

# NEW YORK NON-NATIVE PLANT INVASIVENESS RANKING FORM

Scientific name: Vicia cracca L. s.l. (includes: Vicia cracca L. subsp. cracca, V. cracca subsp tenuifolia (Roth) Gaudin, V. villosa subsp pseudocracca (Bertol.) Ball, V. villosa var. varia (Host) Corb., V. villosa Roth var. villosa)  
 USDA Plants Code: VICRC, VICRT, VIVIP, VIVIV, VIVIV8

Common names: Bird vetch, cow vetch, winter vetch, bramble vetch, tufted vetch, shaggy vetch

Native distribution: Europe

Date assessed: January 15, 2010

Assessors: Steve Glenn, Gerry Moore

Reviewers: LIISMA SRC

Date Approved: Jan. 20, 2010 Form version date: 10 July 2009

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

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

<b>Invasiveness Ranking Summary</b> (see details under appropriate sub-section)		Total (Total Answered*) Possible	Total
1	Ecological impact	40 ( <u>30</u> )	13
2	Biological characteristic and dispersal ability	25 ( <u>25</u> )	19
3	Ecological amplitude and distribution	25 ( <u>25</u> )	14
4	Difficulty of control	10 ( <u>10</u> )	3
	Outcome score	100 ( <u>90</u> ) <sup>b</sup>	49 <sup>a</sup>
	Relative maximum score <sup>†</sup>		54.44
	New York Invasiveness Rank <sup>§</sup>	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."  
<sup>†</sup>Calculated as 100(a/b) to two decimal places.  
<sup>§</sup>Very High >80.00; High 70.00–80.00; Moderate 50.00–69.99; Low 40.00–49.99; Insignificant <40.00  
 Not Assessable: not persistent in NY, or not found outside of cultivation.

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

A1.1. Has this species been documented to persist without cultivation in NY? (reliable source; voucher not required)

Yes – continue to A1.2

No – continue to A2.1

A1.2. In which PRISMs is it known (see inset map)?

Adirondack Park Invasive Program

Capital/Mohawk

Catskill Regional Invasive Species Partnership

Finger Lakes

Long Island Invasive Species Management Area

Lower Hudson



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<input checked="" type="checkbox"/>	Saint Lawrence/Eastern Lake Ontario
<input checked="" type="checkbox"/>	Western New York

**Documentation:**

Sources of information:

*Vicia cracca* and *V. villosa* are two European species in different subsections of section *Cracca*; differentiated by subtle perianth morphologies and life durations (see Sect. 2.4) (Tutin & Heywood, 1968; Aarssen et al., 1986; Leht, 2005). Additionally, both species have complicated infra-specific taxonomies (Tutin & Heywood, 1968; Roti-Michelozzi, 1986). Both species are reported to be widespread throughout the Northeast and New York State (USDA, 2010; Weldy & Werier, 2010); although Aarssen et al. (1986) state that *V. cracca* is the most common. A critical review of herbarium specimens is needed to fully elucidate the occurrence and distribution of these taxa in our area. Brooklyn Botanic Garden, 2010; Weldy & Werier, 2010.

A2.1. What is the likelihood that this species will occur and persist outside of cultivation, given the climate in the following PRISMs? (obtain from PRISM invasiveness ranking form)

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

**Documentation:** Well established in PRISM.

Sources of information (e.g.: distribution models, literature, expert opinions):  
Brooklyn Botanic Garden, 2010.

***If the species does not occur and is not likely to occur in any of the PRISMs, then stop here as there is no need to assess the species. Rank is "Not Assessable."***

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	Widespread
Lower Hudson	Not Assessed
Saint Lawrence/Eastern Lake Ontario	Not Assessed
Western New York	Not Assessed

**Documentation:**

Sources of information:

Brooklyn Botanic Garden, 2010.

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

Other potential or known suitable habitats within New York: waste places, ballast grounds.

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**Documentation:**

Sources of information:

Brown, 1879; Uva et al., 1997; Seefeldt et al., 2007; Brooklyn Botanic Garden, 2010.

