

**Non-Native Animal and Pathogen Species in New Jersey  
Central Jersey Invasive Species Strike Team  
March 2010**

Potential CJISST target species are highlighted in blue (31 species).

Species sorted by 'Taxa', followed by 'New Jersey Invasive Status'.

Numerous species have "Unknown" rankings and must be researched further. This list requires careful vetting by experts in various taxa.

Scientific Name	Common Name	Taxa	Origin	National Distribution Status <sup>1</sup>	National Invasive Species Status <sup>2</sup>	Risk of Introduction to New Jersey <sup>3</sup>	New Jersey Distribution Status <sup>4</sup>	New Jersey Threat Status <sup>5</sup>	New Jersey Invasive Status <sup>6</sup>	Species at Risk	Comments
<i>Pectinatella magnifica</i>	freshwater bryozoan	freshwater - bryozoan	North America	Established	Invasive / Native	Unknown	Unknown	Unknown	Unknown	freshwater aquatic communities	Can create a toxin poisonous to fish.
<i>Eriocheir sinensis</i>	Chinese mitten crab	freshwater - crustacean	Asia	Established	Invasive	Already Present	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic and marine communities	Lives in freshwater and breeds in saltwater. Found in Delaware Bay and Hudson River (2007). Travel several hundred miles upstream from breeding areas. Burrowing can threaten stream banks - may compete with native blue crab.
<i>Orconectes rusticus</i>	rusty crayfish	freshwater - crustacean	North America	Established	Invasive / Native	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	Can reduce native crayfish and alter fish species composition.
<i>Orconectes virilis</i>	virile crayfish	freshwater - crustacean	North America	Established	Invasive / Native	Unknown	Unknown	Unknown	Unknown	freshwater aquatic communities	Create damage to levees.
<i>Hypophthalmichthys molitrix</i>	silver carp	freshwater - fish	Asia	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Found at Wickecheokee Creek Preserve (New Jersey Conservation Foundation)
<i>Hypophthalmichthys nobilis</i>	bighead carp	freshwater - fish	Asia	Established	Invasive	Already Present	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Found in Gloucester County
<i>Monopterus albus</i>	Asian swamp eel	freshwater - fish	Asia	Established	Invasive	Already Present	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Introduced game species, may alter fish communities through competition and predation. Recently found in Delaware River (Fireman's Hole, Lambertville).
<i>Pylodictis olivaris</i>	flathead catfish	freshwater - fish	North America	Established	Invasive / Native	Already Present	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Introduced game species, competition for food with similar species.
<i>Ambloplites rupestris</i>	rock bass	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through predation.
<i>Ameiurus melas</i>	black bullhead	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through predation.
<i>Amia calva</i>	bowfin	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced from aquarium releases, may compete with other sunfish for food and nesting locations.
<i>Astronotus ocellatus</i>	oscar	freshwater - fish	South America	Established	Invasive	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	Introduced ornamental species, may alter aquatic vegetation and substrate.
<i>Carassius auratus</i>	goldfish	freshwater - fish	Asia	Established	Invasive	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter aquatic vegetation and substrate.
<i>Ctenopharyngodon idella</i>	grass carp	freshwater - fish	Asia	Established	Invasive	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter aquatic vegetation and substrate.
<i>Cyprinus carpio</i>	common carp	freshwater - fish	Eurasia	Established	Invasive	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Esox lucius</i>	Northern pike	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Esox lucius x masquinongy</i>	tiger muskellunge	freshwater - fish	Artificial hybrid	Established	Unknown	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Esox masquinongy</i>	muskellunge	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced for mosquito control, may impact fish species through egg predation and composition of invertebrate communities -- may not be effective at controlling mosquitos.
<i>Gambusia affinis</i>	mosquitofish	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may hybridize with other catfish, may alter fish species composition through predation.
<i>Ictalurus furcatus</i>	blue catfish	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	

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<i>Ictalurus punctatus</i>	channel catfish	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may hybridize with other catfish, may alter fish species composition through predation.
<i>Lepomis cyanellus</i>	green sunfish	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game and bait species, may alter fish communities through competition and predation.
<i>Lepomis gulosus</i>	warmouth	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game and bait species, may alter fish communities through competition and predation, may hybridize with other sunfish.
<i>Lepomis macrochirus</i>	bluegill	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game and bait species, may alter fish communities through competition and predation.
