Appendix A2

Bird SGCN Conservation Reports

Wildlife Action Plan 2015

Common Name: **Common Loon**
Scientific Name: **Gavia immer**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B,S4N **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Officially designated as Endangered in VT in 1978, statewide population has steadily rebounded from a low of 8 nesting pairs in 1983 and 1984 to 43 pairs in 2004.

Common Loon was designated as Endangered in VT in 1978, and removed from the list in 2005. The statewide population has steadily rebounded from a low of 8 nesting pairs in 1983 and 1984, to 301 adults and 66 chicks in 2014. Sustained management and monitoring has continued due to the Vermont Loon Conservation Project: a partnership with Vermont Center for Ecostudies and the Vermont Fish and Wildlife Department.

Distribution

Breeding is concentrated in northeastern and north-central VT, with confirmed nests found in the southern Green Mountains. Breeding probable in Champlain Valley. Loons are a medium –distance migrant. After leaving Vermont Loons head to coastal marine wintering locations along the entire eastern seaboard of the United States

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Unknown
Champlain Hills	Confident	**Vermont Valley**	Probable
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Territories range from 9 to 161 ha, prefers freshwater lakes larger than 24 ha, particularly those containing small islands and coves. Lakes with undisturbed islands or marshy shorelines, adequate fish and crayfish prey base, and clear water to a depth of at least 3 m.

Habitat Types:

Aquatic: Lacustrine

Aquatic: Lake Champlain

Aquatic: Man-Made Water Bodies

Common Name: **Common Loon**
Scientific Name: **Gavia immer**
Species Group: **Bird**

Current Threats

Habitat Threats:

Habitat Alteration

Climate Change

Incompatible Recreation

Description of habitat threat(s): Lakeshore development and subsequent loss of shoreline habitat is a threat to the breeding population at this time. Effects of climate change may impact this species.

Non-Habitat Threats:

Competition

Pollution

Trampling or Direct Impacts

Description of non-habitat threat(s): Interference competition from extraterritorial loons has caused some territory and nest abandonments, as well as direct killing of chicks and adults, in recent years. Vermont Loon Conservation Program participated in a study looking at mercury in Loons. They found that mercury bioaccumulates, resulting in a negative effect on adult behavior and chick productivity. Recreational activities and direct human disturbance of nesting or nursery sites also a serious problem on more heavily used lakes. Lead fishing gear likely killed three adult Loons in 2014 in Vermont. Maine and New Hampshire have also reported deaths due to lead poisoning

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Distribution and Abundance	Low	This is well known overall, due to sustained annual monitoring since 1978, and the Vermont Breeding Bird Atlas, but changes due to loss of nesting areas should be documented quickly.
Research	Threats and Their Significance	High	) Collaborative research on extent and possible effects of mercury contamination in VT loons should be continued. 2) Patterns of shoreline development and ownership of current and recent nest sites needs to be documented.3) Effects of climate change may impact population and should be documented.
Monitoring	Population Change	High	Sustained monitoring is crucial to documenting population trends
Monitoring	Habitat Change	Low	Changes of suitable nesting habitats, and use of rafts.
Monitoring	Monitor Threats	Medium	Monitoring of all limiting factors goes hand-in-hand with population monitoring and is critical to evaluate long-term viability and management needs of statewide population. Sick, weak, and dead loons should be collected and sent to wildlife health facilities for determination of cause of death, including interference competition from other loons (trauma), lead, and other contaminants. Annual summaries of known causes of deaths should be completed and disseminated. Results should be evaluated for management applications.

Common Name: **Common Loon**
Scientific Name: **Gavia immer**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Awareness Raising and Communications	High	Continue concerted public education effort targeting landowners and lake users. Volunteers should continue to receive training, toward long-term goal of having loon monitoring and management be largely volunteer-based.	Public presentations, informational signs at VFWD lake access areas, media articles, and informal meetings with lakeshore residents and recreationists are all crucial to continued public awareness. Platforms and sign buoys must be used as necessary.	VFWD, VCE	Nongame Fund, SWG
Easements	High	Long-term protection of all current and recent (within past 5 years) loon nest sites should be secured through conservation easements and land acquisition.	Ownership of all current and recent nest sites should be documented. For those nest sites not currently protected, landowners should be contacted and protocols for securing protection should be developed.	VFWD, VCE, TNC, Lake Associations, power companies	SWG, PR
Species Restoration	High	Monitoring and management should be continued and supported.	Annual management should be continued as necessary. Annual LoonWatch should be continued indefinitely.	VFWD,VCE	VFWD, USFWS

Common Name: **Common Loon**
Scientific Name: **Gavia immer**
Species Group: **Bird**

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Common Name: **Pied-billed Grebe**
Scientific Name: **Podilymbus podiceps**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B,S3N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

A sporadic breeder in Vermont, but believed to have been much more common historically. Loss of suitable wetlands since European settlement may have greatly reduced population. Development of wetland buffers and increased disturbance of nesting sites by recreationists and boat wakes may have helped continue the population decline. The second Atlas of Breeding Birds of Vermont showed little change of statewide distribution, but a slight decrease in occurrences was seen. The Breeding Bird Survey of Vermont showed a long term trend (1966 - 2012) of -8.6%. The 10-year trend from 2003-2012 (-7.99%) mirrors the long term loss.

Distribution

Most breeding was documented within wetlands located in the Champlain Valley and Lake Memphremagog regions. During the second Atlas breeding documentation was lost from the Green Mountains, Vermont Valley and Southern Piedmont biophysical regions.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Lakes, ponds, marshes, swamps, and slow-moving streams and rivers. Prefers shallow, permanent marshlands with stable water levels.

Common Name: **Pied-billed Grebe**
Scientific Name: **Podilymbus podiceps**
Species Group: **Bird**

Habitat Types:

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Aquatic: Fluvial

Aquatic: Lower CT River

Aquatic: Large Lake Champlain Tribs Below Falls

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Invasion by Exotic Species

Incompatible Recreation

Description of habitat threat(s): Conversion of Habitat - loss of wetlands due to draining, filling for development and agriculture. Habitat Degradation - outdoor recreational activities disturb nesting. Invasion by exotic species - common reed and purple loosestrife compete with native vegetation for nesting and feeding sites.

Non-Habitat Threats:

Harvest or Collection

Trampling or Direct Impacts

Description of non-habitat threat(s): Harvest or Collection - sometimes mistakenly shot as waterfowl. Trampling or Direct Impacts; nests susceptible to damage by boating and associated wakes. Mercury accumulation. Human disturbance of nest sites. Disturbance by recreational water users

Common Name: **Pied-billed Grebe**
Scientific Name: **Podilymbus podiceps**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	High	More surveys needed to determine distribution and abundance.
Research	Threats and Their Significance	Medium	Impact of recreational activities at known nest sites.

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Awareness Raising and Communications	High	Protect nesting areas from destructive recreational activities through enforcement, signing, press releases, educational materials, television/radio commercials.	Presence/absence of nesting grebes, number of chicks surviving to fledgling stage.	Audubon-VT, VINS, lake associations, angler groups, boating organizations.	SWG, Nongame fund, USFWS
Publically-Owned Protected Areas	High	Protect large wetlands (>20 ac.) suitable as grebe nesting habitat, acquired in fee through purchase.	Number of acres conserved in fee.	USFWS,DU, TNC	PR, DU, VHCB, VLT, Lake Champlain Land Trust, VT Waterfowl Stamp Funds
Policy & Regulations	High	Protect potential nesting habitat (large wetlands) through regulatory process.	Number of wetland acres protected from development.	VT-DEC	PR, EPA

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Common Name: **American Bittern**
Scientific Name: **Botaurus lentiginosus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G4 **Global Trend:**
State Rank: S3B,S3N **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

The distribution and population status of this species of regional conservation concern are not well documented in VT. The Breeding Bird Survey indicates a 0.22% increase over the long term trend (1966-2012) and a 0.38% increase over the last 10-years, but this is based on a small sample of routes and low abundance, so cannot be considered reliable. The Second VT Breeding Bird Atlas showed an increase of presence in all biophysical regions, except the Southern Green Mountains and Southern Vermont Piedmont regions. Vermont recently delisted the species from the status of species of special concern.

Distribution

From first VT Breeding Bird Atlas, confirmed breeding in large wetland complexes in Champlain Valley, also in West Rutland Marsh, sites in lower Connecticut River Valley, and two sites in north-central VT. Probably breeds in other larger wetland complexes (e.g., Memphremagog) and scattered smaller wetlands throughout the state. The second VT Breeding Bird Atlas confirmed breeding in marsh systems located in the northern portions of the state. The southern portions showed a stable or slightly decreasing presence.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Probable
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Probable
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Primarily freshwater wetlands with tall, emergent vegetation. Inhabits wetlands of all sizes (0.1-1,000 ha), but more abundant on larger than smaller wetlands. Prefers impoundments and beaver-created wetlands to those of glacial origin. Also found in wet swale of poorly drained fields.

Habitat Types:

Marshes and Sedge Meadows

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Common Name: **American Bittern**
Scientific Name: **Botaurus lentiginosus**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Invasion by Exotic Species

Description of habitat threat(s):): Loss or degradation of wetland habitats the primary problem to this species throughout its range. Changes in wetland isolation and water stabilization may erode habitat quality. Invasion of Phragmites and purple loosestrife a further problem to native wetland vegetation.

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Chemical contamination and human disturbance are identified problems.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Distribution and Abundance	Medium	1) More robust data are needed on the statewide distribution and abundance of this species in wetlands of different sizes and vegetative composition. 2) A standardized, coordinated statewide survey of this and other wetland birds is needed to establish baseline information on distribution and abundance. An extensive, single-season survey could be followed by annual monitoring at a core number of wetlands. A volunteer-based survey that uses standardized, repeatable protocols could collect presence/absence and relative abundance data at a large number of wetland sites statewide. A core number (12-15) of sites could be annually monitored for long-term trends.
Research	Threats and Their Significance	Medium	
Monitoring	Population Change	High	A standardized monitoring program is needed for this and other wetland birds, Extensive sampling needs to coordinated periodically, while a core sample of wetlands should be monitored annually.
Monitoring	Habitat Change	Medium	Important to monitor habitat quality and changes that may be occurring, e.g. from invasive plants like Phragmites and purple loosestrife.
Monitoring	Monitor Threats	Medium	

Common Name: **American Bittern**
Scientific Name: **Botaurus lentiginosus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Invasive Species Control & Prevention	Medium	Assess whether wetland habitat quality is compromised by invasive species like Phragmites and purple loosestrife; implement control measures at selected sites to eliminate or minimize these species; evaluate success of measures for AMBI and other birds.	Correlate presence/absence and changes in relative abundance of AMBI and other wetland species, in relation to natural and manipulated changes in vegetation composition caused by increase or elimination of invasives.	VFWD, USFWS, TNC, VTDEC	Wetland Reserve Program, NFWF, SWG
Policy & Regulations	Medium	Ensure that wetlands inhabited by this species are well-protected, including a representative sample of smaller wetlands. Ensure that further wetland loss or degradation in VT is minimized.	Conduct a spatially explicit inventory and evaluation of wetlands in VT, and assess local regulations for protecting them. Involve local conservation commissions in wetlands inventories and protection, also monitoring.	VFWD, USFWS, TNC, local Cons Comms	Wetland Reserve Program
Compatible Resource Use	Medium	Monitor wetland habitat quality (sedimentation rates, nutrient fluxes, water quality, chemical contamination) and correlate with changes in AMBI relative abundance or presence/absence.	Correlate habitat parameters with standardized AMBI survey data, and changes in both over time.	VFWD, USFWS, TNC, local Cons Comms	Wetland Reserve program

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Common Name: **Least Bittern**
Scientific Name: **Ixobrychus exilis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B,S2N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

No state BBS data. BBS routes are not well-sited for monitoring marsh species. Status of species unknown in state; the species is regularly found in relatively few marshes in VT (Kibbe 1985).

Distribution

Primarily found in the deep water marshes of Lake Champlain Valley and more sparsely in other favorable habitats in other parts of the state.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Not Probable	**Vermont Valley**	Confident
Northern Green Mtns	Not Probable	**Southern Green Mtns**	Not Probable
Northern VT Piedmont	Not Probable	**Taconic Mtns**	Confident
Northeastern Highlands	Not Probable		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Found in freshwater and brackish marshes with dense, tall growths of emergent vegetation interspersed with woody vegetation and open water. Most abundant in hemi-marsh conditions with stable water levels, rarely found in areas without standing water. In freshwater marshes, generally prefers cattails (Typha spp.; Poole et al. 2009).

Habitat Types:

Marshes and Sedge Meadows

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Invasion by Exotic Species

Description of habitat threat(s): Loss of wetlands will continue to limit the species. Invasion of

Common Name: **Least Bittern**
Scientific Name: **Ixobrychus exilis**
Species Group: **Bird**

wetlands by loosestrife and phragmites will degrade habitat quality. Agricultural and urban runoff could reduce water quality and prey populations. Greater frequency of storm events could lead to variation in water levels in wetlands, particularly along Lake Champlain, leading to decreased nesting success.