**B. INVASIVENESS RANKING**

Questions apply to areas similar in climate and habitats to New York unless specified otherwise.

*1. ECOLOGICAL IMPACT*

1.1. Impact on Natural Ecosystem Processes and System-Wide Parameters (e.g. fire regime, geomorphological changes (erosion, sedimentation rates), hydrologic regime, nutrient and mineral dynamics, light availability, salinity, pH)

- 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 (e.g., has a perceivable but mild influence on soil nutrient availability) 3
- C. Significant alteration of ecosystem processes (e.g., increases sedimentation rates along streams or coastlines, reduces open water that are important to waterfowl) 7
- D. Major, possibly irreversible, alteration or disruption of ecosystem processes (e.g., the species alters geomorphology and/or hydrology, affects fire frequency, alters soil pH, or fixes substantial levels of nitrogen in the soil making soil unlikely to support certain native plants or more likely to favor non-native species) 10
- U. Unknown

Score 7

**Documentation:**

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

As all members of Fabaceae, it has been demonstrated to increase soil nitrogen levels via symbiotic bacteria in their root nodules. One study also found an average of 87% of sites under *Vicia villosa* transmitted less than 1% of unobstructed sunlight (Teasdale & Daughtry, 1993).

Sources of information:

Brown et al., 1993; Teasdale & Daughtry, 1993; Zomlefer, 1994.

1.2. Impact on Natural Community Structure

- A. No perceived impact; establishes in an existing layer without influencing its structure 0
- B. Influences structure in one layer (e.g., changes the density of one layer) 3
- C. Significant impact in at least one layer (e.g., creation of a new layer or elimination of an existing layer) 7
- D. Major alteration of structure (e.g., covers canopy, eradicating most or all layers below) 10
- U. Unknown

Score 3

**Documentation:**

Identify type of impact or alteration:

Has been shown to increase the density of the herb layer.

Sources of information:

Teasdale & Daughtry, 1993; authors' pers. obs.

1.3. Impact on Natural Community Composition

- A. No perceived impact; causes no apparent change in native populations 0
- B. Influences community composition (e.g., reduces the number of individuals in one or more native species in the community) 3

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- C. Significantly alters community composition (e.g., produces a significant reduction in the population size of one or more native species in the community) 7
- D. Causes major alteration in community composition (e.g., results in the extirpation of one or several native species, reducing biodiversity or change the community composition towards species exotic to the natural community) 10
- U. Unknown

Score 

3
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**Documentation:**  
 Identify type of impact or alteration:  
 One study found reduction of grass emergence under *Vicia cracca* (Teasdale et al., 2003), thus suggesting species is at least reducing the number of individuals of one or more native species in the community. These results agree with observations of the authors. While the species does certainly alter community composition, it is usually found in old fields in association with other non-native species.  
 Sources of information:  
 Teasdale & Daughtry, 1993; Teasdale et al., 2003; authors' pers. obs.

1.4. Impact on other species or species groups (cumulative impact of this species on the animals, fungi, microbes, and other organisms in the community it invades. Examples include reduction in nesting/foraging sites; reduction in habitat connectivity; injurious components such as spines, thorns, burrs, toxins; suppresses soil/sediment microflora; interferes with native pollinators and/or pollination of a native species; hybridizes with a native species; hosts a non-native disease which impacts a native species)

- A. Negligible perceived impact 0
- B. Minor impact 3
- C. Moderate impact 7
- D. Severe impact on other species or species groups 10
- U. Unknown

Score 

U
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**Documentation:**  
 Identify type of impact or alteration:  
 No studies on the impact to other species located.  
 Sources of information:  
 Authors' pers comm.