<i>Leuciscus idus</i>	ide	freshwater - fish	Europe	Established	Unknown / Native	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may behavior similarly to goldfish and carp.
<i>Micropterus dolomieu</i>	smallmouth bass	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Micropterus salmoides</i>	largemouth bass	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Misgurnus anguillicaudatus</i>	Oriental weatherfish	freshwater - fish	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	Introduced aquarium species.
<i>Oncorhynchus mykiss</i>	rainbow trout	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species.
<i>Pimephales notatus</i>	bluntnose minnow	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced bait species.
<i>Pimephales promelas</i>	fathead minnow	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced bait species.
<i>Pomoxis alularis</i>	white crappie	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through competition and predation.
<i>Pomoxis nigromaculatus</i>	black crappie	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through competition and predation.
<i>Salmo trutta</i>	brown trout	freshwater - fish	Europe	Established	Unknown	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may impact native brook trout through competition or predation.
<i>Salvelinus namaycush</i>	lake trout	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through competition and predation.
<i>Sander vitreus</i>	walleye	freshwater - fish	North America	Established	Unknown / Native	Already Present	Widespread	Unknown	Unknown	freshwater aquatic communities	Introduced game species, may alter fish communities through competition and predation.
<i>Craspedacusta sowerbyi</i>	freshwater jellyfish	freshwater - hydrozoan	Asia	Established	Unknown	Unknown	Unknown	Unknown	Unknown	freshwater aquatic communities	Widespread distribution.
<i>Dreissena bugensis</i>	quagga mussel	freshwater - mollusk	Eurasia	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Found in one location in eastern Pennsylvania; Not found in New Jersey, but introduction is possible.
<i>Dreissena polymorpha</i>	zebra mussel	freshwater - mollusk	Eurasia	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Causes significant damage where present.
<i>Potamopyrgus antipodarum</i>	New Zealand mud snail	freshwater - mollusk	Asia	Established	Invasive	High	Emerging Stage 0	Moderate	Emerging / Potential	freshwater aquatic communities	Introduced to North America in 1987. Found from California to Great Lakes.

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<i>Corbicula fulminea</i>	Asiatic clam	freshwater - mollusk	Asia	Established	Invasive	Already Present	Widespread	High	Invasive	freshwater aquatic communities	Widespread outside of Pine Barrens; species may produce 'biofouling' of intake pipes in the U.S.; ecological impacts unknown; tolerant of human-caused impacts (siltation, nutrient loads, etc.). In areas south of New Jersey, species may become the dominant stream substrate.
<i>Bithynia tentaculata</i>	mud bithynia	freshwater - mollusk	Europe	Established	Unknown	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	Records for Sussex County.
<i>Cipangopaludina chinensis malleata</i>	Chinese mystery snail	freshwater - mollusk	Asia	Established	Unknown	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	
<i>Physella acuta</i>	European physa	freshwater - mollusk	Europe	Established	Unknown	Unknown	Unknown	Unknown	Unknown	freshwater aquatic communities	
<i>Pisidium amnicum</i>	greater European pea clam	freshwater - mollusk	Europe	Established	Unknown	Unknown	Unknown	Unknown	Unknown	freshwater aquatic communities	Can grow at great densities in native range.
<i>Radix auricularia</i>	big-ear radix	freshwater - mollusk	Europe	Established	Unknown	Already Present	Unknown	Unknown	Unknown	freshwater aquatic communities	
<i>Pseudemys scripta elegans</i>	red-eared slider	freshwater - reptile	North America	Established	Invasive / Native	Already Present	Widespread	Mild	Invasive	freshwater aquatic communities	May directly compete with native painted turtle. May carry additional parasites not present in native species.
<i>Trionyx spiniferus</i>	Eastern spiny softshell turtle	freshwater - reptile	North America	Established	Non-invasive / Native	Already Present	Emerging Stage 0	Mild	Non - Invasive	freshwater aquatic communities	Maurice River system only
<i>Codium fragile</i> ssp. <i>tomentosoides</i>	Green fleece	marine - algae	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Aesthetic impact on beaches, ship, dock, shellfish fouling
<i>Coscinodiscus wailesii</i>	diatom	marine - algae	Asia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Caused fouling of fishnets, 1970s. Current impacts unknown.