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Information about the distribution of LEBI in VT is lacking. A state-wide (perhaps one-time) survey of all potential wetlands would also yield valuable information for other wetland-dependent species (SORA, VIRA, COGA, PBGR, AMBI, BLTE). Marshbird monitoring programs are limited in their spatial extent in VT. An extensive initial survey would provide baseline data for a long-term monitoring program that would lay the foundation for a more representative marshbird monitoring program.
Monitoring	Population Change	High	Improving the standardization and spatial extent of marsh monitoring programs for wetland birds would greatly help our understanding of the species' distribution and population status.
Monitoring	Habitat Change	Medium	Most wetlands on which LEBI are found are protected, but more information about wetland loss and degradation would be useful as loss of wetlands will continue to limit LEBI. Although regulations currently in place will likely protect most nesting sites, some research indicates that LEBI is not area-sensitive (Gibbs and Melvin 1990) and may be found on wetlands <=0.4 ha.

Common Name: **Least Bittern**
Scientific Name: **Ixobrychus exilis**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Invasive Species Control & Prevention	Medium	Prevent wetland invasions by Phragmites and Purple Loosestrife and remove these species where they have already invaded in order to maintain/improve habitat quality for LEBI.	Presence/absence of LEBI in relation to changes in vegetation composition.	VFWD, TNC, USFWS.	NFWF, Marsh bird monitoring groups, TNC, Wetland Reserve Program (NRCS).
Compatible Resource Use	Medium	Decrease sedimentation rates and nutrient influxes into marshes currently containing LEBI to maintain habitat quality.	Ideally, annual variation in abundance of LEBI could be correlated with changes in habitat quality. More realistically, survey results will need to be based on presence/absence in relation to changes in water quantity, quality and vegetation.	VFWD, TNC, USFWS.	NFWF, Marsh bird monitoring groups, TNC, Wetland Reserve Program (NRCS).

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Common Name: **Great Blue Heron**
Scientific Name: **Ardea herodias**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S2S3B,S5N **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

Population currently stable with numbers increasing at largest colony site, Missisquoi National Wildlife Refuge.

Largest breeding colony (350 pairs) currently located at Missisquoi National Wildlife Refuge, second largest at Porters Bay on Lake Champlain (~100 pairs). Smaller colonies located throughout the state. Missisquoi colony stable until 2000 when 600 pair colony failed due to disturbance early in the season. Has recovered to approx. 350 pairs.

Distribution

Widely distributed with the largest colonies located in Champlain Valley. Smaller colonies located throughout state.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills		**Vermont Valley**	Unknown
Northern Green Mtns	Probable	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Probable		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☐

Colony nester, nesting in tall trees, usually in wooded swamps. Colony size ranges from a couple of pairs to more than 500 pairs. Inhabits marshes, swamps, streams and lakeshores.

Habitat Types:

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Common Name: **Great Blue Heron**
Scientific Name: **Ardea herodias**
Species Group: **Bird**

Current Threats

Habitat Threats:

Habitat Alteration

Incompatible Recreation

Description of habitat threat(s): Loss or degradation of nesting habitat at colony sites, especially larger colony sites directly impacts population

Non-Habitat Threats:

Competition

Predation or Herbivory

Description of non-habitat threat(s): Disturbance of nesting colony early in the season has lead to abandonment of nesting colonies. Increasing numbers of nesting Double-crested Cormorants at large colony sites results in competition for nesting space and habitat degredation

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Determine specific habitat requirements for nesting locations.
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Document know nesting locations in the state, primarily smaller nesting colonies.
Research	Threats and Their Significance	High	Continue research efforts into competititon with cormorants in breeding colonies unknown. More research is needed to better understand dynamics between these 2 species and effects on heron breeding colonies. Determine impacts of Double-crested Cormorants
Research	Population Genetics	Low	
Monitoring	Population Change	High	Annually monitor known nesting colonies.
Monitoring	Habitat Change	High	Monitor habitat changes at colony sites especially degredation of nesting trees due to the presence of Double-crested Cormorants.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	High	Monitor disturbance and nest site competition at colony sites.

Common Name: **Great Blue Heron**
Scientific Name: **Ardea herodias**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Protected Area Management	High	Reduce competition at nesting locations by Double-crested Cormorants	Minimize impacts of cormorants on nesting herons by limiting the number nesting cormorants at the colony site	USFWS, VTFWS, UVM, TNC	USFWS, TNC
Compatible Resource Use	Medium	Attempted predation by Bald Eagles is suspected of causing colony abandonment. Potential eagle nesting near colony sites could result in the loss of the colony	Maintain largest two colonies (Missisquoi and Porters Bay) in Vermont	USFWS,VTFWS, UVM, TNC	USFWS, SWG
Protected Area Management	High	Protect colony sites from human disturbance early in the nesting season to decrease chances of abandonment.	Increased education and awareness of individuals using the area (primarily boaters) through outreach efforts and signage.	USFWS, VTFWS, Audubon VT, TNC	USFWS, SWG
Habitat Restoration	High	Stop or reverse loss of vegetation used for nesting (trees) due to impacts of expanding Double-crested Cormorant colonies and maintain suitable nesting structure.	Maintenance of current nesting structure and identification of other suitable habitat.	UFWS, UVM, Audubon	UFWS

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Common Name: **Black-crowned Night-heron**
Scientific Name: **Nycticorax nycticorax**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B,S2N **State Trend:**
Extirpated in VT? **Regional SGCN?** Yes

Assessment Narrative:

Currently no documented nesting in Vermont.

Black-crowned Night-herons have been documented nesting on Lake Champlain, Vermont with the largest colony (30-50 pairs) having been on Young Island in Lake Champlain. Competition for nest sites and degradation of habitat by Double-crested Cormorants on Young Island resulted in the abandonment of that colony in the mid 1990's.

Distribution

Has nested at 2 sites along Lake Champlain with the largest being Young Island on the northern part of the lake. Nesting has not been documented in the state since the mid 1990's.

Distribution by Biophysical Region:

Champlain Valley	Unknown	**Southern VT Piedmont**	Unknown
Champlain Hills		**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☐

Prefers islands and wooded swamps for nesting locations. Feeds along shoreline and within marshes and swamps

Habitat Types:

Floodplain Forests

Hardwood Swamps

Marshes and Sedge Meadows

Shrub Swamps

Common Name: **Black-crowned Night-heron**
Scientific Name: **Nycticorax nycticorax**
Species Group: **Bird**

Current Threats

Habitat Threats:

Habitat Alteration

Description of habitat threat(s): Degradation of habitat as a result of nesting Double-crested Cormorants

Non-Habitat Threats:

Competition

Description of non-habitat threat(s): Competition for nest sites with Double-crested Cormorants

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	Determine specific nesting habitat requirments
Research	Basic Life History	Low	
Research	Distribution and Abundance	High	Currently there is no documented breeding of this species in Vermont although breeding suspected. Surveys for breeding pairs and colonies should be undertaken to better assess status in Vermont
Research	Threats and Their Significance	Medium	Determine limiting factors to potential breeding locations.
Monitoring	Population Change	High	Determine presence/absence of species in the state.
Monitoring	Habitat Change	Medium	
Monitoring	Monitor Threats	Medium	If nesting sites located determine and monitor potential limiting factors.

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Protected Area Management	Medium	Rapid increase in cormorant population of Young Island has displaced BCNH. Efforts to reduce cormorant numbers and restore areas of the island for BCNH nesting may result in BCNH nesting here in the future.	BCNH nesting on Young Island	VTWD, Wildlife Services	US government, USDA
Habitat Restoration	Medium	Restore nesting structure (trees and shrubs) on Young Island to enhance nesting opportunities.	BCNH nesting on Young Island	VTFW, UVM	USDA Wildlife Services, USFWS

Common Name: **Black-crowned Night-heron**
Scientific Name: **Nycticorax nycticorax**
Species Group: **Bird**

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Common Name: **American Black Duck**
Scientific Name: **Anas rubripes**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B,S5N **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Population decline is readily apparent, but likely due to a number of factors including habitat loss, hybridization with mallard, and marine pollution that affects molluscs, an important winter food source. The second Atlas of Breeding Birds of Vermont showed a 32% decrease in distribution. The Breeding Bird Survey of Vermont showed a 5.9% decrease in occurrence in the long term trend, (1966-2012) and a 5.44% decrease during the 10- year period form 2003-2012. The Atlantic Flyway Breeding Waterfowl Plot Survey showed the 2014 breeding population 11.19% below the long term average, (1993-2014). The downward slope of the long term trends for the traditional and eastern survey areas mirror the decreasing population estimates of the Atlantic Flyway Breeding Waterfowl Plot Survey.

Distribution

Widespread across Vermont. Highest occurrences are found in the Champlain Valley, the Northern and Southern Vermont piedmonts and Southern Green Mountain biophysical regions.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Uses a variety of wetland habitats along the coast, in woodlands, boreal forest, mixed conifer-hardwoods, wherever there is water nearby. Nests in dense shrub vegetation usually near water but sometimes up to a mile or more away. Preferred wintering habitat includes brackish marshes bordering bays, estuaries, and agricultural areas, but also found on inland lakes, reservoirs, and marshes wherever ice-free conditions exist.

Common Name: **American Black Duck**
Scientific Name: **Anas rubripes**
Species Group: **Bird**

Habitat Types:

Floodplain Forests

Hardwood Swamps

Open Peatlands

Marshes and Sedge Meadows

Shrub Swamps

Aquatic: Fluvial

Aquatic: Lower CT River

Aquatic: Large Lake Champlain Tribs Below Falls

Aquatic: Lacustrine

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Description of habitat threat(s):): Habitat conversion and degradation- conversion of wetlands to agriculture, and loss due to development including shoreline construction, ditching and other drainage methods; road building, alteration of wetland hydrology; invasive species such as purple loosestrife, common reed. On the wintering areas coastal erosion and filling of wetlands for development are a concern.

Description of non-habitat threat(s):

Common Name: **American Black Duck**
Scientific Name: **Anas rubripes**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	High	A breeding black duck survey is needed to determine where birds are breeding, by wetland or woodland type.
Research	Basic Life History	Low	
Research	Distribution and Abundance	High	Distribution and abundance of breeding black ducks are not well known in Vermont.
Research	Threats and Their Significance	High	The main limiting factor includes the loss of shrub wetlands from agriculture and residential and commercial development, including alteration and degradation of habitats over time. This duck is more susceptible to human disturbances than other duck species due to its shy nature and tendency to abandon nests when disturbed.
Research	Population Genetics	Low	This species hybridizes with the mallard but it is not believed to be a long term threat.
Research	Taxonomy	Low	
Monitoring	Population Change	High	Regional trends show a declining population in the St. Lawrence River Valley and northern New England.
Monitoring	Habitat Change	High	Wetland inventories should be updated periodically and analyzed for changes in wetland abundance by wetland type (i.e. scrub-shrub wetlands as potential black duck nesting). habitat.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	High	Same as Habitat change.

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Payments/Financial Incentives	High	Work with farmers and provide incentives for protection of wetlands from agricultural conversion.	Number of acres protected from conversion.	USFWS, USDA-NRCS, Ducks Unlimited	EQIP,NAWCA, PR, DU
Compliance & Enforcement	High	Better enforce state and federal wetland laws, including buffer zones.	Number of wetland acres and wetland buffer acres protected under state Conditional Use Determination regulatory process and federal Clean Water Act.	VT-DEC, EPA, US Army COE	EPA, PR

Common Name: **American Black Duck**
Scientific Name: **Anas rubripes**
Species Group: **Bird**

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Common Name: **Bald Eagle**
Scientific Name: **Haliaeetus leucocephalus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B,S2N **State Trend:** Increasing
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

State listed as endangered. Removed from the federal list of endangered and threatened species in 2007. 2014 population of 18 territorial pairs within Vermont's borders. The Vermont eagle population has seen a steady increase since the first pair nested successfully in 2008. The first Atlas in 1982 had only one record of a possible nesting; the second Atlas showed an 800% increase from the first to the second atlas (Renfrew 2013). Breeds in all adjacent states and Quebec. See: VT Bald Eagle Recovery Plan (VFWD 2010). Currently close to meeting downlisting goals of 19 pairs, 50% of which nest successfully in VT (VFWD, unpublished data).

Distribution

Breeding and wintering concentrated in the CT River and Lake Champlain watersheds. Numerous incidental sightings throughout the year on additional waterbodies throughout the state.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Unknown
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Breeding: Lakes & rivers with large trees for nesting, perching and roosting. Prefers minimal human. Disturbance (USFWS 1999, DeGraaf & Yamasaki 2001). Wintering: Large waterbodies with open water or good supply of carion (USFWS 1999).