Total Possible 

30
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 Section One Total 

13
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**2. BIOLOGICAL CHARACTERISTICS AND DISPERSAL ABILITY**

**2.1. Mode and rate of reproduction**

- A. No reproduction by seeds or vegetative propagules (i.e. plant sterile with no sexual or asexual reproduction). 0
- B. Limited reproduction (fewer than 10 viable seeds per plant AND no vegetative reproduction; if viability is not known, then maximum seed production is less than 100 seeds per plant and no vegetative reproduction) 1
- C. Moderate reproduction (fewer than 100 viable seeds per plant - if viability is not known, then maximum seed production is less than 1000 seeds per plant - OR limited successful vegetative spread documented) 2
- D. Abundant reproduction with vegetative asexual spread documented as one of the plants prime reproductive means OR more than 100 viable seeds per plant (if viability is not known, then maximum seed production reported to be greater than 1000 seeds per plant.) 4
- U. Unknown

Score 

4
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**Documentation:**

Describe key reproductive characteristics (including seeds per plant):

One study found stems to have an average of 10-40 flowers per inflorescence with 2-6 seeds per pod (Aarssen et al., 1986). Thus individual seed production could easily exceed 1000 seeds per plant.

Sources of information:

Aarssen et al., 1986; authors' pers. obs.

2.2. Innate potential for long-distance dispersal (e.g. bird dispersal, sticks to animal hair, buoyant fruits, pappus for wind-dispersal)

- |    |  |   |
|----|--|---|
| A. | Does not occur (no long-distance dispersal mechanisms)   | 0 |
| B. | Infrequent or inefficient long-distance dispersal (occurs occasionally despite lack of adaptations)  | 1 |
| C. | Moderate opportunities for long-distance dispersal (adaptations exist for long-distance dispersal, but studies report that 95% of seeds land within 100 meters of the parent plant)    | 2 |
| D. | Numerous opportunities for long-distance dispersal (adaptations exist for long-distance dispersal and evidence that many seeds disperse greater than 100 meters from the parent plant) | 4 |
| U. | Unknown  |   |

Score 2

**Documentation:**

Identify dispersal mechanisms:

Seeds taken by mammals and birds (endozoochory) but some may be digested.

Sources of information:

Yocom & Harris, 1953; Aarssen et al., 1986; O'Leske et al, 1996.

2.3. Potential to be spread by human activities (both directly and indirectly – possible mechanisms include: commercial sales, use as forage/revegetation, spread along highways, transport on boats, contaminated compost, land and vegetation management equipment such as mowers and excavators, 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) | 3 |
| U. | Unknown   |   |

Score 3

**Documentation:**

Identify dispersal mechanisms:

*Vicia cracca* s.l. used as a grazing or conserved fodder (hay/silage) crop, a green manure, or ground cover/mulches in no-till planted rows in fields, orchards, organic farms; and hairy vetch mulch used as N fertilizer and weed control for vegetable production (Teasdale & Daughtry, 1993; Kelly et al., 1995; Sainju et al., 2003). Used less today due to its weedy nature; when it is used it is oftentimes not allowed to set seed. Formerly reported from ballast dumping grounds (Brown, 1879). Seeds could also be readily dispersed by mowing and farming equipment.

Sources of information:

Brown, 1879; Teasdale & Daughtry, 1993; Kelly et al., 1995; Sainju et al., 2003; authors' pers. obs..

2.4. Characteristics that increase competitive advantage, such as shade tolerance, ability to grow on infertile soils, perennial habit, fast growth, nitrogen fixation, allelopathy, etc.

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- A. Possesses no characteristics that increase competitive advantage 0
- B. Possesses one characteristic that increases competitive advantage 3
- C. Possesses two or more characteristics that increase competitive advantage 6
- U. Unknown

Score

**Documentation:**

Evidence of competitive ability:

Species fixes nitrogen. *Vicia cracca* s.l. has demonstrated allelopathic effects (White et al., 1989; Kamo et al., 2003; Hill et al., 2007) (*V. cracca*- perennial, *V. villosa*- annual or biennial) (Tutin & Heywood, 1968; Aarssen et al., 1986; Leht, 2005). Some cultivars of *V. villosa* may persist for more than one year. Frost- and winter-resistant cultivars mentioned as "hibernating" in one Russian study (Lakhanov & Muzalevskaya, 1980); and Aarssen et al. (1986) state that *V. villosa* has a high degree of winter hardiness and fall-germinating specimens overwinter as seedlings. Both species reportedly not specialized in their substrate requirements (Aarssen et al., 1986), and can grow on nutrient poor soils..