<i>Neosiphonia harveyi</i>	red seaweed	marine - algae	Asia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Odontella sinensis</i>	diatom	marine - algae	Asia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Balanus amphitrite</i>	purple acorn barnacle	marine - barnacle	Asia	Established	Non-invasive	Unknown	Unknown	Unknown	Unknown	marine communities	Ship fouling agent; no known records in NJ; established from Chesapeake south
<i>Bowerbankia gracilis</i>	creeping bryozoan	marine - bryozoan	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Bowerbankia imbricata</i>	bryozoan	marine - bryozoan	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Electra pilosa</i>	hairy sea mat	marine - bryozoan	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Blackfordia virginica</i>	hydroid and jellyfish	marine - cnidaria	Eurasia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Cordylophora caspia</i>	hydroid orange-striped anemone	marine - cnidaria	Eurasia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Occasional fouler of powerplants, boats, and fishing gear
<i>Diadumense lineata</i>	anemone	marine - cnidaria	Asia	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Ectopleura larynx</i>	hydroid	marine - cnidaria	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Garveia franciscana</i>	hydroid	marine - cnidaria	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	Sometimes a severe fouler of powerplants, fishing gear, etc.

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<i>Obelia bidentata</i>	hydroid	marine - cnidaria	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Obelia longissima</i>	hydroid	marine - cnidaria	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Hemigrapsus sanguineus</i>	Asian shore crab	marine - crustacean	Asia	Established	Invasive	Already present	Emerging Stage 1	High	Emerging / Potential	marine communities	may cause significant damage to native ecosystems through predation and competition, first discovered in North America by a college biology class at Cape May in 1987 and has rapidly spread north to Maine; probably introduced with ballast water; may compete with native crab species in rocky areas, may consume barnacles and mussels.
<i>Carcinus maenas</i>	European green crab	marine - crustacean	Europe	Established	Invasive	Already Present	Widespread	Moderate	Invasive	marine communities	May cause significant damage to commercial fisheries and native ecosystems through predation and competition, known from North America since 1817.
<i>Barentsia benedini</i>	entoproct	marine - entoprocta	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Morone chrysops</i>	white bass	marine - fish	North America	Established	Unknown / Native	Already Present	Unknown	Unknown	Unknown	marine communities	introduced game species, may alter fish community composition through predation, may eliminate smaller native fish species, reached Hudson River in 1977, white bass-striped bass hybrids also widely stocked
<i>Pterois volitans</i>	red lion fish	marine - fish	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Introduced ornamental species
<i>Ligia exotica</i>	wharf roach	marine - isopod	Asia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	competition with similar species
<i>Synidotea laevidorsalis</i>	isopod species	marine - isopod	Asia	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Newly discovered in Northeast in 2003
<i>Littorina littorea</i>	common periwinkle	marine - mollusk	Europe	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	May severely alter rocky intertidal communities through selective browsing of algae, first observed in New Jersey in the 1890's, grow densely to the exclusion of native species.
<i>Myosotella myosotis</i>	salt-marsh snail	marine - mollusk	Europe	Established	Non-invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Air-breathing snail of upper intertidal zone; first reported in 1865, earlier name was <i>Ovatella myosotis</i>
<i>Rangia cuneata</i>	Gulf wedge clam	marine - mollusk	Central America	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Northward expansion from Gulf of Mexico possibly with oyster transplants, or through canals, barges, and ballast water; established in brackish estuaries from 1950s to 1980s (Chesapeake - 1960, Delaware Bay (1971), Hudson (1988)); impacts as filter-feeder, waterfowl food, may compete with natives species
<i>Tenellia adspersa</i>	nudibranch	marine - mollusk	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Teredo bartschi</i>	bartsh shipworm	marine - mollusk	Cryptogenic / unknown	Established	Non-invasive	Unknown	Extirpated	Unknown	Unknown	marine communities	May damage untreated wooden structures; known to occur in Barnegat Bay prior to 1993. Dependent on powerplant effluents. Now extirpated in NJ.
