

NEW YORK

TERRESTRIAL VERTEBRATE INVASIVENESS RANKING FORM

Scientific name: Phasianus colchicus and Phasianus colchicus strachi
 Common names: Ring-necked Pheasant (P. colchicus) and Sichuan Pheasant (P. colchicus strachi)
 Native distribution: Central and eastern Asia, China, and Japan
 Date assessed: 12/21/2012
 Assessors: E. Schwartzberg
 Reviewers: _____
 Date Approved: _____ Form version date: 7 July 2009

New York Invasiveness Rank: Moderate (Relative Maximum Score 50.00-69.99)

Distribution and Invasiveness Rank (Obtain from PRISM invasiveness ranking form)		
Status of this species in each PRISM:	Current Distribution	PRISM Invasiveness Rank
1	Adirondack Park Invasive Program	Not Assessed
2	Capital/Mohawk	Not Assessed
3	Catskill Regional Invasive Species Partnership	Not Assessed
4	Finger Lakes	Not Assessed
5	Long Island Invasive Species Management Area	Not Assessed
6	Lower Hudson	Not Assessed
7	Saint Lawrence/Eastern Lake Ontario	Not Assessed
8	Western New York	Not Assessed

Invasiveness Ranking Summary (see details under appropriate sub-section)		Total (Total Answered*) Possible	Total
1	Ecological impact	30 (30)	3
2	Biological characteristic and dispersal ability	30 (30)	21
3	Ecological amplitude and distribution	30 (30)	27
4	Difficulty of control	10 (10)	0
	Outcome score	100 (100) ^b	51 ^a
	Relative maximum score †		51.00
	New York Invasiveness Rank §	Moderate (Relative Maximum Score 50.00-69.99)	

* For questions answered “unknown” do not include point value in “Total Answered Points Possible.” If “Total Answered Points Possible” is less than 70.00 points, then the overall invasive rank should be listed as “Unknown.”

† Calculated as 100(a/b) to two decimal places.

§ Very High >80.00; High 70.00–80.00; Moderate 50.00–69.99; Low 40.00–49.99; Insignificant <40.00

A. DISTRIBUTION (KNOWN/POTENTIAL): Summarized from individual PRISM forms

A1.1. Has this species been documented in NY? (reliable source; voucher not required)		
<input checked="" type="checkbox"/>	Yes – continue to A1.2	
<input type="checkbox"/>	No – continue to A2.1; Yes <input type="checkbox"/> NA; Yes <input type="checkbox"/> USA	
A1.2. In which PRISMs is it known (see inset map)?		
<input checked="" type="checkbox"/>	Adirondack Park Invasive Program	
<input checked="" type="checkbox"/>	Capital/Mohawk	
<input checked="" type="checkbox"/>	Catskill Regional Invasive Species Partnership	
<input checked="" type="checkbox"/>	Finger Lakes	
<input checked="" type="checkbox"/>	Long Island Invasive Species Management Area	
<input checked="" type="checkbox"/>	Lower Hudson	
<input checked="" type="checkbox"/>	Saint Lawrence/Eastern Lake Ontario	

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<input checked="" type="checkbox"/>	Western New York
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Documentation:

Sources of information:

NYS Breeding Bird Atlas, 2005.

A2.0. Is this species listed on the Federal Injurious Fish and Wildlife list?

Yes – the species will automatically be listed as Prohibited, no further assessment required

No – continue to A2.1

A2.1. What is the likelihood that this species will occur and persist given the climate in the following PRISMs? (obtain from PRISM invasiveness ranking form and/ or Climatch score)

- Very Likely Adirondack Park Invasive Program
- Very Likely Capital/Mohawk
- Very Likely Catskill Regional Invasive Species Partnership
- Very Likely Finger Lakes
- Very Likely Long Island Invasive Species Management Area
- Very Likely Lower Hudson
- Very Likely Saint Lawrence/Eastern Lake Ontario
- Very Likely Western New York

Documentation:

Sources of information (e.g.: distribution models, literature, expert opinions):

NYS Breeding Bird Atlas, 2005.