Common Name: **Bald Eagle**
Scientific Name: **Haliaeetus leucocephalus**
Species Group: **Bird**

Habitat Types:

Floodplain Forests

Hardwood Swamps

Marshes and Sedge Meadows

Aquatic: Lower CT River

Aquatic: Large Lake Champlain Tribs Below Falls

Aquatic: Lake Champlain

Aquatic: Man-Made Water Bodies

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Impacts of Roads or Transportation Systems

Climate Change

Description of habitat threat(s): Habitat loss and human disturbance considered significant problems to breeding eagles. Roads and/or trails near nest site can be detrimental if human activity is not restricted. (Buehler 2000). Climate change has the potential to reduce food supply.

Non-Habitat Threats:

Pollution

Trampling or Direct Impacts

Disease

Loss of Prey Base

Description of non-habitat threat(s): Eagles are most vulnerable to toxic substances - lead, mercury, pesticides, and other toxic chemicals (DeSorbo and Evers 2007). Also vulnerable to collisions with vehicles and power lines and possibly to disease (USFWS 1999, Buehler 2000). Potentially threatened by wind turbines (Pagel et al. 2013)

Common Name: **Bald Eagle**
Scientific Name: **Haliaeetus leucocephalus**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	High	Follow up on reports of nesting pairs
Research	Threats and Their Significance	Medium	Monitor potential effects of climate change and wind turbines
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Research	Other Research	High	Effects of chemical threats such as mercury not well-known in Vermont.
Monitoring	Population Change	High	Monitor population and productivity.
Monitoring	Habitat Change	Medium	
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	High	Monitor potential threats of habitat loss, human disturbance,

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	High	Protect nesting habitat of nesting pairs using predator guards, signage, and long-term protection as necessary.	Monitoring productivity at active breeding sites	VFWD, Audubon VT, VINS, MNWR	PR, SWG, private grants
Awareness Raising and Communications	Medium	Educate the public about eagle ecology and the importance of minimizing disturbance	Public presentations, informational signs, media articles are all necessary for increased public awareness.	VFWD, Audubon VT, VINS	PR, SWG, private grants
Species Restoration	High	Implement the VT Bald Eagle Recovery Plan, including breeding season monitoring, winter surveys, etc.	Monitoring population's distribution and productivity	VFWD, Audubon VT, VINS, NH Audubon, USFWS, MNWR, NY DEC	PR, SWG, private grants
Research	Medium	Send any deceased eagles for necropsies and toxic chemical testing	Determine any mortality caused by toxic chemicals – mercury, lead, etc.	VFWD, USFWS, NY DEC, Tufts Univ	USFWS

Common Name: **Bald Eagle**
Scientific Name: **Haliaeetus leucocephalus**
Species Group: **Bird**

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Common Name: **Northern Harrier**
Scientific Name: **Circus cyaneus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B,S3S4N **State Trend:** Increasing
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Recent positive population trends in Atlas (Renfrew 2013) and stable BBS data for VT, NH, and NY (Sauer et al. 2011). There is a documented decline of this species in some eastern states (PA), and there may be the suggestion of a decreasing range but increasing population density in appropriate habitat (Renfrew 2013). Listed as VT Species of Special Concern, and listed as endangered in CT and NH. Recent population increases may be due to the fact that harriers can nest in wetter grasslands that cannot be mowed early in the season. Abandoned farmland in the past 20 years may have increased the number of unused wet agricultural fields. Primary threats are incompatible agricultural management, wetland destruction, development grasslands, and succession.

Distribution

Distributed in all biophysical regions of the state, but most concentrated in the Champlain Valley (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Open wetlands, marshy meadows, wet, lightly grazed pastures, old fields, marshes, upland prairies, mesic grasslands, drained marshlands, croplands, cold desert shrub-steppe, and riparian woodland. Densest populations typically associated with large tracts of undisturbed habitats dominated by thick vegetation (MacWhirter and Bildstein 1996).

Habitat Types:

Marshes and Sedge Meadows

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Common Name: **Northern Harrier**
Scientific Name: **Circus cyaneus**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Fragmentation

Description of habitat threat(s): Major problem is likely early mowing of hayfields. Other problems include heavy grazing rotations in pastures, especially wet pastures and wetland drainage or destruction. Additionally, hayfield abandonment (succession) and urban/suburban development are also problems (Renfrew 2013).

Non-Habitat Threats:

Trampling or Direct Impacts

Loss of Prey Base

Description of non-habitat threat(s): Early mowing can destroy nests and decreases rodent populations.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Wetlands are likely a safer nesting habitat for this species in VT. Proportion of birds nesting in wetlands versus hayfields would be helpful from a management standpoint.
Research	Basic Life History	Medium	Many studies on home range size, little on territory size. The disparity between the two (240 ha mean hr size versus 0.8 to 10 ha territory size) creates major variation in potential recommendations for habitat requirements for 500 pairs. Additionally, determining the causes of breeding failure and mortality are important.
Research	Distribution and Abundance	Low	
Research	Threats and Their Significance	Medium	Better information of timing of nesting in relation to hay harvest. Data from first breeding bird atlas suggests nestling dates are much later than necessary to fledge young prior to a Memorial Day cutting.
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	High	Population would be relatively easy to monitor through roadside counts. Demographics would be more difficult to assess.
Monitoring	Habitat Change	Medium	It would be useful to know the proportion of grasslands lost to forest succession versus urban/suburban development.
Monitoring	Monitor Threats	High	Better information about the timing of hayfield cutting.

Common Name: **Northern Harrier**
Scientific Name: **Circus cyaneus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Awareness Raising and Communications	High	Education and outreach program that provides information about grassland dependent species and management options to enhance their populations in Vermont.	Number of landowners reached. Number of cooperating landowners who are maintaining grasslands by periodic late-summer mowing. Periodically assess (5yrs) grassland acreage in Vermont, through GIS analysis.	UVM, Audubon VT, VCE, NRCS.	NRCS, USDA, PR, SWG
Technical Assistance, Training, Learning Networks	High	Provide technical assistance to town and regional planning commissions to help conserve grassland habitats from development.	Number of town and regional planning commissions reached. # of cooperating landowners maintaining grasslands by periodic late-summer mowing. Periodically assess (5yrs) grassland acreage in Vermont, through GIS analyses.	UVM, NRCS.	USDA, NRCS.
Conservation Payments/Financial Incentives	High	Enroll farmers in NRCS funding programs (EQIP) for early/late or delayed mowing regimes	Number of cooperating farmers who are enrolled in EQIP. Additionally, estimates of foraging success rates of birds before and after hay harvest would help assess questions of abundance vs. availability of prey.	UVM, Audubon VT, VCE, NRCS.	NRCS, USDA.
Protected Area Management	High	Maintain nesting habitat throughout breeding season by following site specific conservation plans which include restricting mowing after July 15 on publicly owned lands (WMAs and state airports).	Maintain and increase current acreage under management on state lands	VFWD, NRCS, VTrans	VFWD
Habitat Restoration	High	Maintain grassland habitat in suitable locations through active management of woody vegetation within Grassland Bird Focus Areas.	Increase and maintain available habitat in suitable locations	VFWD, Audubon VT, NRCS, USFWS	PR

Common Name: **Northern Harrier**
Scientific Name: **Circus cyaneus**
Species Group: **Bird**

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Common Name: **Northern Goshawk**
Scientific Name: **Accipiter gentilis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S3S4B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Relatively abundant and widespread, Holarctic; population trends are difficult to determine; no hard evidence of a significant decline in recent decades, but probably declining in some areas primarily as a result of habitat alteration (natureserve.org). Formerly nested principally in Canada, but expanded breeding range south into northeastern North America beginning around 1950 (Laughlin & Kibbe 1985). In Vermont regions show a declining trend (21% statewide) in populations since the first Breeding Bird Atlas in 1985 (Renfrew 2013).

Distribution

Distribution info from VT Breeding Bird Atlas (Laughlin & Kibbe 1985, Renfrew 2013). NOGOs found in all regions of the state, with 22 confirmed breeding pairs mainly in the Green Mountain region of the state, and 1 in the lower Champlain Valley. Most sightings were in areas of medium - high elevation, with all but 1 in the Champlain Valley in the hilly areas on the periphery of the region. Most regions in VT show a declining trend (21% statewide) in populations since the first atlas (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Probable
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☐

Breeding: Forest interior habitats prefers mature forests with large trees and open understories. Found in all elevations up to treeline (DeGraaf & Yamasaki 2001). Nests usually in bottom of the canopy of a large hardwood tree in the East (Laughlin & Kibbe 1985). In Minnesota, 81% of 46 goshawks nests were in aspen trees, generally located in mature (>50 years) early successional upland hardwood stands (aspen and paper birch forest types) (Boal et al. 2001). Prey is primarily small to medium birds, but will also feed on small mammals. Preferred feeding habitats are openings in forests (DeGraaf & Yamasaki 2001).

Breeding: nest site must be away from human disturbance. Occupancy of nest sites positively correlated with stand size. Nests usually in bottom of the canopy of a large tree - goshawks tend to prefer hardwoods for nest trees in the East (Laughlin & Kibbe 1985). In Minnesota, 81% of 46 goshawks nests were in aspen trees,

Common Name: **Northern Goshawk**
Scientific Name: **Accipiter gentilis**
Species Group: **Bird**

generally located in mature (>50 years) early successional upland hardwood stands (aspen and paper birch forest types). Remaining nests were in paper birch, white pine or red oak (Boal et al. 2001).

Habitat Types:

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Early Succession Boreal Conifers

Early Succession Boreal Hardwoods

Early Succession Spruce-Fir

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Fragmentation

Impacts of Roads or Transportation Systems

Description of habitat threat(s): Loss of interior mature forest caused decline when Europeans settled New England. Does not nest in small forest tracks bounded by roads (DeGraaf & Yamasaki 2001).

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Highly sensitive to human presence (DeGraaf & Yamasaki 2001). Some sensitivity to pesticides/toxic checmicals.

Common Name: **Northern Goshawk**
Scientific Name: **Accipiter gentilis**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Basic Life History	Low	Estimate productivity of nesting pairs.
Research	Distribution and Abundance	Medium	Determine population status and trends in VT (locate nesting pairs).
Research	Threats and Their Significance	Medium	Need to determine significance of limiting factors to habitat in Vermont and whether active management/protection of this species is needed.
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	Medium	Monitor trends in Vermont population
Monitoring	Habitat Change	Low	
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	Monitor limiting factors to VT population

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Publically-Owned Protected Areas	High	Manage a portion of Vermont public lands with long rotations or as no-cut reserves.	Number of productive nests on conserved public lands.	VFWD, USFS, USFWS, USFS	SWG, PR
Habitat Restoration	Medium	Identify contiguous forests blocks w/mature components & encourage their conservation via easements or other financial incentives on private lands. Conserve contiguous forest blocks on public lands via appropriate long-range management plan designations.	Number and distribution of core forest blocks conserved on private and public lands	ANR, USFS, USFWS, VHCB, VLT, TNC	SWG, PR, VHCB

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Common Name: **Red-shouldered Hawk**
Scientific Name: **Buteo lineatus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S3S4B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Declined by 37% from first atlas to second atlas (Renfrew 2013). Appears to be stable or increasing in surrounding states and Ontario, as well as North America as a whole. BBS data shows increasing trend in the East, but current populations are thought to be far below historic levels (early 1900's).

Distribution

Reported in all biophysical regions (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☐

Mature forested wetlands near natural openings for foraging and upland forests adjacent to wetlands (DeGraaf & Yamasaki 2001). Requires riparian woodlands with tall trees for nesting. Nest sites are often in the largest deciduous trees and always near water, such as river, pond or swamp. Prey upon herptiles, crustaceans, insects, and small mammals (Laughlin & Kibbe 1985, DeGraaf & Yamasaki 2001).

Common Name: **Red-shouldered Hawk**
Scientific Name: **Buteo lineatus**
Species Group: **Bird**

Habitat Types:

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Description of habitat threat(s): Declines in early 1900s due to loss of wetland habitat (DeGraaf & Yamasaki 2001). Shown to be vulnerable to habitat conversion, including deforestation, development, and draining of wetlands (Dykstra et al. 2008).

Non-Habitat Threats:

Pollution

Trampling or Direct Impacts

Description of non-habitat threat(s): RSHAs have been shown to accumulate pesticides such as PCBs (Laughlin & Kibbe 1985). May also be out-competed by more aggressive species such as Red-tailed Hawks and Great-horned Owls (Renfrew 2013).

Common Name: **Red-shouldered Hawk**
Scientific Name: **Buteo lineatus**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Determine population size and productivity in VT.
Research	Threats and Their Significance	High	Evaluate limiting factors to population in VT
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	Medium	Monitor population changes.
Monitoring	Habitat Change	High	Monitor loss of habitat
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	Medium	Develop and implement protocols to monitor and manage population so as to minimize impacts.		VFWD, Audubon VT, VCE	
Habitat Restoration	High	Identify remaining blocks of contiguous forests w/mature components & encourage their conservation via easements or other financial incentives on private lands. Conserve these blocks on public lands via appropriate long-range management plan designations	Number and distribution of core forest blocks conserved on private and public lands	ANR, USFS, USFWS, VHCB, VLT, TNC	SWG, PR, VHCB

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Common Name: **American Kestrel**
Scientific Name: **Falco sparverius**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Recent negative population trends in Atlas (Renfrew 2013) and BBS data for VT (NS) and survey-wide (Sauer et al. 2011). Listed as Species of Special Concern in 2009. Concern about population in the Northeast as a whole. Development of farmland, habitat succession, West Nile virus, and changes in farming practices are issues in the northeastern US.