<i>Teredo furcifera</i>	deep-cleft shipworm	marine - mollusk	Cryptogenic / unknown	Established	Unknown	Unknown	Extirpated	Unknown	Unknown	marine communities	May damage untreated wooden structures; known to occur in Barnegat Bay prior to 1974
<i>Ficopomatus enigmaticus</i>	tubeworm	marine - polychaeta	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	Recorded in Barnegat Bay (1976 and 1990s); potential fouling organism, but not abundant

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<i>Harmothoe imbricata</i>	scaleworm	marine - polychaeta	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Lepidonotus squamatus</i>	scaleworm	marine - polychaeta	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	
<i>Haplosporidium nelsonii</i>	MSX oyster disease	marine - protozoan	Asia	Established	Invasive	Already Present	Widespread	High	Invasive	marine communities	brought to the Delaware Bay with illegal planting of Japanese oysters in 1957; caused extensive mortality of eastern oysters
<i>Perkinsus marinus</i>	Dermo	marine - protozoan	Central America	Established	Invasive	Already Present	Widespread	High	Invasive	marine communities	First documented in the Delaware Bay in the 1950's
<i>Halichondria bowerbanki</i>	sponge	marine - sponge	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism; found on both sides of Atlantic, origin uncertain
<i>Botrylloides violaceus</i>	tunicate	marine - tunicate	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism- Local abundance unknown
<i>Botryllus schlosseri</i>	tunicate	marine - tunicate	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism
<i>Molgula manhattensis</i>	tunicate	marine - tunicate	Cryptogenic / unknown	Established	Unknown	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism; found on both sides of Atlantic, origin uncertain
<i>Styela canopus</i>	tunicate	marine - tunicate	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism
<i>Styela clava</i>	tunicate	marine - tunicate	Asia	Established	Invasive	Already Present	Unknown	Unknown	Unknown	marine communities	Fouling organism; local abundance unknown; Found by McDermott near Cape May 1998, found washing ashore at Cape Henlopen by Fofonoff 2003. Serious pest of aquaculture in some areas.
<i>Aporrectodea limicola</i>	earthworm (Lumbricidae)	terrestrial - annelid	Europe	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	May dramatically alter forest soils leading to soil erosion and changes in nutrient availability; often associated with infestations of invasive plant species.
<i>Dendrobaena octaedra</i>	earthworm (Lumbricidae)	terrestrial - annelid	Europe	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	May dramatically alter forest soils leading to soil erosion and changes in nutrient availability; often associated with infestations of invasive plant species.
<i>Eisenia rosea</i>	earthworm (Lumbricidae)	terrestrial - annelid	Europe	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	May dramatically alter forest soils leading to soil erosion and changes in nutrient availability; often associated with infestations of invasive plant species.
<i>Lumbricus rubellus</i>	earthworm (Lumbricidae)	terrestrial - annelid	Europe	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	May dramatically alter forest soils leading to soil erosion and changes in nutrient availability; often associated with infestations of invasive plant species.
<i>Lumbricus terrestris</i>	earthworm (Lumbricidae)	terrestrial - annelid	Europe	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	May dramatically alter forest soils leading to soil erosion and changes in nutrient availability; often associated with infestations of invasive plant species.
<i>Cygnus olor</i>	mute swan	terrestrial - bird	Eurasia	Established	Invasive	Already Present	Emerging Stage 1	High	Emerging / Potential	freshwater aquatic communities	Population growth rate very high in New Jersey, localized damage observed (e.g., Great Swamp National Wildlife Refuge); often associated with ponds in developed parks; may harass or displace native birds; occasionally aggressive toward humans especially while nesting.

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<i>Carpodacus mexicanus</i>	house finch	terrestrial - bird	North America	Established	Invasive / Native	Already Present	Widespread	Mild	Invasive	terrestrial communities	Primarily associated with human habitations and agricultural fields; populations are large and may compete with native birds for food and nesting sites; introduced to the eastern U.S. in 1940's.
<i>Molothrus ater</i>	brown-headed cowbird	terrestrial - bird	North America	Established	Invasive / Native	Already Present	Widespread	High	Invasive	terrestrial communities	Primarily associated with small forest patches, edges, grasslands, and agricultural operations; parasitize nests of native birds and kill nestlings; range expanded toward New Jersey with forest clearing for agriculture.
<i>Passer domesticus</i>	house sparrow	terrestrial - bird	Europe	Established	Invasive	Already Present	Widespread	Mild	Invasive	terrestrial communities	Primarily associated with human habitations and agricultural fields; may consume wheat, corn, and buds of fruit trees; may harass or displace native birds (e.g., eastern bluebird, tree swallows).
<i>Sturnus vulgaris</i>	European starling	terrestrial - bird	Europe	Established	Invasive	Already Present	Widespread	Moderate	Invasive	terrestrial communities	Primarily associated with human habitations and agricultural operations; may harass or displace native birds (especially other cavity nesting species - e.g., woodpeckers, eastern bluebird).
<i>Alectoris graeca</i>	chukar	terrestrial - bird	Asia	Established	Non-Invasive	Already Present	Emerging Stage 0	Mild	Non - Invasive	N/A	Introduced game species, common on game farms but cannot sustain populations without continued human stocking programs.