If the species does not occur and is not likely to survive and reproduce within any of the PRISMs, then stop here as there is no need to assess the species.

A2.2. What is the current distribution of the species in each PRISM? (obtain rank from PRISM invasiveness ranking forms)

	Distribution
Adirondack Park Invasive Program	Not Assessed
Capital/Mohawk	Not Assessed
Catskill Regional Invasive Species Partnership	Not Assessed
Finger Lakes	Not Assessed
Long Island Invasive Species Management Area	Not Assessed
Lower Hudson	Not Assessed
Saint Lawrence/Eastern Lake Ontario	Not Assessed
Western New York	Not Assessed

Documentation:

Sources of information:

A2.3. Describe the potential or known suitable habitats within New York. Natural habitats include all habitats not under active human management. Managed habitats are indicated with an asterisk.

- | Aquatic Habitats | Wetland Habitats | Upland Habitats |
|---|---|---|
| <input type="checkbox"/> Marine | <input type="checkbox"/> Salt/brackish marshes | <input checked="" type="checkbox"/> Cultivated* |
| <input type="checkbox"/> Salt/ brackish waters | <input type="checkbox"/> Freshwater marshes | <input checked="" type="checkbox"/> Grasslands/old fields |
| <input type="checkbox"/> Freshwater tidal | <input type="checkbox"/> Peatlands | <input checked="" type="checkbox"/> Shrublands |
| <input type="checkbox"/> Rivers/streams | <input type="checkbox"/> Shrub swamps | <input checked="" type="checkbox"/> Forests/woodlands |
| <input type="checkbox"/> Natural lakes and ponds | <input type="checkbox"/> Forested wetlands/riparian | <input type="checkbox"/> Alpine |
| <input type="checkbox"/> Vernal pools | <input type="checkbox"/> Ditches* | <input type="checkbox"/> Roadsides* |
| <input type="checkbox"/> Reservoirs/impoundments* | <input type="checkbox"/> Beaches/or coastal dunes | <input type="checkbox"/> Cultural* |

Other potential or known suitable habitats within New York:

Wet grasslands and Agricultural lands, specifically corn, sorghum, oats, wheat, barley and other small grains.

Documentation:

Sources of information:

Tesky, 1995; USDA, 1999.

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B. INVASIVENESS RANKING

1. ECOLOGICAL IMPACT

1.1. Impact on Natural Ecosystem Processes (e.g., water cycle, energy cycle, and mineral cycle)

- A. No perceivable impact on ecosystem processes based on research studies, or the absence of impact information if a species is widespread (>10 occurrences in minimally managed areas), has been well-studied (>10 reports/publications), and has been present in the northeast for >100 years 0
- B. Influences ecosystem processes to a minor degree, has a perceivable but mild influence 3
- C. Significant alteration of ecosystem processes 7
- D. Major, possibly irreversible, alteration or disruption of ecosystem processes 10
- U. Unknown

Score

Documentation:

Identify ecosystem processes impacted (or if applicable, justify choosing answer A in the absence of impact information)

Advanced Google Scholar search on species with key words "nutrient, cycling, energy, fluxes, production" yeilded no reports of effecting ecosystem processes. Web of Science search for "ts=Phasianus colchicus and ts=(nutrient or cycling or energy or fluxes or production)" yeilded no pertinent results. 516 peer reviewd papers listed for Phasianus colchicus since 1965. Present in U.S. since prior to 1800.

Sources of information:
USDA, 1999.