Sources of information:

Tutin & Heywood, 1968; Lakhanov & Muzalevskaya, 1980; Aarssen et al., 1986; White et al., 1989; Kamo et al., 2003; Leht, 2005; Hill et al., 2007; authors' pers. obs..

**2.5. Growth vigor**

- A. Does not form thickets or have a climbing or smothering growth habit 0
- B. Has climbing or smothering growth habit, forms a dense layer above shorter vegetation, forms dense thickets, or forms a dense floating mat in aquatic systems where it smothers other vegetation or organisms 2
- U. Unknown

Score

**Documentation:**

Describe growth form:

*Vicia cracca* s.l. has a climbing habit (Aarssen et al., 1986) and sometimes exhibits a smothering growth habit.

Sources of information:

author's personal observations; Aarssen et al., 1986

**2.6. Germination/Regeneration**

- A. Requires open soil or water and disturbance for seed germination, or regeneration from vegetative propagules. 0
- B. Can germinate/regenerate in vegetated areas but in a narrow range or in special conditions 2
- C. Can germinate/regenerate in existing vegetation in a wide range of conditions 3
- U. Unknown (No studies have been completed)

Score

**Documentation:**

Describe germination requirements:

Germination rates for *Vicia cracca* and *V. villosa* have been reported as high as 82% and 98% respectively following scarification, although a small percentage of seeds germinated without any treatment. Seeds usually found germinating in open soil.

Sources of information:

Aarssen et al., 1986; authors' pers obs.

**2.7. Other species in the genus invasive in New York or elsewhere**

- A. No 0
- B. Yes 3
- U. Unknown

Score

**Documentation:**

Species:

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Vicia benghalensis, V. faba, V. grandiflora, V. hirsuta, V. lathyroides, V. laxiflora, V. monantha, V. narbonensis, V. pannonica, V. peregrina, V. sativa, V. sepium, V. tetrasperma reported from the northeast; Vicia sativa and V. tetrasperma listed as a weeds by Uva et al, 1997; no Vicia species listed as invasive in NY or elsewhere.

Uva et al., 1997; Mehrhoff, 2003; Brooklyn Botanic Garden, 2010; CJSST, 2010; Weldy & Werier, 2010; U.S.D.A. NRCS, 2010.

Total Possible	25
Section Two Total	19

**3. ECOLOGICAL AMPLITUDE AND DISTRIBUTION**

3.1. Density of stands in natural areas in the northeastern USA and eastern Canada (use same definition as Gleason & Cronquist which is: "The part of the United States covered extends from the Atlantic Ocean west to the western boundaries of Minnesota, Iowa, northern Missouri, and southern Illinois, south to the southern boundaries of Virginia, Kentucky, and Illinois, and south to the Missouri River in Missouri. In Canada the area covered includes Nova Scotia, Prince Edward Island, New Brunswick, and parts of Quebec and Ontario lying south of the 47th parallel of latitude")

- A. No large stands (no areas greater than 1/4 acre or 1000 square meters) 0
- B. Large dense stands present in areas with numerous invasive species already present or disturbed landscapes 2
- C. Large dense stands present in areas with few other invasive species present (i.e. ability to invade relatively pristine natural areas) 4
- U. Unknown

Score 0

**Documentation:**

Identify reason for selection, or evidence of weedy history:

No large stands reported from the Northeast. Authors' personal observations suggest that while vicia spp. can be locally quite common, they do not form large stands, except where planted.

Sources of information:

Authors' pers. obs.

3.2. Number of habitats the species may invade

- A. Not known to invade any natural habitats given at A2.3 0
- B. Known to occur in one natural habitat given at A2.3 1
- C. Known to occur in two natural habitats given at A2.3 2
- D. Known to occur in three natural habitat given at A2.3 4
- E. Known to occur in four or more natural habitats given at A2.3 6
- U. Unknown

Score 1

**Documentation:**

Identify type of habitats where it occurs and degree/type of impacts:

See A2.3.