<i>Columba livia</i>	rock dove	terrestrial - bird	Europe	Established	Invasive	Already Present	Widespread	Mild	Non - Invasive	N/A	Primarily associated with human habitations and agricultural operations; may be considered a risk to human health; foul structures.
<i>Myiopsitta monachus</i>	monk parakeet	terrestrial - bird	South America	Established	Invasive	Already Present	Emerging Stage 0	Mild	Non - Invasive	N/A	Currently known from a few isolated, but persistent breeding populations associated with urban areas. Current property damage to utility poles, but species is an agricultural pest in its native range.
<i>Phasianus colchicus</i>	ring-necked pheasant	terrestrial - bird	Asia	Established	Non-Invasive	Already Present	Emerging Stage 1	Mild	Non - Invasive	N/A	Introduced game species with marginal ability to maintain populations without continued stocking.
<i>Agrilus planipennis</i>	emerald ash borer	terrestrial - insect	Asia	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	ashes ( <i>Fraxinus</i> spp.), potentially elm ( <i>Ulmus</i> spp.) and Juglandaceae (walnut and hickory families)	USDA risk map shows New Jersey as "moderate risk"; species found in Michigan, Ohio and Ontario; transported to Maryland and Virginia
<i>Agrilus sulcicollis</i>	European oak-boring beetle	terrestrial - insect	Europe	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	Oaks ( <i>Quercus</i> spp.)	First documented in North America in 2005. Found in Michigan and southern Ontario, then discovered in New York in 2009.
<i>Anoplophora glabripennis</i>	Asian longhorned beetle	terrestrial - insect	Asia	Established	Invasive	Already Present	Emerging Stage 1	High	Emerging / Potential	maples ( <i>Acer</i> spp.), poplars ( <i>Populus</i> spp.), birches ( <i>Betula</i> spp.), elms ( <i>Ulmus</i> spp.)	USDA risk map shows New Jersey as largely non-susceptible, but beetles show preference for sugar maple (these forest types in NJ include globally rare limestone forest communities); Eradication programs in urban areas - New York City, Jersey City, Carteret, Woodbridge, and Rahway are ongoing. NYC's program is ongoing as is the survey program in Carteret, Woodbridge and Rahway. ALB is considered eradicated in Jersey City and Hoboken.
<i>Aradus cinnamomeus</i>	pine flat bug	terrestrial - insect	Eurasia	Not Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	Broad host range - hardwoods and conifers	Serious pest in its native range, entry potential high

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<i>Lymantria dispar</i>	Asian gypsy moth	terrestrial - insect	Asia	Not Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	Broad host range - 500 species in native range	Repeatedly found at ports in the Western US; Worse than European variety because females can disperse great distances.
<i>Lymantria monacha</i>	Eurasian nun moth	terrestrial - insect	Eurasia	Not Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	Broad host range - hardwoods and conifers	Serious pest in its native range, entry potential high.
<i>Pyrrhalta viburni</i>	Viburnum leaf beetle	terrestrial - insect	Eurasia	Established	Invasive	Already Present	Emerging Stage 1	High	Emerging / Potential	Various species of native <i>Viburnum</i>	Viburnum are substantial components of forests and shrublands and provide high-quality fruit utilized by birds. Species has spread throughout NY state over the last 10 years. Several locations in New Jersey were confirmed in 2009. Cranberry viburnum and arrowwood viburnum may be the most susceptible species.
<i>Scolytus intricatus</i>	European oak bark beetle	terrestrial - insect	Europe	Not Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	Oaks ( <i>Quercus</i> spp.), chestnuts ( <i>Castanea</i> spp.), beech ( <i>Fagus</i> spp.), birch ( <i>Betula</i> spp.), poplars ( <i>Populus</i> spp.), willows ( <i>Salix</i> spp.), elms ( <i>Ulmus</i> spp.)	Serious pest in its native range, entry potential high. Carries pathogenic fungi. Insect would probably have its greatest impact on eastern hardwood dominated forests.
<i>Sirex noctilio</i>	Sirex woodwasp	terrestrial - insect	Eurasia	Established	Invasive	High	Emerging Stage 0	Moderate	Emerging / Potential	Pines ( <i>Pinus</i> spp.)	Discovered in New York in 2004. Primarily a threat to pine plantations. <i>Sirex noctilio</i> (insect) with <i>Amylostereum areolatum</i> (pathogen)
<i>Solenopsis invicta</i>	red imported fire ant	terrestrial - insect	South America	Established	Invasive	Moderate	Emerging Stage 0	High	Emerging / Potential	terrestrial communities	Typically a southern distribution, but had overwintered in Delaware before being eradicated.
