier tale, larger erect ears with tufts in winter	
American Mink (<i>Neovison vison</i>)	Mustela vison, Mustela canadensis, Mustela rufa, Lutra vison, Vison lutreola	1929 - imported for fur farming (700 farms in 1962) 1958 - recored in wild near Blackpool	N. America	Widespread in waterways and occasionally woodland	Significant impact on native wildlife, esp. watervole, seabirds and fish	Trapping	Schedule 9	Glossy dark fur with white chin. Splayed footprints, often with tear-shaped toes	Conspicuous pungent (fishy) scats, sausage-like drawn out to a point	Can be active during the day	Otters are larger & paler with larger faces and produce jasmine-smelling poos 🦉	
Marsh frog (<i>Pelophylax ridibundus</i>)	Rana ridibunda, Eurasian Marsh Frog, Lake Frog, Laughing Frog	1884 - first imported, 1934 - introduced to Romney Marsh stronghold. Most populations deliberately introduced	Central and E. Europe	Dykes, ditches and slow flowing rivers, mostly Kent and Sussex, but becoming frequent elsewhere	Potential outcompeting for food and spread of chytrid fungus Loud call has caused nuisance to human	Not currently controlled	Schedule 9	Colour variable but typically bright green with dark blotches and pale line running down back	Larger than native frog with eyes closer together and no eye patches, rounder snout.	Warty skin	Edible frog (Pelophylax esculentus) is hard to tell apart Northern pool frogs are predominantly brown in colour with darker blotches, and a light yellow or green stripe along the back.	https://www.arguk.org/info-advice/id-guides
Alpine Newt (<i>Mesotriton alpestris</i>)	Ichthyosaura alpestris	1920 Surrey, but complex picture of several sub-species form multiple locations.	Central Europe	Ponds, predominately in south (c. 40 current locations)	Vector of chytridiomycosis	Not currently controlled in UK but trapping has worked in New Zealand.	Schedule 9	Blue-green marbling, bright orange underside	Darker in terrestrial form		Smooth newt has eye strip and lacks blue-green colour. GCN has jagged crest and orange blotched underbelly	

Terrapin European Pond Terrapin <i>(Emys orbicularis)</i> Red-eared Terrapin <i>(Trachemys scripta)</i>		European Pond - 1929 IOW Red - 1980s	European Pond - Europe Red- N. America	Ponds, mainly urban at present	Unknown, but the Red completes the European	Not currently controlled	Schedule 9 (European) IAS (Red) EU Regulation (1143/2014) (all terrapins)	European - speckled legs Red - striped legs, red stripe behind eye				
Signal Crayfish <i>(Pacifastacus leniusculus)</i>		1976 - brought in for farming	N. America and British Columbia	Rivers, streams, canals and into slightly salty water Can travel over land	Carry Crayfish plague (fatal to WCC - 50-80% decline) Erosion of banks (burrows up to 2m) Predation on other species	Trapping (under licence), accompanied with habitat restoration for watervoles Hunting with hounds is not an effective method and causes disturbance to beneficial wildlife	Schedule 9 EU Regulation (1143/2014) IAS	Large (16-18cm - WCC=12cm) , with parallel ridges on rostrum (WCC converge towards front). Large claws, smooth body (WCC more spiny)	Red underside to claws, with orange tint to underside of body (WCC underclaws are dirty white with slight pink tinge white) Blue-white 'signal' mark on claw hinge	Can be seen during the day (WCC nocturnal)	White-clawed Crayfish Noble, Turkish, Virile & Spiny-Cheeked have also been recorded in the UK	
Quagga Mussel <i>(Dreissena rostriformis bugensis)</i>	Dreissena bugensis	2014 - near Egham, Surrey	Dnieper and Southern Bug estuary & Lower Inguletz River in the Ukraine	Lakes, rivers and estuaries, attaching to any hard surfaces	Fast coloniser, blocking up aquatic infrastructure Predates heavily on zooplankton Spreads by floating larvae (1 million eggs per season)	Physical, chemical and biological		Triangular bivalve, often with alternation light and dark brown stripes, but can be solid brown			Zebra Mussel - triangular, darker and sits flat on underside	
Killer Shrimp <i>(Dikerogammarus villosus)</i>		2010 - Graham Reservoir, Sussex	Russian Far East, Caucasus, Russia South, Ukraine	Canals, rivers, lakes - freshwater and brackish. Now recorded in Norfolk, through to southern Wales.	Varacious predators on other shrimps and native fauna, causing cascading affect through foodwebs In a year can spread 124km downstream and 35km upstream	Almost impossible		3cm with transparent body and large powerful mandibles				

LAWS	Wording	Species
The Wildlife and Countryside Act 1981 (WCA)	Makes it an offence to: -release (accidentally or on purpose) a non-native animal (e.g. grey squirrel, American mink etc) into the wild. -plant non-native plants in the wild (or release seeds etc.) -allow non-native plants to spread into the wild (e.g. by allowing it to spread from your land through inactivity, by dumping garden waste into the wild, by moving contaminated soil etc.).	Listed on Schedule 9 - Long list which is subject to quinquennial reviews
The Invasive Alien Species (Enforcement and Permitting) Order 2019	Article 3 contains offences around the importing, keeping, breeding, purchasing, and releasing or allowing to escape into the wild of invasive alien species.	30 Animals 36 Plants
EU Regulation (1143/2014) on the prevention and management of the introduction and spread of invasive alien species (retained in domestic law under the European Union (Withdrawal) Act 2018)	imposes restrictions on species on the list of species of special concern, known as 'invasive alien species of special concern'. These are species whose adverse impact across Great Britain are such that concerted action is required. You must not do any of the following: ANIMALS keep them in your house, garden or business sell them to other people exchange them for goods release them into the environment let them breed or escape import them into the UK transport them within the UK export them to other countries PLANTS import / keep / breed / transport / sell / grow, cultivate or permit to reproduce	30 animals (list here) 36 plants (list here)
Wildlife and Countryside Act 1981 (prohibition on Sale etc. of Invasive Non-native Plants) (England) Order 2014	2014 amendment to WCA	Fern, Water , Azolla filiculoides, (Fairy Fern) Parrot's Feather, Myriophyllum aquaticum, (Brazilian Watermilfoil, Myriophyllum brasiliense, Myriophyllum Proserpinacoides, Eurydria aquatica) Pennywort, Floating, Hydrocotyle ranunculoides Primrose, Floating Water, Ludwigia peploides Primrose, Water, Ludwigia grandiflora Primrose, Water, Ludwigia uruguayensis Stonewort, Australian Swamp, Crassula helmsii, (New Zealand Pigmyweed, Tillaea aquatica, Tillaea recurva)
Conservation of Habitats and Species Regulations 2017	offences around -deliberate introduction into the wild of any species which is not native to their territory	
Destructive Imported Animals Act 1932	controls the importation and keeping of "destructive non-indigenous animals"	While the 1932 Act deals primarily with muskrats, orders made under the Act relate to grey squirrels, non-indigenous rabbits, coypus and mink
Plant Health Act 1967	prevents the introduction of pests into Great Britain	