Sources of information:

Brown, 1879; Uva et al., 1997; Seefeldt et al., 2007; Brooklyn Botanic Garden, 2010.

3.3. Role of disturbance in establishment

- 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. 4

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U. Unknown

Score

**Documentation:**

Identify type of disturbance:

Readily establishes in areas with natural or anthropogenic disturbance.

Sources of information:

Seefeldt et al., 2007; authors' pers. obs.

**3.4. Climate in native range**

A. Native range does not include climates similar to New York 0

B. Native range possibly includes climates similar to at least part of New York. 1

C. Native range includes climates similar to those in New York 3

U. Unknown

Score

**Documentation:**

Describe what part of the native range is similar in climate to New York:

The native range of both species includes northern Europe (Tutin & Heywood, 1968).

*Vicia cracca* reported to be expanding along Alaskan roadsides (Seefeldt et al., 2007) and reported as naturalized as far north as Alberta (Aarssen et al., 1986). *Vicia villosa* reported naturalized as far north as Alaska and southern Canada (Aarssen et al., 1986).

Sources of information:

Tutin & Heywood, 1968; Aarssen et al., 1986; Seefeldt et al., 2007.

**3.5. Current introduced distribution in the northeastern USA and eastern Canada (see question 3.1 for definition of geographic scope )**

A. Not known from the northeastern US and adjacent Canada 0

B. Present as a non-native in one northeastern USA state and/or eastern Canadian province. 1

C. Present as a non-native in 2 or 3 northeastern USA states and/or eastern Canadian provinces. 2

D. Present as a non-native in 4–8 northeastern USA states and/or eastern Canadian provinces, and/or categorized as a problem weed (e.g., “Noxious” or “Invasive”) in 1 northeastern state or eastern Canadian province. 3

E. Present as a non-native in >8 northeastern USA states and/or eastern Canadian provinces, and/or categorized as a problem weed (e.g., “Noxious” or “Invasive”) in 2 northeastern states or eastern Canadian provinces. 4

U. Unknown

Score

**Documentation:**

Identify states and provinces invaded:

Both species reported from all northeastern states and provinces.

Sources of information: See known introduced range in [plants.usda.gov](http://plants.usda.gov), and update with information from states and Canadian provinces.

Aarssen et al., 1986; U.S.D.A. NRCS, 2010.

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

A. Present in none of the PRISMs 0

B. Present in 1 PRISM 1

C. Present in 2 PRISMs 2

D. Present in 3 PRISMs 3

E. Present in more than 3 PRISMs or on the Federal noxious weed lists 4

U. Unknown

Score



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**Documentation:**

Describe distribution:

See A1.1.

Sources of information:

Brooklyn Botanic Garden, 2010; Weldy & Werier, 2010.

Total Possible	25
Section Three Total	14

**4. DIFFICULTY OF CONTROL**

**4.1. Seed banks**

- A. Seeds (or vegetative propagules) remain viable in soil for less than 1 year, or does not make viable seeds or persistent propagules. 0
- B. Seeds (or vegetative propagules) remain viable in soil for at least 1 to 10 years 2
- C. Seeds (or vegetative propagules) remain viable in soil for more than 10 years 3
- U. Unknown

Score 2

**Documentation:**

Identify longevity of seed bank:

Seed banking of *Vicia cracca*- viable for at least 2.5 years (Van Assche et al., 2003) but less than 5 years (Roberts & Boddrell, 1985; Thompson et al., 1993).

Sources of information:

Roberts & Boddrell, 1985; Thompson et al., 1993; Van Assche et al., 2003

**4.2. Vegetative regeneration**

- A. No regrowth following removal of aboveground growth 0
- B. Regrowth from ground-level meristems 1
- C. Regrowth from extensive underground system 2
- D. Any plant part is a viable propagule 3
- U. Unknown

Score 1

**Documentation:**

Describe vegetative response:

*Vicia cracca* when perennial could presumably resprout from roots. *Vicia cracca* has been reported to have strong vegetative growth in response to previous year burning.