<i>Tetropium fuscum</i>	brown longhorned spruce beetle	terrestrial - insect	Eurasia	Established	Invasive	Mild	Emerging Stage 0	Moderate	Emerging / Potential	Red spruce ( <i>Picea rubens</i> ), white spruce ( <i>Picea glauca</i> ), potentially pines ( <i>Pinus</i> spp.), fir ( <i>Abies</i> spp.), larch ( <i>Larix</i> spp.)	Found in Nova Scotia, primarily a risk to conifer forests.
<i>Tomiscus piniperda</i>	common pine shoot beetle	terrestrial - insect	Europe	Established	Invasive	Already Present	Emerging Stage 2	Moderate	Emerging / Potential	Scotch pine ( <i>Pinus sylvestris</i> ) and other Pines ( <i>Pinus</i> spp.)	Discovered in North America in 1992 (Ohio) and now known from 12 states; May cause damage to Christmas tree farms; may cause severe decline in the health of the trees; APHIS-PPQ limits its spread beyond the infested area through quarantine, an active regulatory program and control of infestation impacts.
<i>Xylosandrus crassiusculus</i>	ambrosia beetle	terrestrial - insect	Asia	Established	Invasive	Mild	Emerging Stage 0	Moderate	Emerging / Potential	Fruit trees and nursery stock, so far	Found in South Carolina.
<i>Xylosandrus mutilatus</i>	ambrosia beetle	terrestrial - insect	Asia	Established	Invasive	Moderate	Emerging Stage 0	Moderate	Emerging / Potential	Broad host range - hardwood trees and shrubs	Found in Mississippi.
<i>Adelges tsugae</i>	hemlock woolly adelgid	terrestrial - insect	Asia	Established	Invasive	Already Present	Widespread	High	Invasive	Eastern hemlock ( <i>Tsuga canadensis</i> ), Carolina hemlock ( <i>Tsuga caroliniana</i> )	Slightly more than half of NJ hemlocks have been, many are wounded, but there are places where trees are still healthy (URI is investigating natural resistance). There are 3 biocontrol agents, <i>Sasajiscymnus tsugae</i> , <i>Scymnus sinuanodulus</i> and <i>Laricobius nigrinus</i> . <i>L. nigrinus</i> has been recovered from all release sites. There is new data from UTK showing that <i>S. tsugae</i> may take longer to show up than we expected. Biocontrol agents showing limited efficacy thus far.
<i>Aedes albopictus</i>	Asian tiger mosquito	terrestrial - insect	Asia	Established	Invasive	Already Present	Widespread	Moderate	Invasive	freshwater aquatic communities	First discovered in 1985 (Texas), First NJ record in Monmouth County (1995); unknown ecological impacts; may transmit human diseases.

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<i>Lymtria dispar</i>	European gypsy moth	terrestrial - insect	Europe	Established	Invasive	Already Present	Widespread	Moderate	Invasive	Primarily Oak species ( <i>Quercus</i> spp.)	Periodic severe defoliations occur, perennial low level infestations. Last serious defoliations occurred over 20 years ago. Species is currently controlled by a native pathogen and aerial application of Bt.
<i>Anoplophora chinensis</i>	citrus longhorned beetle	terrestrial - insect	Asia	Eradicated	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	maple ( <i>Acer</i> spp.), oak ( <i>Quercus</i> spp.), willow ( <i>Salix</i> spp.), poplar ( <i>Populus</i> spp.), apple ( <i>Malus</i> spp.)	
<i>Coleophora laricella</i>	larch casebearer	terrestrial - insect	Europe	Established	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	American larch ( <i>Larix laricina</i> )	Larch found in small, but globally rare communities in NJ (spread rate would be low?); introduced parasitoids released
<i>Hylurgus ligniperda</i>	red-haired pine bark beetle	terrestrial - insect	Europe	Established	Unknown	Unknown	Emerging Stage 0	Mild	Non - Invasive	Conifers	Found in Christmas tree plantation in Rochester, NY (and two other sites in the county)
<i>Ips typographus</i>	European spruce beetle	terrestrial - insect	Europe	Not Established	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	Spruce ( <i>Picea</i> spp.)	Repeatedly found at ports, entry potential high. Carries extremely pathogenic fungi; naturally occurring spruce uncommon in NJ, but found in rare plant communities and could impact nursery industry. Ornamental spruce is very common and may be adversely affected.