Distribution

Distributed in all biophysical regions of the state, but most concentrated in the Champlain Valley and Northern Vermont Piedmont (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Minimum area requirements appear to be ~25 ha grassland. Reports of home range size are variable. "Typical" densities are 0.11 to 1.74/100 ha (assuming peripatric home ranges, 57 to 909 ha). However, greater densities have been reported of 5.4 and 27.4/100 ha (3 -18 ha home range sizes). Kestrels are cavity nesters and use woodpecker holes, farm building crevices, or human-made nest boxes (Smallwood and Bird 2002).

Habitat Types:

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Common Name: **American Kestrel**
Scientific Name: **Falco sparverius**
Species Group: **Bird**

Habitat Fragmentation

Description of habitat threat(s): Loss of grassland habitat to forest succession, conversion of agricultural areas to urban/suburban development, or changes in farming practices to eliminate hedgerows and trees for nesting (Renfrew 2013).

Non-Habitat Threats:

Trampling or Direct Impacts

Disease

Predation or Herbivory

Description of non-habitat threat(s): Automobile collisions are a concern where nest boxes have been placed on interstate highway signs (Smallwood and Bird 2002). There are also concerns with mortality from West Nile virus (Medica et al. 2007) and predation from increasing Cooper's Hawk populations (Farmer et al. 2006).

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Research should focus on relative importance of grassland habitat and cavity availability. If cavity availability is limiting, species could benefit from an active nest box placement program.
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	This species is relatively conspicuous and roadside counts could provide an excellent index of statewide population trends.
Research	Threats and Their Significance	High	Species is a useful model for environmental contaminants and climate change. May be a useful indicator species as they feed on herbivorous insects in agricultural habitats.
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Research	Other Research	Low	
Monitoring	Population Change	High	Nest monitoring in MA cranberry bogs shows 4 consecutive years of population declines. Peterson (2003) suggests the species is "quietly slipping away in New England."
Monitoring	Habitat Change	High	It would be helpful to know whether development or forest succession is more important to habitat loss.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	High	

Common Name: **American Kestrel**
Scientific Name: **Falco sparverius**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Payments/Financial Incentives	High	Conserve grassland/shrubland habitats on private lands.	Number and total area of sites conserved.	USDA, NRCS, USFWS, VHCB	EQIP, SWG, PR, VHCB
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and general public about grassland birds and management options to protect habitat	Enroll landowners into USDA habitat incentive programs	VFWD, Audubon VT, NRCS, UVM	PR, SWG, private funding sources
Habitat Restoration	High	Maintain grassland habitat in suitable locations through active management of woody vegetation within Grassland Bird Focus Areas.	Increase and maintain available habitat in suitable locations	VFWD, Audubon VT, NRCS, USFWS	USFWS, NRCS
Technical Assistance, Training, Learning Networks	Medium	Develop a nest box program for interested landowners.	Nest box occupancy rates as reported by landowners.	Audubon VT, VFWD	EQIP

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Common Name: **Peregrine Falcon**
Scientific Name: **Falco peregrinus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G4 **Global Trend:**
State Rank: S2B,S2N **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Officially designated as Endangered in VT in 1972, statewide population has steadily recovered and surpassed recovery goals.
See: VT Peregrine Falcon Recovery Plan (Fowle et al. 2001) and Post-delisting Monitoring and Management Plan. Removed from VT Endangered Species List in 2005. Increases due in large part to concerted monitoring and management efforts; population continues to require monitoring and site protection to ensure successful nesting (Renfrew 2013).

Distribution

Breeding well distributed throughout the state. Nest sites known in all biophysical regions except the Vermont Valley.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Unknown
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Open areas for hunting, adequate food supply and steep rocky cliffs for nesting (Ratcliffe, 1993). Cliffs must be high enough (at least 30 m) to protect from terrestrial predators, have adequate horizontal nesting ledges (loose substrate for nest, protection from weather and predators), and have adequate perches and good views of the surrounding area for territorial defense and hunting (Hickey 1942, Ratcliffe 1993). Human disturbance on or above the nesting cliff must be minimal and limited to more than 1/4 mile from the nest site, but activity such as a road below the nesting cliff will not negatively affect the nesting birds (USFWS 1991, Ratcliffe 1993).

Common Name: **Peregrine Falcon**
Scientific Name: **Falco peregrinus**
Species Group: **Bird**

Habitat Types:

Upland Shores

Cliffs and Talus

Building or Structure

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Aquatic: Fluvial

Aquatic: Lower CT River

Aquatic: Large Lake Champlain Tribs Below Falls

Aquatic: Lacustrine

Aquatic: Lake Champlain

Aquatic: Man-Made Water Bodies

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Description of habitat threat(s):): Inappropriate development, poorly planned forest management and habitat changes on or near a cliff during the breeding season may disturb nesting peregrines and cause them to abandon their nest site. Any development on or near a cliff may be enough to cause a pair to abandon that nest site (USFWS 1991, Fowle et al. 2001).

Non-Habitat Threats:

Pollution

Trampling or Direct Impacts

Predation or Herbivory

Loss of Prey Base

Description of non-habitat threat(s): Pesticides and other toxic chemicals have shown negative effects in the past, and some of these chemicals persist today (Fowle et al. 2001, USFWS, unpublished data). Fire retardant chemicals have been found in elevated levels in Vermont and northeastern peregrine populations (Eriksson et al. 2004, Da Chen et al. 2008). Human disturbance on or near nesting cliffs is the greatest known problem to peregrines nesting in VT. Predation of young on the nest site has been an occasional problem in the past, as has adverse weather (Fowle et al. 2001, Ratcliffe 1993).

Common Name: **Peregrine Falcon**
Scientific Name: **Falco peregrinus**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	
Research	Threats and Their Significance	Medium	Potential effects of toxic chemicals and ridgeline wind development
Research	Population Genetics	Low	
Monitoring	Population Change	High	Monitor breeding population and productivity annually
Monitoring	Habitat Change	Medium	Protect breeding habitat from human disturbance and development
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	Monitor human disturbance effects and protect nesting cliffs from disturbance. Where possible, monitor other potential threats on productivity such as predation and adverse weather

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Research	Medium	Monitor site occupancy and productivity, as well as monitor threats	Continue to evaluate the health of the breeding population annually	VFWD, Audubon VT, VINS, landowners, volunteers	PR, SWG, Private grants
Compatible Resource Use	High	Reduce/minimize human disturbance at nesting cliffs through access closures during the breeding season.		VFWD, Audubon VT, CRAG-VT	PR, SWG, Private grants
Awareness Raising and Communications	High	Continue concerted public education effort targeting climbers and recreational hikers to inform public of cliff closures. Continue volunteer-based monitoring efforts.	Public presentations, informational signs at climbing and hiking areas, and media articles and posts are all critical to maintaining public awareness.	VFWD, Audubon VT, CRAG-VT	PR, SWG, private grants

Common Name: **Peregrine Falcon**
Scientific Name: **Falco peregrinus**
Species Group: **Bird**

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Common Name: **Spruce Grouse**
Scientific Name: **Falcipennis canadensis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

The Spruce Grouse is a state listed endangered species. The species is not listed in the Breeding Bird Survey data likely due to its interior forest nature and limited vocalizations render it difficult to detect. Draft Recovery Plan for Vermont. Spruce grouse inhabit the boreal forests of North America. Although considered common in Canada and in a few northern states, in Vermont the species is near the southern edge of its range. Historical accounts indicate the species was present in the northeastern counties of Orleans and Essex (Thompson 1853, Cutting 1884). Currently, breeding spruce grouse are restricted to a 62 km2 (25 mi2) area of spruce-fir forest in northern Essex County (Royar and Alexander 1987). This breeding habitat is principally owned by the U.S. Fish and Wildlife Service (Nulhegan Division of the Silvio Conte Refuge) and the State of Vermont, Department of Fish and Wildlife (Wenlock Wildlife Management Area).

It is estimated that between 150 and 300 adult birds occur in this population, and periodic surveys since 1990 indicate a stable population. Although the future of this population would seem secure given the interest of the two public owners in conserving wildlife (assuming that vegetation management will continue to maintain and improve habitat and that disturbance from the potential increase in recreationists to this area can be controlled) a stochastic event such as a widespread fire or disease outbreak could prove disastrous.

Full recovery of Vermont spruce grouse, outlined in its recovery plan, will require the establishment of 2 additional sub-populations, most likely on the State Lands located in the southern Essex County towns of Victory and Granby, and in the northern Essex County town of Norton. During 2008 and 2009 a total of 136 spruce grouse (males, females, and chicks) from Maine and Quebec were translocated to the Victory Basin Wildlife Management Area. This was an effort to establish a second viable population as per goals of the recovery plan. Subsequent surveys from 2009 through 2014 indicate the translocated birds are not successfully reproducing and declining in number due to inherent mortality factors.

Distribution

Spruce grouse inhabit the boreal forests of North America and are considered common in much of Canada. PIF reports a continental estimate of 11,000,000 birds. In Vermont, Maine, and New Hampshire the species is at the southern edge of its range. Historical accounts indicate the species was present in the northeastern Vermont counties of Orleans and Essex (Thompson 1853, Cutting 1884). Currently, breeding spruce grouse are restricted to a 62 km2 (25 mi2) area of spruce-fir forest in northern Essex County (Royar and Alexander 1987). This breeding habitat is principally owned by the U.S. Fish and Wildlife Service (Nulhegan Division of the Silvio Conte Refuge) and the State of Vermont, Department of Fish and Wildlife (Wenlock Wildlife Management Area).

Distribution by Biophysical Region:

Champlain Valley	Not Probable	**Southern VT Piedmont**	Not Probable
Champlain Hills	Not Probable	**Vermont Valley**	Not Probable
Northern Green Mtns	Probable	**Southern Green Mtns**	Not Probable
Northern VT Piedmont	Probable	**Taconic Mtns**	Not Probable

Common Name: **Spruce Grouse**
Scientific Name: **Falcipennis canadensis**
Species Group: **Bird**

Northeastern Highlands Confident

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

The spruce grouse is a bird of the boreal forest. Highest grouse densities (40-80 adults in summer/100 ha) are found in young dense jack pine (Pinus banksiana) stands, where live branches occur from 4-8 meters (13-26 ft.) above ground (Szuba and Bendell 1983; Keppie 1995). Jack pine forests do not occur in Vermont, however, spruce-fir forests of similar structure provide suitable habitat throughout much of the species range. Keppie (1987) documented breeding densities of 9.8 - 21.9 adults/100 ha (0.25-0.55/ac) in a New Brunswick spruce-fir pine forest. Spruce (Picea spp.) is preferred over fir (Abies balsamea) because it develops and maintains better vertical stratification. A shrub layer of Vaccinium spp. or regenerating spruce-fir in low densities enhances habitat for spruce grouse (Robinson 1969). Larch (Larix laricina) in the overstory may provide a preferred fall food resource. Forest openings are important to female spruce grouse and their broods, as they provide greater abundance of accessible food resources for chicks than the dense forest (Allan 1985).

Habitat Types:

Spruce Fir Northern Hardwood

Softwood Swamps

Open Peatlands

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Habitat Fragmentation

Description of habitat threat(s): Two main causes of historic spruce grouse decline are habitat loss and human encroachment. As colonial settlements expanded from southern Vermont into northeastern Vermont forests, spruce fir forests were cleared and the relatively tame spruce grouse was undoubtedly taken for human consumption whenever the opportunity arose. As industrial timber companies were formed, vast areas of virgin spruce fir forest were cut, and 19th century loggers may have taken spruce grouse to supplement their daily fare. By 1980 spruce grouse apparently remained only in the Nulhegan Basin, which at the time was experiencing heavy cutting of its mostly mature forests.

With the dawn of the new millennium, much of Essex County forests are publicly owned or subject to conservation easements held by the State and/or private conservation organizations. As a result, Conservation and sustained forestry goals across much of Essex County forestland will likely maintain if

Common Name: **Spruce Grouse**
Scientific Name: **Falcipennis canadensis**
Species Group: **Bird**

not increase available spruce grouse habitat. Increasing human development, however, will no doubt continue to encroach on some peripheral habitats, and the forecast increases in outdoor recreationists to Essex County could disrupt breeding activities and/or increase susceptibility to predation or adverse weather conditions (especially if pets accompany their owners on excursions through grouse habitats)

Non-Habitat Threats:

Harvest or Collection

Predation or Herbivory

Description of non-habitat threat(s): Predation is likely the most common cause of spruce grouse mortality (Boag and Schroeder 1992) although no predator seems to depend on spruce grouse as a large part of its diet (Robinson 1980). A major predator of spruce grouse eggs is the red squirrel (Tamiasciurus hudsonicus) (Boag et al 1984, Naylor and Bendell 1987). Other potential predators in Vermont are the northern goshawk (Accipiter gentilis), barred owl (Strix varia), northern raven (Corvus corax), red fox (Vulpes vulpes), coyote (Canis latrans) , bobcat (Lynx rufus), black bear (Ursus americanus), striped skunk (Mephitis mephitis), fisher (Martes americana) and ermine (Mustela erminea). On Mount Desert Island, 7 of 19 radio transmitter-carrying adult females (37%) were predated between April and late August (Whitcomb et.al.1996). Predators identified were a Red-tailed Hawk (Buteo jamaicensis), red fox and an unidentified raptor. A study in Ontario of 67 spruce grouse nests found 55% were depredated by red squirrels, red fox, black bear and striped skunk (D'Eon 1997).