Sources of information:

Aarssen et al., 1986.

**4.3. Level of effort required**

- A. Management is not required: e.g., species does not persist without repeated anthropogenic disturbance. 0
- B. Management is relatively easy and inexpensive: e.g. 10 or fewer person-hours of manual effort (pulling, cutting and/or digging) can eradicate a 1 acre infestation in 1 year (infestation averages 50% cover or 1 plant/100 ft<sup>2</sup>). 2
- C. Management requires a major short-term investment: e.g. 100 or fewer person-hours/year of manual effort, or up to 10 person-hours/year using mechanical equipment (chain saws, mowers, etc.) for 2-5 years to suppress a 1 acre infestation. Eradication is difficult, but possible (infestation as above). 3
- D. Management requires a major investment: e.g. more than 100 person-hours/year of manual effort, or more than 10 person hours/year using mechanical equipment, or the use of herbicide, grazing animals, fire, etc. for more than 5 years to suppress a 1 acre infestation. Eradication may be impossible (infestation as above). 4
- U. Unknown

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Score 

0
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**Documentation:**

Identify types of control methods and time-term required:

Management of species currently not required in the state in natural areas.

*Vicia villosa* is listed as a weed by Uva et al, 1997; *V. cracca* is noted as “persistent and difficult to control” (Aarssen et al., 1986). Neither species listed as invasive by Mehrhoff et al., 2003 nor CJISST, 2010. No studies delineating specific management costs or time have been located. Chemical Control: *Vicia cracca*- complete control was achieved with rates of clopyralid, dicamba plus diflufenzopyr, triclopyr, and 2,4-D that were a fourth to an eighth of the full registered rate (Seefeldt et al., 2007). *Vicia cracca*- combinations of metribuzin and metolachlor, and thifensulfuron methyl/tribenuron methyl when used in combinations with MCPA amine provide good control (Ivany, 2001). Both species reportedly controlled with alachor, clopyrild, diphenamid, propyzamide, glyphosate, et al., for a complete list see Aarssen et al. (1986). BioControl: Numerous viral, fungal, insect and nematode pests have been recorded on these species, (Blanton, 1939; Aarssen et al., 1986); but no studies have been found demonstrating their use as dedicated biocontrol. Fire Control: *Vicia cracca* has been reported to have strong vegetative growth the year following burning (Aarssen et al., 1986).

**Sources of information:**

Blanton, 1939; Tutin & Heywood, 1968; Aarssen et al., 1986; Roti-Michelozzi, 1986; Uva et al., 1997; Ivany, 2001; Mehrhoff et al., 2003; Leht, 2005; Seefeldt et al., 2007; CJISST, 2010; USDA, 2010; Weldy & Werier, 2010.

Total Possible 

10
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Section Four Total 

3
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**Total for 4 sections Possible**

90
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**Total for 4 sections**

49
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**C. STATUS OF CULTIVARS AND HYBRIDS:**

At the present time (May 2008) there is no protocol or criteria for assessing the invasiveness of cultivars 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.

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.

Some cultivars of the species known to be available: *Vicia villosa* cultivars include- 'Americus', 'AU Early Cover', 'AU Merit', 'Glabrescens', 'Lana', 'Madison'; 60+ cultivars mentioned by Lakhanov & Muzalevskaya, 1980.

**References for species assessment:**

Aarssen, L. W., I. V. Hall & K. I. N. Jensen. 1986. The biology of Canadian weeds 76. *Vicia angustifolia*, *Vicia cracca*, *Vicia sativa*, *Vicia tetrasperma*, and *Vicia villosa*. Canadian J. Plant Science. 66(3):711-738.

Blanton, F. S. 1939. Notes on some thrips collected in the vicinity of Babylon, Long Island, N. Y. J. New York Entomological Soc. 47(1):83-94.

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