<i>Orthotomicus erosus</i>	Mediterranean pine engraver beetle	terrestrial - insect	Europe	Not Established	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	Pine ( <i>Pinus</i> spp.), douglas-fir ( <i>Pseudotsuga menziesii</i> ), spruce ( <i>Picea</i> spp.), fir ( <i>Abies</i> spp.)	Repeatedly found at ports, entry potential high.
<i>Scolytus schevyrewi</i>	banded elm bark beetle	terrestrial - insect	Asia	Established	Unknown	Moderate	Emerging Stage 0	Mild	Non - Invasive	Elm ( <i>Ulmus</i> spp.), Cherries ( <i>Prunus</i> spp.)	Currently found from California to Michigan.
<i>Myocastor coypus</i>	nutria	terrestrial - mammal	South America	Established	Invasive	Already Present	Emerging Stage 0	High	Emerging / Potential	freshwater aquatic communities	Limited distribution and abundance.
<i>Sus scrofa</i>	feral hog	terrestrial - mammal	Escaped livestock	Established	Invasive	Already Present	Emerging Stage 1	High	Emerging / Potential	terrestrial communities	Large population (> 100 individuals) known from the White Oak Branch Wildlife Management Area and neighboring state-owned golf course in Gloucester County (several other observations of feral hogs have been reported in Ocean and Sussex Counties). Species is subject to a current eradication program. Species may carry pseudo-rabies that can infect domestic pigs. Feral hogs are known to produce significant impacts on natural systems in other parts of the country.
<i>Felis domesticus</i>	feral cats	terrestrial - mammal	Africa	Established	Invasive	Already Present	Widespread	High	Invasive	terrestrial communities	Primarily associated with human habitations; estimated to result in the death of nearly 240 million birds per year in the U.S.
<i>Lepus californicus</i>	black-tailed jackrabbit	terrestrial - mammal	North America	Established	Non-invasive / Native	Already Present	Emerging Stage 0	Mild	Non - Invasive	terrestrial communities	Introduced game species.
<i>Lepus capensis</i>	European hare	terrestrial - mammal	Europe	Established	Non-Invasive	Already Present	Emerging Stage 0	Mild	Non - Invasive	terrestrial communities	Introduced game species.
<i>Lepus townsendii</i>	white-tailed jackrabbit	terrestrial - mammal	North America	Established	Non-invasive / Native	Already Present	Emerging Stage 0	Mild	Non - Invasive	terrestrial communities	Introduced game species.
<i>Mus musculus</i>	house mouse	terrestrial - mammal	Eurasia	Established	Non-Invasive	Already Present	Widespread	Mild	Non - Invasive	terrestrial communities	Primarily associated with human habitations, may be considered an agricultural problem and risk to human health; may compete with native small mammals.
<i>Rattus norvegicus</i>	brown rat	terrestrial - mammal	Europe	Established	Non-Invasive	Already Present	Widespread	Mild	Non - Invasive	terrestrial communities	Primarily associated with human habitations, may be considered an agricultural problem and risk to human health.

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<i>Rattus rattus</i>	black rat	terrestrial - mammal	Asia	Established	Non-Invasive	Already Present	Widespread	Mild	Non - Invasive	terrestrial communities	Primarily associated with human habitations, may be considered an agricultural problem and risk to human health.
<i>Cronartium ribicola</i>	white pine blister rust	terrestrial - pathogen	Eurasia	Established	Invasive	Already Present	Emerging Stage 2	Moderate	Emerging / Potential	Five needle pines (e.g., white pine - <i>Pinus strobus</i> )	NJDA considers species to be dangerous plant disease and is a nuisance. NJDA restricts importation and movement of infected white pine trees and currants ( <i>Ribes</i> sp. and <i>Grossularia</i> sp.). Relatively small pockets of naturally occurring white pine in New Jersey, but some extensive stands occur along the Delaware River in Warren & Sussex Counties. Invasive could have large impacts to nursery industry.
<i>Ophiostoma novo-ulmi</i>	Dutch elm disease 2	terrestrial - pathogen	Asia	Established	Unknown	Mild	Emerging Stage 0	High	Emerging / Potential	Elm ( <i>Ulmus</i> spp.)	Potentially more damaging than <i>O. ulmi</i> .