1.2. Impact on Natural Habitat

- A. No perceived impact; causes no apparent change in native habitat 0
- B. Influences natural habitat (e.g., reduces the stem density and height of one or more native species in core habitat) 3
- C. Significantly alters natural habitat (e.g., produces a notable reduction in the population size of one or more native species in core habitat) 7
- D. Causes major alteration in natural habitat (e.g., results in the extirpation of one or more native species, or changes the community composition in core habitat towards species exotic to the natural community) 10
- U. Unknown

Score

Documentation:

Identify type of impact or alteration:

Natural habitat managed for Ring-necked Pheasant.

Sources of information:
USDA, 1999.

1.3. Impact on other species or species groups, including cumulative impact of this species on other organisms in the community it invades (e.g., interferes with native predator/ prey dynamics; hybridizes with a native species; hosts a non-native disease which impacts a native species)

- A. Negligible perceived impact 0
- B. Minor impact (e.g. 1 species, <20% population decline) 3
- C. Moderate impact (e.g. 2-3 species and/ or 20-29% population decline of any 1 species) 7
- D. Severe impact on other species or species groups (e.g. >3 species and/ or ≥30% population decline of any 1 species) 10
- U. Unknown

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Score

Documentation:

Identify type of impact or alteration:

Parasite of the ring-necked pheasant may have contributed to decline in wild grey partridge populations.

Sources of information:

Tompkins et al., 1999; Tompkins et al., 2000.

Total Possible
Section One Total

2. BIOLOGICAL CHARACTERISTICS AND DISPERSAL ABILITY

2.1. Mode and rate of reproduction

- A. No reproduction (e.g. sterile with no sexual or asexual reproduction) 0
- B. Limited reproduction (e.g. intrinsic rate of increase <10%/ year) 1
- C. Moderate reproduction (e.g. intrinsic rate of increase between 10-30%/ year) 2
- D. Abundant reproduction (e.g. intrinsic rate of increase >30%/ year) 4
- U. Unknown

Score

Documentation:

Describe key reproductive characteristics:

Lay 6-15 eggs and can reproduce the spring after they hatch.

Sources of information:

Tesky, 1995.

2.2. Migratory behavior

- A. Always migratory in its native range 0
- B. Non-migratory or facultative migrant in its native range 2
- U. Unknown

Score

Documentation:

Describe migratory behavior:

Non-migratory

Sources of information:

USDA, 1999.

2.3. Biological potential for colonization by long-distance dispersal/ movement.

- A. No long-distance dispersal/ movement mechanisms 0
- A. Adaptations exist for long-distance dispersal, but studies report that most individuals (90%) establish territories within 10 miles of parent or within a distance twice the home range of the parent, and tend not to cross major barriers such as rivers and major roads 1
- B. Adaptations exist for long-distance dispersal, movement and evidence that offspring often disperse greater than 10 miles of parent or greater than twice the home range of parent and will cross major barriers such as river and major roads 2
- U. Unknown

Score

Documentation:

Identify dispersal mechanisms:

Flight of up to 1.9 km from placement within a managemnt area documented.

Sources of information:

Wilson et al., 1992.

2.4. Practical potential to be spread by human activities, both directly and indirectly (possible vectors include: commercial sales, deliberate stocking, translocation,

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rehabilitation, pest control industry, agricultural escapes, pet abandonment and release, etc.)

- A. Does not occur 0
- B. Low (human dispersal to new areas occurs almost exclusively by direct means and is infrequent or inefficient) 1
- C. Moderate (human dispersal to new areas occurs by direct and indirect means to a moderate extent) 2
- D. High (opportunities for human dispersal to new areas by direct and indirect means are numerous, frequent, and successful) 4
- U. Unknown

Score 4

Documentation:
 Identify dispersal mechanisms:
 Stocked and managed extensively as game
 Sources of information:
 NYSDEC, 2010.

2.5. Non-living chemical and physical characteristics that increase competitive advantage (e.g., tolerance to various extremes, pH, temperature, fill vacant niche, charismatic species)

- A. Possesses no characteristics that increase competitive advantage 0
- B. Possesses one characteristic that increases competitive advantage 4
- C. Possesses two or more characteristics that increase competitive advantage 8
- U. Unknown

Score 4

Documentation:
 Evidence of competitive ability:
 Charismatic species. Managed to increase population.
 Sources of information:
 NYSDEC, 2010.