Another potential problem, especially in small patches that might hold dispersing grouse, is accidental shootings by ruffed grouse hunters. A limited number of accidental shootings were documented during the 1980's in Ferdinand and Norton. The continuation of educational efforts aimed at grouse hunters in Essex County should help prevent this source of mortality from actually limiting the population.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Vermont's triennial census within the Nulhegan Basin should be continued, and reported sighting from elsewhere during the breeding season should be investigated
Research	Threats and Their Significance	Low	
Research	Population Genetics	Low	Genetic comparisons between Vermont birds and potential sources for reintroduction should occur.
Monitoring	Population Change	Medium	Vermont's trienniel census within the Nulhegan Basin should be continued, and reported sighting from elsewhere during the breeding season should be investigated
Monitoring	Habitat Change	Medium	Extent of spruce-fir forests in Northeastern Vermont should be peridocally assessed (eg USFS Forest Survey).
Monitoring	Monitor Threats	Low	

Common Name: **Spruce Grouse**
Scientific Name: **Falcipennis canadensis**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Implement the habitat management guidelines as detailed in VFWD's Spruce Grouse Recovery Plan.	Number of public land management plans which incorporate Spruce Grouse habitat management.	VFWD, USFWS	SWG, PR
Species Restoration	High	Establish a 2nd sub-population in Victory Basin to reduce likelihood of serious impact to the overall population. Enhance genetic exchange with NH s grouse with establishment of another population within dispersal distance of the Connecticut River.	Number of sub-populations established and maintained.	ANR	SWG
Awareness Raising and Communications	Medium	Continue with educational campaign to reduce accidental harvest by ruffed grouse hunters.	Number of accidentally-shot spruce grouse	VFWD, USFWS	SWG, PR

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Common Name: **Ruffed Grouse**
Scientific Name: **Bonasa umbellus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

While no trend data is collected in Vermont, habitat declines and trends reported from other states (MA drumming survey, NH regional biologist information, ME hunter reports) indicate a general decline in ruffed grouse populations across New England. the potential exists for some of these declines to be related to ruffed grouse "cycles", these cycles have been shown to be less prevalent in the NE than in midwest and northern/subarctic regions.

Early successional habitat components required by ruffed grouse are declining on both a statewide and regional basis. Losses of acceptable habitat continue due to conversion to non-forest use. On areas which remain forested, stand maturation due to reductions in active forest management have substantially reduced habitat quality and grouse population density has decreased significantly. Conservation efforts should focus on implementing a comprehensive program of habitat improvements on both public land and private land.

Distribution

Distributed statewide where acceptable habitat components are present.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Prefers mosaic of young and mid-aged hardwood and hardwood/conifer forests. Typically utilizes maturing forest habitats for nesting, sapling/pole stage hardwood forest habitats for breeding, and very young hardwood forest regeneration habitats for brood rearing. While species can utilize and survive within edge and other suboptimal habitats, larger patch sizes of required habitat components adjacent to one another usually result in greater productivity and survival.

Common Name: **Ruffed Grouse**
Scientific Name: **Bonasa umbellus**
Species Group: **Bird**

Habitat Types:

Upland Shores

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Early Succession Boreal Conifers

Early Succession Boreal Hardwoods

Early Succession Spruce-Fir

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Early Succession Other Types

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Inadequate Disturbance Regime

Habitat Fragmentation

Invasion by Exotic Species

Description of habitat threat(s): - permanent loss of forest habitat to non-forest uses; - regional forest maturation resulting in suboptimal brood survival due to lack of protective cover and resulting increased predation; - fragmentation of dense regeneration habitats by mature forest resulting in substantially declining species productivity and significant mortality in localized, and sometimes large areas. Coupled with habitat loss to conversion of non-forest habitats, some ruffed grouse sub-populations have been extirpated in areas of former population abundance.

Non-Habitat Threats:

Parasites

Common Name: **Ruffed Grouse**
Scientific Name: **Bonasa umbellus**
Species Group: **Bird**

Predation or Herbivory

Description of non-habitat threat(s): Herbivory by white-tailed deer can substantially limit necessary brood habitats in areas of high deer abundance, although this is essentially a manifestation of an early-succession habitat volume-related problem.

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	Information on optimal habitat component patch size in various landscapes and forest cover types would be helpful.
Research	Basic Life History	Low	
Research	Distribution and Abundance	Low	Institute a ruffed grouse drumming survey and small-game hunter survey to establish ruffed grouse breeding population trends and harvest levels.
Research	Threats and Their Significance	Medium	Information on mortality due to parasites or nest predation in northern hardwood forest would be helpful.
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	Medium	Little monitoring has been done on either productivity or mortality. This has compromised efforts to adequately measure changes due to habitat loss and respond to these population changes with corrective actions.
Monitoring	Habitat Change	High	See above.

Common Name: **Ruffed Grouse**
Scientific Name: **Bonasa umbellus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	High	Reverse VT ruffed grouse population trend delcine to support an annual average hunting harvest of 150,000 birds over 10 years through improvement of grouse breeding and rearing habitat Use CSWA habitat target of 82,000ha (Rosenberg 2004).	Population response to management, BBS surveys.	Ruffed Grouse Society, FWD	PR, EQIP
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.		
Habitat Restoration	Medium	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, VT Loggers	PR, EQIP
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative. Fund for > $50,000/yr with revenues from state lands forest management.	Level of funds raised.	FWD	ANR, PR

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Common Name: **Sora**
Scientific Name: **Porzana carolina**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S2S3B,S3N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Currently listed as a species of special concern in Vermont. Known as a breeder in the state but distribution and abundance unknown. Although uncommon in the state, the species increased by 50% between the first and second breeding bird atlas, perhaps as a result of more concerted use of playbacks.

Distribution

In the second Vermont Breeding Bird Atlas, 60% of records were from the Champlain Valley, with the remainder scattered across the state, generally at lower elevations.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Unknown
Champlain Hills	Not Probable	**Vermont Valley**	Confident
Northern Green Mtns	Not Probable	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Not Probable		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Found primarily in seasonal or semi-permanent freshwater wetlands with shallow and intermediate water depths (~0.33 m), dominated by emergent vegetation, especially cattails (Typha spp.), sedges (Carex spp., Cyperus spp.), burreeds (Sparganium spp.) and bulrushes (Scirpus spp.; Melvin and Gibbs 2012). Some suggestion that the species is area sensitive, but data are inconclusive.

Habitat Types:

Marshes and Sedge Meadows

Current Threats

Habitat Threats:

Conversion of Habitat

Invasion by Exotic Species

Climate Change

Common Name: **Sora**
Scientific Name: **Porzana carolina**
Species Group: **Bird**

Description of habitat threat(s): Habitat Threats: Loss of wetlands will continue to limit the species. Invasion of wetlands by loosestrife and phragmites will degrade habitat quality. Greater frequency of storm events could lead to variation in water levels in wetlands, particularly along Lake Champlain, leading to decreased nesting success.

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Agricultural and urban runoff could reduce water quality and prey populations.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Determine habitat requirements specific to Vermont
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Information about the distribution of Sora in VT is lacking. A state-wide (perhaps one-time) survey of all potential wetlands would also yield valuable information for other wetland-dependent species (VIRA, COGA, PBGR, AMBI, LEBI, BLTE). Marshbird monitoring programs are limited in their spatial extent in VT. An extensive initial survey would provide baseline data for a long-term monitoring program that would lay the foundation for a more representative marshbird monitoring program.
Research	Threats and Their Significance	Medium	Determine potential limiting factors
Monitoring	Population Change	High	Improving the standardization and spatial extent of marsh monitoring programs for wetland birds would greatly help our understanding of the species' distribution and population status.
Monitoring	Habitat Change	Medium	1) Most wetlands on which Sora are found are protected, but more information about wetland loss and degradation would be useful as loss of wetlands will continue to limit Sora. 2) Monitor habitat changes at known nesting locations
Monitoring	Monitor Threats	Low	

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Common Name: **Lesser Yellowlegs**
Scientific Name: **Tringa flavipes**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S4S5N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

There is limited information on the population size of Lesser Yellowlegs. The best estimate is 400,000 birds worldwide. The species has been experiencing long-term (> 30 year) population declines (Andres et al. 2012). Impacts to breeding areas (Canadian tundra, muskeg) include commercial development, extraction of earth resources, and oil and gas development. Wetlands along migration routes in VT may be jeopardized by development also. Pollutants and un-regulated hunting may be concerns on wintering grounds (S. America)

Distribution

Found in all biophysical regions of Vermont

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Nests in open forest and forest-tundra transitional habitat, the vast majority of which (over 90%) occurs in the boreal forest of Alaska and Canada. Typical nesting habitat is open to semi-open forest mixed with marshes, bogs, sedge meadows, and ponds (Clay et al. 2012), using shallow wetlands and muskeg areas with abundant aquatic invertebrates. Migratory habitats include lake shores, river banks, and wetlands near agricultural area and early successional forests and shrub patches.

Common Name: **Lesser Yellowlegs**
Scientific Name: **Tringa flavipes**
Species Group: **Bird**

Habitat Types:

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Aquatic: Fluvial

Aquatic: Lower CT River

Aquatic: Large Lake Champlain Tribs Below Falls

Aquatic: Man-Made Water Bodies

Current Threats

Habitat Threats:

Conversion of Habitat

Description of habitat threat(s): Conversion of wetlands to agriculture and residential development along shorelines, oil and gas development, logging, and mining activities. As a boreal forest-breeding species it is susceptible to climate change as higher temperatures may lead to drought and habitat changes.

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Agrochemicals are used throughout the species' migration corridors and nonbreeding grounds, the effects of which are unknown. Hunting pressure has presumably declined, but unregulated hunting during fall migration is a concern in the Caribbean and the Guianas.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Water level management to attract shorebirds. Timing and duration of drawdowns is critical to providing stopover areas along migration routes in VT..
Research	Distribution and Abundance	Medium	More shorebird surveys are needed around Lake Champlain and during drawdowns at state wildlife management areas.

Common Name: **Lesser Yellowlegs**
Scientific Name: **Tringa flavipes**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Policy & Regulations	Medium	Protect shorelines through ACT 250 and other regulatory processes.	Number of shoreline acres or feet impacted by development.	Audubon-VT, VT-DEC, USFWS	EPA, Nongame fund, Partners for Fish and Wildlife, EQIP
Awareness Raising and Communications	Medium	Continue to provide training to waterfowl hunters to minimize inadvertent take.	Number of trainings and training materials offered	VFWD, DU	PR, SWG

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Common Name: **Upland Sandpiper**
Scientific Name: **Bartramia longicauda**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S2S3B,S3N **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Breeding population possibly extirpated in Vermont, no confirmed breeding records in at least 5 years. Currently listed as endangered in Vermont.
Upland Sandpiper numbers have dropped sharply in Vermont since the early 1990's, with population losses from 1966-2003 estimated at -9.6 per year (Sauer et al. 2014), and the breeding has population has disappeared from the state since the first SWAP. The small numbers reported during the second Breeding Bird Atlas (2003-2007) in the Champlain Valley and at the Berlin airport are no longer present. Habitat loss due to direct loss and agricultural intensification possible causes, as well as range contraction in the northeastern US. Broadcast methods designed to encourage establishment of a breeding population have been unsuccessful.

Distribution

In recent years, only 1-2 individuals reported during breeding season, from same location in northern Franklin County.

Distribution by Biophysical Region:

Champlain Valley	Historic Records Only	**Southern VT Piedmont**	Unknown
Champlain Hills	Probable	**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

A migrant that winters in South America, Upland Sandpiper prefers large grassland areas (50-100 acres) with a mosaic of grassland vegetation structures (short, medium, and taller grasses for foraging, nesting, and brood rearing, primarily pastures and hayfields in Vermont. Will use airports with suitable mowing regime.

Habitat Types:

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Other Cultural

Common Name: **Upland Sandpiper**
Scientific Name: **Bartramia longicauda**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Habitat Fragmentation

Description of habitat threat(s): Loss of habitat due to development and succession of abandoned farmland, fragmentation of large agricultural grasslands, and agricultural intensification (conversion to row crops, early haying regimes).