<i>Phytophthora cinnamomi</i>	Phytophthora root rot	terrestrial - pathogen	Asia	Established	Invasive	High	Emerging Stage 0	High	Emerging / Potential	American chestnut ( <i>Castanea dentata</i> ), Allegheny chinkapin ( <i>Castanea pumila</i> )	Potential threat to oaks, which are attacked by this pathogen in Europe. Species currently found below 40 degrees latitude, but may expand range northward due to climate change.
<i>Phytophthora ramorum</i>	sudden oak death syndrome	terrestrial - pathogen	Asia?	Established	Invasive	High	Emerging Stage 0	Moderate	Emerging / Potential	red oak group ( <i>Quercus</i> spp.), mountain laurel ( <i>Kalmia angustifolia</i> ), great bay ( <i>Rhododendron maximum</i> )	Found in nursery stock in Long Island and Cape May; risk maps show New Jersey as "moderate risk", however, there is a margin of error in the risk designation for our area and this pest has huge destructive potential. 2.1 million plants from contaminated nurseries were shipped to 21 states since 2003. 1.5 million of the potentially infected plants were not recovered (infected stock installed as landscape plantings). Searches were conducted near affected nurseries and disease did not establish in wild.
<i>Xylella fastidiosa</i>	bacterial leaf scorch	terrestrial - pathogen	North America?	Established	Invasive / Native	Already Present	Emerging Stage 2	Moderate	Emerging / Potential	Red oak group ( <i>Quercus</i> spp.)	Currently, BLS is associated with street trees and other ornamental plantings (40% of tested trees were infested across the state), but spread into more natural settings appears to be occurring (J. Arsenault, personal communication).
<i>Cryphonectria parasitica</i>	chestnut blight (bark disease)	terrestrial - pathogen	Asia	Established	Invasive	Already Present	Widespread	High	Invasive	American chestnut ( <i>Castanea dentata</i> ), Allegheny chinkapin ( <i>Castanea pumila</i> )	Chestnuts have been reduced to short-lived sprouts. There are efforts to produce plants with resistance for future reintroduction.
<i>Discula destructiva</i>	dogwood anthracnose disease	terrestrial - pathogen	Asia?	Established	Invasive	Already Present	Widespread	Moderate	Invasive	Flowering dogwood ( <i>Cornus florida</i> )	Resistance found in non-native ornamental ( <i>Cornus kousa</i> ), but is rare or absent in the native <i>C. florida</i> ; acid deposition increases susceptibility, more prevalent in southeast U.S.
<i>Nectria coccinea</i> var. <i>faginata</i>	beech bark disease	terrestrial - pathogen	Europe	Established	Invasive	Already Present	Widespread	Moderate	Invasive	American beech ( <i>Fagus grandifolia</i> )	There is mortality in North Jersey (Stokes State Forest) and isolated dead trees from Mercer County and North. <i>Nectria coccinea</i> var. <i>faginata</i> (pathogen) with <i>Cryptococcus fagisuga</i> (insect).
<i>Ophiostoma ulmi</i>	Dutch elm disease	terrestrial - pathogen	Asia	Established	Invasive	Already Present	Widespread	Moderate	Invasive	American elm ( <i>Ulmus americana</i> )	Mostly street trees infected, but also impacts forests, slippery elm ( <i>Ulmus rubra</i> ) has some resistance. <i>Ophiostoma ulmi</i> (pathogen) vectored by native elm bark beetle ( <i>Hylurgopinus rufipes</i> ) and the European bark beetle ( <i>Scolytus multistriatus</i> ).
<i>Sirococcus clavignenti-juglandacearum</i>	butternut canker	terrestrial - pathogen	Asia	Established	Invasive	Already Present	Widespread	Moderate	Invasive	Butternut ( <i>Juglans cinerea</i> )	Butternut relatively uncommon in NJ.

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<i>Dryocosmus kuriphilus</i>	chestnut gall wasp	terrestrial - pathogen	Asia	Established	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	American chestnut ( <i>Castanea dentata</i> )	Found in Georgia, chinquapins are resistant
<i>Lachnellula willkommii</i>	European larch canker	terrestrial - pathogen	Europe	Established	Unknown	Mild	Emerging Stage 0	Mild	Non - Invasive	American larch ( <i>Larix laricina</i> )	Reported infections to our north, larch found in small, but globally rare communities in NJ (spread rate would be low?).