2.6. Biological characteristics that increase competitive advantage (e.g., high fecundity, generalist, highly evolved defense mechanisms, behavioral adaptations)

- A. Possesses no characteristics that increase competitive advantage 0
- B. Possesses one characteristic that increases competitive advantage 4
- C. Possesses two or more characteristics that increase competitive advantage 8
- U. Unknown

Score 4

Documentation:
 Evidence of competitive ability:
 May have advantage over some other birds if general habitat is lost and competition of nesting sites increases.
 Sources of information:
 Hagen et al., 2007.

2.7. Other species in the family and/ or genus invasive in New York or elsewhere?

- A. No 0
- B. Yes 2
- U. Unknown

Score 2

Documentation:
 Identify species:

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Large Family containing 38 genera. Family contains several invasive birds, including the common chicken, Asian partridges, and chukars.

Total Possible	30
Section Two Total	21

3. ECOLOGICAL AMPLITUDE AND DISTRIBUTION

3.1. Current introduced distribution of established populations in the northern latitudes of USA and southern latitude of Canada (e.g., between 35 and 55 degrees)

- | | |
|--|---|
| A. Not known from the northern US or southern Canada | 0 |
| B. Established as a non-native in 1 northern USA state and/or southern Canadian province | 1 |
| C. Established as a non-native in 2 or 3 northern USA states and/or southern Canadian provinces | 2 |
| D. Established as a non-native in 4 or more northern USA states and/or southern Canadian provinces, and/or categorized as a problem species (e.g., "Invasive") in 1 northern state or southern Canadian province | 3 |
| U. Unknown | |

Score 3

Documentation:

Identify states and provinces:

Established throughout northern United States

Sources of information:

- See known introduced range at www.usda.gov, and update with information from states and Canadian provinces.

eBird, 2012.

3.2. Current introduced distribution of established populations of the species in natural areas in the eight New York State PRISMs (Partnerships for Regional Invasive Species Management)

- | | |
|--------------------------------------|---|
| A. Established in none of the PRISMs | 0 |
| B. Established in 1 PRISM | 1 |
| C. Established in 2 or 3 PRISMs | 3 |
| D. Established in 4 or more PRISMs | 5 |
| U. Unknown | |

Score 5

Documentation:

Describe distribution:

Throughout New York State, including AIPIPP, although absent from east of the Adirondack Park.

Sources of information:

eBird, 2012.

3.3. Number of known, or potential (each individual possessed by a vendor or consumer is a potential release), individual releases and/ or release events (propagule pressure)

- | | |
|---|---|
| A. None | 0 |
| B. Few releases (e.g., <10 annually) | 2 |
| C. Regular, small scale releases (e.g., 10-99 annually) | 4 |
| D. Multiple, large scale (e.g., ≥100 annually) | 6 |
| U. Unknown | |

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Score

Documentation:
Describe known or potential releases:
Managed to increase population.
Sources of information:
NYSDEC, 2010.

3.4. Current introduced population density in northern USA and/ or southern Canada.

- A. No known populations established 0
- B. Low to moderate population density (e.g., $\leq 1/4$ or $<$ to $1/2$ native population density) 1
- C. High or irruptive population density (e.g., $\geq 1/2$ native population density) 2
- U. Unknown

Score

Documentation:
Describe population density:
Population density less than found in Western U.S.
Sources of information:
eBird, 2012.

3.5. Number of habitats the species may invade

- A. Not known to invade any natural habitats 0
- B. Known to occur in 2/ 3 habitats, with at least 1/ 2 natural habitat(s) 2
- C. Known to occur in 4 or more habitats, with at least 3 natural habitats 3
- U. Unknown

Score

Documentation:
Identify type of habitats where it occurs and degree/type of impacts:
Open fields, cultivated or grasslands. Hedge rows and ditches not frequently used. May use wetland habitat in winter.
Sources of information:
Cornell University DNR, 1981.