Non-Habitat Threats:

Trampling or Direct Impacts

Description of non-habitat threat(s): Destruction of nest site from mowing.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Monitoring	Population Change	Medium	Track, verify, and monitor any observations recorded during breeding period. Note habitat structure and landscape characteristics at any site where there is evidence of breeding.

Species Strategies

Strategy Type	*Strategy Priority*	*Strategy Description*	*Performance Measure*	*Potential Partners*	*Potential Funding Sources*
Compatible Resource Use	High	Implement Vermont grassland bird management and recovery plan (LaBarr et al. 2013)			
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and general public about grassland birds and management options to protect habitat	Continue grassland bird outreach programs and initiation of landowner information-sharing network	VFWD, Audubon-VT, VCE, UVM	PR, SWG
Habitat Restoration	High	Maintain grassland habitat in focal areas through active management of woody vegetation.	Increase and maintain available habitat in focal habitat	VFWD, Audubon-VT, NRCS	SWG, EQIP
Conservation Payments/Financial Incentives	High	Protect potential breeding habitat in grassland bird focal areas (see LaBarr et al. 2013, Vermont Grassland Bird Management Plan) by focusing EQIP payments on provate lands in thee areas.	Protection of acreage through enrollment in EQIP	VFWD, Audubon-VT, NRCS	EQIP

Common Name: **Upland Sandpiper**
Scientific Name: **Bartramia longicauda**
Species Group: **Bird**

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Common Name: **American Woodcock**
Scientific Name: **Scolopax minor**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

PIF Tier IIA -- high regional concern. Annual singing-ground survey trends for the Eastern Region and Vermont for the period 1968-2004 = -2.1 (P<0.01) and -1.1%, respectively (Kelly 2004). Range wide declines in American woodcock have been tied to similar declines in habitat area and quality, and losses of these habitats appears to be accelerating. Existing, moist-soil early-successional hardwood habitat (especially alder and aspen-dominated sites), and open field components required by woodcock should be identified on both public and some conserved private land, and these habitats should be actively managed to prevent further losses or qualitative declines. Additional work should focus on identifying areas where active habitat management would re-establish quality regeneration and open field habitat components across all biophysical regions.

Distribution

American woodcock are present statewide where acceptable habitat exists. During migration, woodcock numbers increase and birds can often be found less optimal habitat. While distributed across all Vermont biophysical regions, the relative scarcity of critical habitat components w/in these polygons makes this distribution map somewhat a misleading gauge of habitat security.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Prefers young hardwood, hardwood/conifer and alder forests proximate to open-field habitats in moist soil areas. Typically utilizes dense alder or aspen regeneration forest habitats for nesting, brood rearing and adult feeding, open field or forest openings > 1 ac. for breeding and roosting. While species can utilize and survive within moist soil forest edge and other suboptimal habitats, larger patch sizes of required habitat components adjacent to one another usually result in greater productivity and survival.

Common Name: **American Woodcock**
Scientific Name: **Scolopax minor**
Species Group: **Bird**

Habitat Types:

Outcrops and Alpine

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Seeps and Pools

Open Peatlands

Wet Shores

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Early Succession Other Types

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Description of habitat threat(s): Losses of moist-soil regeneration/successional habitats has been implicated in 30-yr population decline in both eastern and central flyways. Additional concerns regardingconversion to agriculture and non-forest cover of overwintering habitat in southern U.S. Fragmentation of both field habitats by reforestation and feeding/brood cover by succession has likely increased brood mortality during post-hatch brood movements to adequate rearing habitat.

Non-Habitat Threats:

Pollution

Predation or Herbivory

Description of non-habitat threat(s): Some anecdotal and emerging scientific data concerns regarding soil contaminants (primarily heavy metals) inducing adult mortality and compromising

Common Name: **American Woodcock**
Scientific Name: **Scolopax minor**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	High	Habitat/breeding success interrelationship information would help to formulate range-wide recovery strategies.
Research	Basic Life History	Medium	AOU recommends studies to investigate large-scale population dymamics as related to habitat.
Research	Distribution and Abundance	Low	AOU recommends studies to investigate potential range expansions, however these likely would not be warranted in Vermont or established , central portions of range.
Research	Threats and Their Significance	Medium	As related to Habitat requirements, IAFWA has conducted work on habitat v. hunting mortality. Additional work could expand on this type of comparative mortality assessment, including such elements as soil contamination, losses by domestic predators and potential breeding losses due to various statutory restrictions on vegetation management in riparian and other "buffer" areas.
Monitoring	Population Change	High	Ongoing singing ground surveys should be enhanced and updated to consider historic habitat changes and other factors such as degree of development, etc.
Monitoring	Habitat Change	High	Habitat losses have largely been "tracked" by USFS Forest statistics in terms of age class/cover type composition. A more focused approach to estimation of historic, current and projected "woodcock habitat" across the region is certainly warranted.
Monitoring	Range Shifts	Medium	See above research needs re: distribution.

Common Name: **American Woodcock**
Scientific Name: **Scolopax minor**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	High	Reverse declining woodcock breeding populations to BPOP of 3.0-3.2 males/singing ground route. Maintain population w/ breeding habitat enhancement and creation/maintenance of suitable migration/feeding habitat.Use CSWA habitat target (Rosenberg 2004)	Population response to management, BBS surveys.	Ruffed Grouse Society, FWD	PR, EQIP
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.		
Habitat Restoration	Medium	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, VT Loggers	PR, EQIP
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative (modeled on NH's Small Landowner Grant program). Fund for > $50,000/yr with revenues from state lands forest management. This could offset landowner EQIP obligations.	Level of funds raised.	FWD	EQIP
Species Restoration	Medium	Continue and increase efforts at singing ground survey participation and observer recruitment.			
Habitat Restoration	Medium	Increase the size and number of well distributed roosting/display field habitats in proximity to feeding and brood habitat on public land.	Number and distribution of roosting/display fields		

Common Name: **American Woodcock**
Scientific Name: **Scolopax minor**
Species Group: **Bird**

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Common Name: **Common Tern**
Scientific Name: **Sterna hirundo**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1S2B,S2N **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

VT state endangered since 1988. Common Tern populations in Vermont declined during the 1970's and 80's from about 300-400 breeding pairs to approx. 50 breeding pairs in 1988. Since then numbers have increased steadily due to monitoring and management efforts and protection of nesting islands. Breeding numbers have recently exceeded the levels recommended for down-listing to Threatened in Vermont but continuing low productivity has prevented down-listing. Monitoring and management efforts will need to continue to avoid a population decline in the future.

Distribution

Nests only on 4-5 small rocky islands (<0.5 ha) in the NE arm of Lake Champlain. Has not been documented nesting elsewhere in VT. Popasquash and Rock island primary nesting sites. Both are small islands in the NE arm of Lake Champlain. Has nested in the past on 3 other island. A social attraction (decoys and sound) project in 2006-2008 was successful in bringing terns to Grammas Island but heavy owl predation at this site resulted in the discontinuation of this work. Can be observed throughout the northern part of the lake.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Unknown
Champlain Hills	Unknown	**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Known Watersheds
Lake Champlain

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☐

Nests on isolated islands, beaches, dredge spoils and human made structures in areas with little to no vegetation.

Habitat Types:

Aquatic: Lake Champlain

Common Name: **Common Tern**
Scientific Name: **Sterna hirundo**
Species Group: **Bird**

Current Threats

Habitat Threats:

Habitat Alteration

Description of habitat threat(s): Traditional nesting islands are currently protected for this species. No direct habitat problems documented although habitat degradation due to nesting and roosting Double-crested Cormorants possible. Current management actions have limited cormorant related degradation in recent years.

Non-Habitat Threats:

Trampling or Direct Impacts

Competition

Predation or Herbivory

Description of non-habitat threat(s): Predation by avian predators and ants, competition for nesting sites with Ring-billed gulls and human disturbance are primary problems to this species.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Low	Well documented.
Research	Basic Life History	Low	Well documented.
Research	Distribution and Abundance	Low	Well documented.
Research	Threats and Their Significance	Low	Well documented.
Research	Population Genetics	Low	Well documented.
Monitoring	Population Change	High	Annual monitoring needed to determine population size and reproductive success.
Monitoring	Habitat Change	Medium	Annual monitoring of impacts of Ring-billed Gull and Double-crested Cormorants and impacts on island vegetation.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	High	Annual monitoring required to determine impacts of predation, nest-site competition, and human disturbance on breeding population

Common Name: **Common Tern**
Scientific Name: **Sterna hirundo**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Protected Area Management	High	Provide adequate nesting space by managing gull and cormorant populations as competition for nesting space on tern nesting islands by Ring-billed Gulls and Double-crested Cormorants may result in limited nesting space for terns	breeding success, number of nests per island.	VFWD, Audubon-VT	PR, private grants
Protected Area Management	High	Limit predation by owls, night herons and ants at nesting islands through active management (fencing, trapping owls, eradicating ants).	Sustained increase in reproductive success to 1 fledgling/pair	VFWD, Audubon-VT	PR, private grants
Species Restoration	High	Continue to prevent Double-crested Cormorants from nesting as nesting islands could be negatively impacted by Double-crested Cormorants resulting in alteration of current vegetative cover	Number of islands free of double-crested cormorants.	VFWD, Audubon-VT, Lake Champlain Land Trust	PR, private grants
Protected Area Management	High	Continue to restrict access to tern nesting islands during the breeding season.	No documented nest failure due to human disturbance	VFWD, Audubon-VT, VT State Police	PR, private grants

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Common Name: **Black Tern**
Scientific Name: **Chlidonias niger**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G4 **Global Trend:**
State Rank: S2B,S2N **State Trend:** Stable
Extirpated in VT? **Regional SGCN?** Yes

Assessment Narrative:

Listed as Endangered in Vermont. Black Tern populations have remained low and fluctuated during the past decade with a high count of 157 breeding pairs in both 2010 and 2015 and a low of 65 pairs in 2007. Totals for 2014 were 95 breeding pairs but this was considered an underestimate (J. Sefchick-Edwards, pers. com.). These numbers represent an overall increase from estimates between 1990 and 2005 (44-103 pairs). Missisquoi National Wildlife Refuge remains the only nesting location for Black Tern in Vermont. They are, however, found in 6 separate locations within the 6000+ acre refuge.

Distribution

Black Terns are currently only found at one location, Missisquoi National Wildlife Refuge on northern Lake Champlain. Nesting occurred regularly in Lake Memphremagog South Bay throughout the 1990's.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Unknown
Champlain Hills	Unknown	**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Probable	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Nests in wetlands consisting of both emergent (cattails) and shrub (buttonbush) vegetation with adequate floating vegetation to build nests on.

Habitat Types:

Marshes and Sedge Meadows

Shrub Swamps

Current Threats

Habitat Threats:

Invasion by Exotic Species

Common Name: **Black Tern**
Scientific Name: **Chlidonias niger**
Species Group: **Bird**

Description of habitat threat(s): Sufficient habitat seems available both at its known nesting site (MNWR) and at sites it has nested at in the past. High water levels on Lake Champlain seem to influence nesting numbers at MNWR by limiting available nesting habitat. A water chestnut infestation at MNWR is being actively controlled. It could limit nesting and feeding habitat without control.

Non-Habitat Threats:

Unknown Non-Habitat Threats

Trampling or Direct Impacts

Description of non-habitat threat(s): Direct problems to this species have been difficult to determine, however Vermont is on the periphery of this species range and declines in the core of its range may be causing peripheral populations to decline at a faster rate. Human disturbance is suspected as at the Missisquoi National Wildlife Refuge Black Terns have only nested in areas closed to public use.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Determine if changes in habitat structure at nesting locations has resulted in abandonment of sites used in the past.. Evaluate the significance of Vermont's habitat for migration/staging.
Research	Basic Life History	Low	Well documented
Research	Distribution and Abundance	Medium	Annually monitor current and past nesting locations
Research	Threats and Their Significance	High	Increased understanding of limiting factors to this species in Vermont
Research	Population Genetics	Medium	Relationship to core population
Research	Taxonomy	Low	
Research	Other Research	Low	
Monitoring	Population Change	High	Annually monitor breeding population at current and past nesting locations.
Monitoring	Habitat Change	Medium	Monitor changes in habitat structure, especially those due to invasive species.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	Annually monitor known limiting factors
Monitoring	Other Monitoring Needs	Medium	Continue to manage protected wetlands to provide suitable habitat. Determine appropriate management actions (e.g. vegetation management, artificial nesting structures) that will enhance breeding success.

Common Name: **Black Tern**
Scientific Name: **Chlidonias niger**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	High	Determine appropriate management strategies which will increase population size and the number of breeding locations.	Increase in population size and number of colony sites at different geographic locations.	USFWS, VFWD, Audubon-VT	SWG, PR

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Common Name: **Black-billed Cuckoo**
Scientific Name: **Coccyzus erythropthalmus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Bird Conservation Regions 13 & 14 High Regional Concern. Not on Audubon/ABC's Watch Lists. BBS shows a significant long-term (1966-2013) annual decline for Vermont (-4.62 %). Shorter-term (2003-2013) decline is higher (-6.28%), but not judged significant.