3.6. Role of anthropogenic (human related) features in establishment (e.g. buildings, roads, agricultural fields, etc)

- A. Requires anthropogenic disturbances to establish 0
- B. May occasionally establish in undisturbed areas but can readily establish in areas with natural or anthropogenic disturbances 2
- C. Can establish independent of any known natural or anthropogenic disturbances 3
- U. Unknown

Score

Documentation:
Identify anthropogenic features:
Land cleared and maintained for agriculture.
Sources of information:
Cornell University DNR, 1981.

3.7. Climate in native range (e.g., med. to high, ≥ 5 , Climatch score; within 35 to 55 degree latitude; etc.)

- A. Native range does not include climates similar to New York 0
- B. Native range possibly includes climates similar to portions of New York 4
- C. Native range includes climates similar to those in New York 8

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U. Unknown

Score

Documentation:

Describe known climate similarities: Well established in New York State.

Sources of information:

eBird, 2012.

Total Possible
Section Three Total

4. DIFFICULTY OF CONTROL

4.1. Re-establishment potential, nearby propagule source, known vectors of re-introduction in vicinity (e.g. biological supplies, pets, game farms, zoos, shooting preserves, connecting corridors, mechanized transportation)

- A. No known vectors/ propagule source for re-establishment following removal 0
- B. Possible re-establishment from 1 vector/ propagule source following removal 1
- C. Likely to re-establish from 2-3 vectors/ propagule sources following removal 2
- D. Strong potential for re-establishment from 4 or more vectors/ propagule sources following removal 3
- U. Unknown

Score

Documentation:

Identify source/ vectors:

Game farms and shooting preserves, habitat incentive programs.

Sources of information:

NYSDEC, 2012.

4.2. Status of monitoring and/ or management protocols for species

- A. Standardized protocols appropriate to New York State are available 0
- B. Scientific protocols are available from other countries, regions or states 1
- C. No known protocols exist 2
- U. Unknown

Score

Documentation:

Describe protocols:

Managed to increase population.

Sources of information:

NYSDEC, 2010.

4.3. Status of monitoring and/ or management resources (e.g. tools, manpower, travel, traps, lures, ID keys, taxonomic specialists, etc.)

- A. Established resources are available including commercial and/ or research tools 0
- B. Monitoring resources may be available (e.g. partnerships, NGOs, etc) 1
- C. No known monitoring resources are available 2
- U. Unknown

Score

Documentation:

Describe resources:

Managed to increase population.

Sources of information:

NYSDEC, 2010.

4.4. Level of effort required.

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- A. Management is not required (e.g., species does not persist without repeated human mediated action) 0
- B. Management is relatively easy and inexpensive; invasive species can be maintained at low abundance causing little or no ecological harm (e.g., 10 or fewer person-hours of manual effort can eradicate a local population in 1 year) 1
- C. Management requires a major short-term investment, and is logistically and politically challenging; eradication is difficult, but possible (e.g., 100 or fewer person-hours/year of manual effort, or up to 10 person-hours/ year for 2-5 years to suppress a local population) 2
- D. Management requires a major investment and is logistically and politically difficult; eradication may be impossible (e.g., more than 100 person-hours/ year of manual effort, or more than 10 person hours/year for more than 5 years to suppress a local population) 3
- U. Unknown

Score

0

Documentation:

Identify types of control methods and time required:

Managed to increase population.

Sources of information:

NYSDEC, 2010.

Total Possible

10

Section Four Total

0

Total for 4 sections Possible

100

Total for 4 sections

51

C. STATUS OF GENETIC VARIANTS AND HYBRIDS:

At the present time there is no protocol or criteria for assessing the invasiveness of genetic variants independent of the species to which they belong. Such a protocol is needed, and individuals with the appropriate expertise should address this issue in the future. Such a protocol will likely require data on cultivar fertility and identification in both experimental and natural settings.

Genetic variants of the species known to exist: Known to hybridize with *Phasianus versicolor* in Japan.

Hybrids (crosses between different parent species) should be assessed individually and separately from the parent species wherever taxonomically possible, since their invasiveness may differ from that of the parent species. An exception should be made if the taxonomy of the species and hybrids are uncertain, and species and hybrids can not be clearly distinguished in the field. In such cases it is not feasible to distinguish species and hybrids, and they can only be assessed as a single unit.

Hybrids of uncertain origin known to exist:

References for species assessment:

eBird: An online database of bird distribution and abundance. 2012. <<http://www.ebird.org>>; [Accessed on December 20, 2012].

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- New York State Department of Environmental Conservation (NYSDEC). Division of Fish, Wildlife and Marine Resources. Bureau of Wildlife. 2010. Management Plan for Ring-necked Pheasant. <http://www.dec.ny.gov/docs/wildlife_pdf/pheasantplan10.pdf>; [Accessed on December 20, 2012].
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Citation: The New York Terrestrial Vertebrate Invasiveness Ranking Form is an adaptation of the New York Plant Invasiveness Ranking Form. The original plant form may be cited as: Jordan, M.J., G. Moore and T.W. Weldy. 2008. Invasiveness ranking system for non-native plants of New York. Unpublished. The Nature Conservancy, Cold Spring Harbor, NY; Brooklyn Botanic Garden, Brooklyn, NY; The Nature Conservancy, Albany, NY.

Acknowledgments: The New York Terrestrial Vertebrate Invasiveness Ranking Form incorporates components and approaches used in several other systems, cited in the references below. Valuable contributions by members of the Invasive Species Council and Invasive Species Advisory Committee were incorporated in revisions of this form. Members of the Office of

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Invasive Species Coordination's Four-tier Team, who coordinated the effort, included representatives of the New York State Department of Environmental Conservation* (Division of Fish, Wildlife and Marine Resources, Division of Lands and Forests, Division of Water); The Nature Conservancy; New York Natural Heritage Program; New York Sea Grant; Lake Champlain Sea Grant*; New York State Department of Agriculture and Markets (Division of Plant Industry and Division of Animal Industry); Cornell University (Department of Natural Resources and Department of Entomology); New York State Nursery and Landscape Association; New York Farm Bureau; Brooklyn Botanic Garden; Pet Industry Joint Advisory Council*; Trout Unlimited; United States Department of Agriculture Animal and Plant Health Inspection Service* (Plant Protection and Quarantine and Wildlife Services); New York State Department of Transportation; State University of New York at Albany and Plattsburgh; and Cary Institute of Ecosystem Studies. Those organizations listed with an asterisk comprised the Terrestrial Vertebrate Working Group.

References for ranking form:

Bomford, M. 2008. Risk Assessment Models for Establishment of Exotic Vertebrates in Australia and New Zealand. Invasive Animals Cooperative Research Centre, Canberra.

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Natural Resources Board Order No. IS-34-06, Invasive Species Identification, Classification and Control. 2008. Wisconsin Department of Natural Resources, Madison Wisconsin.

Preventing Biological Invasions: Best Practices in Pre-Import Risk Screening for Species of Live Animals in International Trade. 2008. Convention of Biological Diversity, Global Invasive Species Programme and Invasive Species Specialist Group of IUCN's Species Survival Commission. University of Notre Dame, Indiana.

Standard Methodology to Assess the Risks From Non-native Species Considered Possible Problems to the Environment. 2005. DEFRA.

Witmer, G., W. Pitt and K. Fagerstone. 2007. Managing Vertebrate Invasive Species. USDA National Wildlife Research Center Symposia, Fort Collins, Colorado.