Distribution

Distributed statewide, although less common in northeastern quarter of the state. The Second Atlas of Breeding Birds of Vermont (Renfrew 2013) results show biggest losses from southern Green Mountains.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Brushy pastures, shrubby hedgerows at edges of fields, dry, open woods and groves (DeGraaf and Rudis 1986). Prefers groves of trees, forest edges, and thickets; frequently associated with water. In NE. U.S.; usually found in edges and clearings of young deciduous-coniferous woods; abandoned farmland...brushy hillsides and pastures hawthorn thickets " (Hughes 2001).

Common Name: **Black-billed Cuckoo**
Scientific Name: **Coccyzus erythropthalmus**
Species Group: **Bird**

Habitat Types:

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Spruce-Fir

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Fragmentation

Description of habitat threat(s): "Declines in some regions could be due in part to reversion of abandoned farmland to forests that are unsuitable (Erskine 1992). Other problems responsible for declines could be modification of habitat on wintering grounds, hazards during migration, and pesticide use." (Hughes 2001).

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Black-billed cuckoos may be highly vulnerable to pesticides used on insect outbreaks, perhaps especially on winter range in South America.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	The nature of breeding range habitat changes relatively well understood, however the magnitude of these changes should be documented.
Research	Distribution and Abundance	Medium	Continued monitoring of changes in distribution and abundance should be tied to tracking changes in habitat (succession of abandoned farmland).
Monitoring	Population Change	Medium	Continued monitoring of changes in distribution and abundance should be tied to tracking changes in habitat (succession of abandoned farmland).
Monitoring	Habitat Change	Medium	The nature of breeding range habitat changes relatively well understood, however the magnitude of these changes should be documented.

Common Name: **Black-billed Cuckoo**
Scientific Name: **Coccyzus erythropthalmus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Policy & Regulations	Medium	Better control use of pesticides harming this species and its food sources.	Number of regulations restricting use of harmful pesticides. Reduction in contaminates present in cuckoo habitat.	ANR, Vt. Dept of Agriculture, USDA	USDA, FDA
Conservation Payments/Financial Incentives	Medium	Conservation of hedgerows could be incorporated into EQIP program goals.	Number of sites designated for hedgerow conservation and protection from development.	ANR, USFS, USFWS	SWG, PR,EQIP
Habitat Restoration	High	Early- successional habitat (shrubland) goals should be developed for public and private land to support 4,200 individuals (Rosenberg 2004).	Total area managed for ESH.	ANR, USFS, USFWS	SWG, PR,EQIP

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Rosenberg, K. V. 2004. Partners in Flight continental priorities and objectives defined at the state and bird conservation region levels, Vermont. Cornell Lab of Ornithology, Ithaca, NY. 26 p.

Common Name: **Short-eared Owl**
Scientific Name: **Asio flammeus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B,S2N **State Trend:** Unknown
Extirpated in VT? Unknown **Regional SGCN?** Yes

Assessment Narrative:

Unknown breeding status in VT - regular winter sightings in Champlain Valley.

BBS data indicate significant long-term overall decline, although trend unknown for many areas. Decline likely attributed to habitat conversion of marshes, grasslands, and low-use pastures.

Distribution

Distribution info from VT Breeding Bird Atlas (Laughlin & Kibbe 1985). Two confirmed nestings found in Champlain Valley. Other sightings in Northern Green Mts, and Southern & Northern VT Piedmont - all single sightings. Significant wintering concentrations have been seen in the Champlain Valley.

Distribution by Biophysical Region:

Champlain Valley	Probable	**Southern VT Piedmont**	Probable
Champlain Hills		**Vermont Valley**	Unknown
Northern Green Mtns	Probable	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Probable	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☐

Breeding: Open land (marshlands & grasslands preferred), but will also use agricultural land and other open habitat.

Wintering: same as above with little/no snow cover (DeGraaf & Yamasaki 2001).

Habitat Types:

Marshes and Sedge Meadows

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Common Name: **Short-eared Owl**
Scientific Name: **Asio flammeus**
Species Group: **Bird**

Habitat Succession

Habitat Alteration

No Habitat Threats

Description of habitat threat(s): Loss of marshes and grasslands since 1930s has caused declines in population (DeGraaf & Yamasaki 2001).

Non-Habitat Threats:

Trampling or Direct Impacts

Description of non-habitat threat(s): Farming practices may impact nesting owls.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Low	
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Determine if there is a breeding population in VT
Research	Threats and Their Significance	Medium	
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	Medium	
Monitoring	Habitat Change	Medium	
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	

Common Name: **Short-eared Owl**
Scientific Name: **Asio flammeus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Payments/Financial Incentives	High	Protect suitable grassland habitat from development and agricultural intensification by creating Grassland Bird Focus Areas to concentrate management efforts (see Vermont Grassland Bird Management Plan)	Development of Grassland bird focus Areas and increased protection of habitat through enrollment in EQIP and CRP Grassland	VFWD, Audubon VT, NRCS	USDA
Protected Area Management	High	Maintain nesting habitat throughout breeding season by developing site specific conservation plans which include restricting mowing after July 15 on publicly owned lands (WMAs and state airports).	Maintain and increase current acreage under management on state lands	VFWD, NRCS, VTrans	VFWD
Habitat Restoration	High	Maintain grassland habitat in suitable locations through active management of woody vegetation within Grassland Bird Focus Areas.	Increase and maintain available habitat in suitable locations	VFWD, Audubon VT, NRCS, USFWS	US government
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and general public about grassland birds and management options to protect habitat	Develop a grassland bird outreach program	VFWD, Audubon VT, VCE, UVM	SWG, VFWD

Bibliography

DeGraaf, R. M., and M. Yamasaki. 2001. New England wildlife: habitat, natural history, and distribution. University Press of New England, Hanover, NH. 482 pp.

Laughlin, S. B., and D. P. Kibbe. 1985. The atlas of breeding birds of Vermont. University Press of New England, Hanover, NH. 456 pp.

Common Name: **Common Nighthawk**
Scientific Name: **Chordeiles minor**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

The Common Nighthawk was listed as an endangered species in Vermont in 2012. In Vermont's first breeding bird atlas (1985) there were three confirmations in priority blocks and the bird occupied 35 blocks. During the second Breeding Bird Atlas (2013) in Vermont the bird was not confirmed in any survey blocks, and only occupied nine survey blocks. The species is declining due to lack of breeding habitat. Additional evidence that non-selective pest control for mosquitoes has resulted in declining food resource availability (largely moths).

Distribution

Confirmed breeding records are few, and decreased between the first and second Atlas surveys (1985-2013). Two probable breeding records were from southern Orange County and Brattleboro. The bird has been recorded via ebirders throughout the state over the past 10 years, but those sightings include birds that are migrating.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Probable
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Prefers nesting/breeding habitats including dunes, beaches, logged or clearcut areas, open forests, rock outcrops, gravel outwashes and gravel on flat roofed buildings. Utilizes virtually all open habitats, above water and open woodlands, including urban and suburban areas, during crepuscular feeding and migration.

Common Name: **Common Nighthawk**
Scientific Name: **Chordeiles minor**
Species Group: **Bird**

Habitat Types:

Upland Shores

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Early Succession Boreal Conifers

Early Succession Boreal Hardwoods

Early Succession Spruce-Fir

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Building or Structure

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Description of habitat threat(s): Losses of upland openings, reductions of clearcut timber harvest, conversion of natural openings to non-suitable habitat (residential, etc.), conversion of flat, gravel-covered roofs to metal/rubberized coating/sheeting.

Non-Habitat Threats:

Predation or Herbivory

Loss of Prey Base

Description of non-habitat threat(s): Reductions of preferred prey due to non-selective pesticide use. Loss of suitable wintering ground habitats due to changes in agricultural practices.

Common Name: **Common Nighthawk**
Scientific Name: **Chordeiles minor**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	High	Factor accounting for decreased nesting on available gravel roofs and effects of deforestation; nest/roost site characteristics. Continue study on effectiveness of creating artificial gravel patches on rooftops
Research	Basic Life History	Medium	Longevity of breeders, reproductive output; male fidelity
Research	Distribution and Abundance	Low	Continued monitoring to determine if population is increasing or decreasing. Support for gathering data from citizen scientists, including Vermont ebird.
Research	Threats and Their Significance	High	Population status as related to pesticide use on breeding grounds, wintering grounds, and migration routes.
Monitoring	Population Change	High	Sustained monitoring is crucial to maintaining the existing population
Monitoring	Habitat Change	High	Changes of suitable nesting habitats, and use of rafts.
Monitoring	Monitor Threats	Medium	Monitoring of all limiting factors goes hand-in-hand with population monitoring and is critical to evaluate long-term viability and management needs of statewide population. death, including interference competition from others.

Common Name: **Common Nighthawk**
Scientific Name: **Chordeiles minor**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Conduct complete vegetation removal on select areas of existing upland openings, and provide for even-age timber management on public lands to increase suitable common nighthawk nesting habitat.	Number of acres positively affected by management. Population response to management.	FWD, FPR, Audubon, Forest Products Association, VT Loggers	PR, EQIP
Habitat Restoration	High	Identify specific threats, and agricultural practices that negatively impact birds		FWD	PR
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even-age forest management and the need for mineral soil outcrops (gravel, ledge) on public and private lands to create suitable habitat complexes.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	ANR, USFS, USFWS	SWG, PR
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative. Fund for > $50,000/yr with revenues from state lands forest management. Allow the installation of gravel pads on flat roofed buildings as a conservation practice.	Level of funds raised.	FWD	PR
Habitat Restoration	Medium	Identify and enlarge/enhance suitable lakeshore and riparian gravel depositions to create additional nesting habitat.	Number of sites identified and positively affected by management. Population response to management.	VA, VCE	SWG, NRCS, FSA

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Common Name: **Whip-poor-will**
Scientific Name: **Caprimulgus vociferus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Whip-poor-will has been declining throughout much of its range, particularly in the northeastern US and eastern Canada, based on data from breeding bird atlases. In Vermont this species was found in 77% fewer blocks between the first (1979-85) and second (2003-2007) breeding bird atlases (Renfrew 2013). Based on expert knowledge, atlas data, and standardized whip-poor-will survey routes conducted since 2005, the statewide population was estimated at <200 breeding pairs in 2012 by the Scientific Advisory Group on Birds (an advisory group for the State's Endangered Species Committee of the Agency of Natural Resources). Based on this estimate and declining trends, the species was listed as threatened in 2013. There are ongoing efforts to determine a more precise estimate of the state's population, and standardized monitoring continues. Causes of declines unknown, possibly succession of farmland, prey, and/or invasive plant and other understory growth in otherwise suitable forests.

Distribution

Statewide, but primarily in Champlain and Connecticut River valleys, rare and disjunct in northern and southern thirds of the state. Highest densities appear to be in West Haven area.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☐

In Vermont, dry open deciduous or open mixed lowland forest with little or no underbrush or ground cover, near or adjacent to open areas for foraging (Cink 2002), such as pastures. Occupied territories often consist of areas where forested mountainsides abut lowland open areas such as pastures, e.g. in the lower Champlain Valley (VFWD/VCE, unpubl. data). Open areas also may be forest clearings, meadows, water, or gravel pits. May occur along power line rights-of-way and pine-oak forests along major rivers.

Common Name: **Whip-poor-will**
Scientific Name: **Caprimulgus vociferus**
Species Group: **Bird**

Habitat Types:

Upland Shores

Outcrops and Alpine

Cliffs and Talus

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Energy Infrastructure and Development

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Impacts of Roads or Transportation Systems

Invasion by Exotic Species

Description of habitat threat(s): Habitat alteration due to forestry practices or conversion of grassland to crops. Habitat conversion due to rural/suburban development of fields and forest. Habitat succession via closure of forest openings and regrowth of understory. Roads present potential threat of direct impact on whip-poor-wills that forage along roads at night, particularly secondary and tertiary roads. Solar infrastructure can result in loss of open habitat, wind turbines present strike hazard. Late successional forest stands with little undergrowth needed for nesting. Exotic plants such as Buckthorn and Mountain Holly

Common Name: **Whip-poor-will**
Scientific Name: **Caprimulgus vociferus**
Species Group: **Bird**

compromise nesting habitat. .

Non-Habitat Threats:

Predation or Herbivory

Loss of Prey Base

Description of non-habitat threat(s): Pesticide/bio control for agricultural pests may have reduced prey base. Ground nests vulnerable to predators.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Habitat preference, ultimately to guide development of management recommendations. Seemingly suitable habitat is unoccupied, although this could be due to limitations other than breeding habitat.
Research	Basic Life History	High	Many unknowns in this species that are difficult to study, including: demography, including seasonal and year-round survival, site fidelity, inter- and intra-seasonal movements, and migratory connectivity.
Research	Threats and Their Significance	High	Reasons for population declines still not well understood. Whether food is limited still unknown. Vulnerability to wind turbines, especially during migration, not known for Vermont. Survival during non-breeding season, including post-fledgling survival, could be a limiting factor. Potential effects of climate change not known.
Monitoring	Population Change	High	Standardized survey to detect regional population changes inadequate for detecting population trends at state level. Need more intensive, standardized survey method to better monitor Vermont's population, to determine local detection probabilities, and to derive a more accurate population estimate.

Common Name: **Whip-poor-will**
Scientific Name: **Caprimulgus vociferus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Investigate and implement, where possible, understory prescribed burning to create open-forest habitat w/ little underbrush suitable for whip-poor-will nesting.	Number of sites identified and positively affected by management. Population response to management.		
Habitat Restoration	Medium	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, VT Loggers	PR, EQIP
Habitat Restoration	High	Stabilize or reverse declining population trend for whip-poor-wills to realize and maintain a population of >400 breeding pairs.	Standardized survey routes, occasional statewide counts with public participation	VFWD, VCE, Audubon	PR, EQIP
Conservation Finance	Medium	Investigate and implement, where possible and where suitable habitat mosaic exists, understory prescribed burning to create open-forest habitat w/ little underbrush suitable for whip-poor-will nesting.	Number of acres identified and positively affected by management. Population response to management.		
Awareness Raising and Communications	Medium	Initiate public education campaigns on the need for active, even-age forest management on public and private lands and to eliminate undergrowth in prime potential forest habitat adjoining open habitat, especially removal of invasive plants (e.g. buckthorn	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs, number of acres treated		

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Common Name: **Chimney Swift**
Scientific Name: **Chaetura pelagica**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S4B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Vermont's second Breeding Bird Atlas found a 26% loss in the number of occupied blocks. These losses were primarily from the Champlain Valley, Northern Green Mountains, and Northern Vermont Piedmont. Declines for this species throughout its range have been shown with BBS surveys and Breeding Bird Atlas surveys. Once nested in old growth forests with scattered large hollow trees for roosting. Since settlement and industrialization, the species has shifted its habitat to mostly urban areas with large chimneys used for roosting and nesting, and agricultural areas where barns and silos provide similar roosting and nesting habitat. Reductions in sizes of chimneys due to change from coal burning to oil and electricity use have now further reduced this species population. Threats on migration pathways and wintering grounds are also a factor.

Distribution

Chimney Swifts breed in almost every region of Vermont; although the second Breeding Bird Atlas found a 26% loss in the number of occupied blocks. They travel miles to feed and are documented through ebird throughout Vermont. Chimney Swifts winter in the Amazon Basin.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Chimney Swifts formerly nested and roosted in caves and large dead trees. As European settlement and development increased, the birds nested mainly in large, tall chimneys in urban and suburban areas. The conversion from heating with coal to oil and electricity in residential homes and industrial plants has reduced the size of chimneys making them less suitable as nest sites for chimney swifts. Some experts believe the birds may still nest in large snags in rural areas. Chimney Swifts forage in a variety of habitats, but seem to prefer open areas over densely forested habitats.

Common Name: **Chimney Swift**
Scientific Name: **Chaetura pelagica**
Species Group: **Bird**

Habitat Types:

Building or Structure

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Aquatic: Man-Made Water Bodies

Current Threats

Habitat Threats:

Conversion of Habitat

Description of habitat threat(s): Originally, loss of old growth habitat with large trees used for roosting and nesting. After habitat shift, loss of large chimneys in urban areas.

Non-Habitat Threats:

Unknown Non-Habitat Threats

Description of non-habitat threat(s): Threats across their range include pesticides, collisions, catastrophic weather events, threats to wintering grounds

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Snag requirements for nesting. Determine if artifical nest structures can reverse declining population.
Research	Distribution and Abundance	Medium	Support of for gathering data from citizen scientists important, including Vermont ebird
Monitoring	Population Change	Medium	Continued monitoring needed to assess if declining trend in population is significant and warrants listing. Use of radio telemetry to determine specific habitat requirements.
Monitoring	Habitat Change	Medium	Assess forest succession conditions throughout state and determine if chimney swifts are re-occupying original forest habitats. Nest and roost trees identified and preserved.
Monitoring	Monitor Threats	Medium	Monitoring of all limiting factors goes hand-in-hand with population monitoring and is critical to evaluate long-term viability and management needs of statewide population.

Common Name: **Chimney Swift**
Scientific Name: **Chaetura pelagica**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	High	Restoration of old growth habitats should be monitored to determine if chimney swifts are re-occupying these areas.	Presence/absence of chimney swifts on breeding bird surveys, bird atlas; location of roost or nest trees.	USFS,USFWS,VFPR, private landowners.	PR, Nongame Fund, SWG
Habitat Restoration	High	Implement artificial nest structure program, especially on existing and new commercial buildings, to restore nesting opportunities for chimney swifts.	Number of artificial nest structures erected and utilized.	VFWD, VA, VCE, TWF, VLCT, VT Home Builders Association, Cons Comms	SWG

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Common Name: **Black-backed Woodpecker**
Scientific Name: **Picoides arcticus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S2B,S2N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

Uncommon resident in northeastern Vermont. Thirty successful nesting pairs documented by Weinhagen (1998) in northeastern Vermont in 1996-97. Black-backed woodpeckers in Vermont are habitat specialists that depend on mature/over mature spruce-fir- tamarack forests for nesting and foraging. Trends in amount of required habitat are unknown. Conversion of substantial amount of potential habitat from intensively managed industrial forest land to public or private land w/easements over the past decade may lead to increased and/or stable amount of preferred habitats. Habitat losses may be caused by seasonal and/or permanent residential development, especially at shoreline sites, which may experience increase frequency in the coming decade in northeastern Vermont.

Distribution

Most nesting records concentrated in Northeast Highlands. Thirty successful nests were documented by Weinhagen (1998) in 1996-97. The Second Atlas of Breeding Birds of Vermont (Renfrew 2013) reports that 35% of the Northeast Highlands biophysical region was occupied by Black-backs and that 93% of all records of this species were found here as well.

Distribution by Biophysical Region:

Champlain Valley	Not Probable	**Southern VT Piedmont**	Not Probable
Champlain Hills	Not Probable	**Vermont Valley**	Not Probable
Northern Green Mtns	Probable	**Southern Green Mtns**	Probable
Northern VT Piedmont	Confident	**Taconic Mtns**	Not Probable
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

The Black-backed woodpecker inhabits mature and decadent coniferous forests where it utilizes these older stands for both nesting and foraging habitat. Lowland spruce-fir forests and bogs and swamps supporting tamarack, red and black spruce, and balsam fir typify the natural community preferred by black-backed woodpeckers. Black-backed woodpeckers feed primarily on wood-boring beetle (cerambycids) larvae (Dixon and Saab 2000). In Vermont, Weinhagen (1998) found a mean stand diameter of 11.5 to 26.7 cm within a 900 meter radius of 62% of nest trees. Average dbh of nest trees was 27 cm (range 19-55). Natural mortality due to senescence or reduced tree vigor brought on by fire, windstorm, flooding, spruce budworm outbreak or residual stand damage from logging can all lead to cerambycid infestations followed by nesting black-backs (Dixon and Saab 2000).

Common Name: **Black-backed Woodpecker**
Scientific Name: **Picoides arcticus**
Species Group: **Bird**

Habitat Types:

Spruce Fir Northern Hardwood

Softwood Swamps

Open Peatlands

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Habitat Fragmentation

Description of habitat threat(s): Black-backed woodpeckers in Vermont are habitat specialists that depend on mature/over-mature spruce-fir-tamarack forests for nesting and foraging. Trends in amount of required habitat are unknown. Conversion of substantial amount of potential habitat from intensively managed industrial forest land to public or private land w/easements over the past decade may lead to increased and/or stable amount of preferred habitats. Habitat losses may be caused by seasonal and/or permanent residential development, however, especially at shoreline sites. Some predictions are that lakeshore development may experience increased frequency in the coming decade in northeastern Vermont.

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Minimum and optimum patch size and degree of home range overlap should be determined. Effects of selective or shelterwood silvicultural practices on nesting success should be investigated
Research	Distribution and Abundance	Medium	Periodic surveys of known woodpecker occupancy throughout the Northeast Highland biophysical region to determine extent of distribution and abundance.
Research	Threats and Their Significance	Medium	Known nest sites should be monitored periodically for limiting factors.
Monitoring	Population Change	Medium	Periodically monitor occupancy of known & potential nesting habitats
Monitoring	Habitat Change	Medium	Known nest sites should be monitored periodically for limiting factors.

Common Name: **Black-backed Woodpecker**
Scientific Name: **Picoides arcticus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Increase rotation age in some managed forests.	Number or sites and total area with increased rotation ages.	ANR	SWG,PR
Publically-Owned Protected Areas	Medium	Identify potential areas on public lands for designation as reserve or no-cut status (including some areas where wildfires and insect outbreaks would not be controlled).	Number of sites and total area of designated reserves.	ANR, UVM, TNC	SWG, PR
Protected Area Management	High	Area of suitable breeding habitat (mature spruce-fir patches > 100 ha) should be mapped. A subset of this data that is in reserve or no-cut status should be determined. Use research findings to inform whether additional acreage is necessary.	Number of sites inventoried. Number of these sites occupied by breeding black-backed woodpeckers.	ANR, UVM	SWG, PR

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Common Name: **Olive-sided Flycatcher**
Scientific Name: **Contopus cooperi**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G4
Global Trend:
State Rank: S4B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Strong NS negative trends on VT BBS routes (Sauer et al. 2004).

Population declines throughout North America (Sauer et al. 2004). VT populations widespread but local (Fichtel 1985).

Distribution

Based on Fichtel (1985).

Distribution by Biophysical Region:

Champlain Valley	Probable	**Southern VT Piedmont**	Confident
Champlain Hills		**Vermont Valley**	Confident
Northern Green Mtns	Probable	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Montane and northern coniferous forests. Frequently associated with forest openings, forest edges near natural openings, or open to semi-open forest stands (Altman and Sallabanks 2000]).

Habitat Types:

Spruce Fir Northern Hardwood

Other Cultural

Current Threats

Habitat Threats:

Conversion of Habitat

Inadequate Disturbance Regime

Description of habitat threat(s): Species seems to require disturbances in coniferous forests. Beaver ponds, burns, clearcuts, or wind throws all appear to be appropriate. The species has a large territory size (10-20 ha), therefore there seems to be wide spacing between territories. Other problems are conversion to

Common Name: **Olive-sided Flycatcher**
Scientific Name: **Contopus cooperi**
Species Group: **Bird**

nonforest habitat, loss of wintering habitat, and decrease in prey species (summarized from Altman and Sallabanks 2000).

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	Range-wide, a better understanding of habitat associations is a research priority.
Research	Basic Life History	Low	
Research	Distribution and Abundance	Medium	Habitat-specific demographic data would be useful to understanding population ecology.
Research	Threats and Their Significance	High	The relative importance of breeding versus wintering habitat loss and degradation would help target effective conservation strategies.
Monitoring	Population Change	High	Distribution in Vermont and areas of high abundance to target habitat management activities.
Monitoring	Habitat Change	High	Determine effects of disturbance regimes on habitat quality.

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Create more early successional habitat, particularly in the northeast kingdom of VT.	Number of acres positively affected by management. Population response to management.	ANR, USFWS	PR, SWG

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Common Name: **Purple Martin**
Scientific Name: **Progne subis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S3S4B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

Populations have shown a nation-wide decline, especially since 1980. The Purple Martin once lived along riparian, lake shoreline, and swamp edges. It is now almost completely found inhabiting areas close to human settlement. It originally nested in tree cavities but almost all nesting now occurs in bird houses erected by humans, except in western U.S. where some natural nesting still occurs.

Distribution

Breeding in Vermont is almost exclusively the Champlain Valley, although the bird is recorded from other places within the state. In 2012 the Scientific Advisory Group on Birds and many volunteers surveyed the state to try to record all Purple Martins breeding. This is possible with this species, as they are completely dependent upon human-provided nest sites. At that time 421 nesting pairs were counted and documented on ebird. Purple Martins migrate outside of the US to central south America. Recent research suggests that some fly across the Gulf of Mexico.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Not Probable
Champlain Hills	Not Probable	**Vermont Valley**	Not Probable
Northern Green Mtns	Not Probable	**Southern Green Mtns**	Not Probable
Northern VT Piedmont	Probable	**Taconic Mtns**	Not Probable
Northeastern Highlands	Not Probable		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Historically found along riparian areas, lake and pond shorelines, and edges of forest openings. Currently found almost exclusively around human settlements. All confirmed breeding records in the second Breeding Bird Atlas were in the Champlain Valley, with the majority of records less than 10 kilometers from the Lake. Colonies were clustered in Grand Isle County and Addison County. In Vermont a survey was completed in 2012 to find all Purple Martin nests. Birds will nest as one pair or in larger colonies. The 2012 survey ranged from 1 occupied compartment to 53 occupied compartments. Some limitations may be due to competition with non-native species such as the House Sparrow and the European Starling.

Common Name: **Purple Martin**
Scientific Name: **Progne subis**
Species Group: **Bird**

Habitat Types:

Wet Shores

Building or Structure

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Aquatic: Fluvial

Aquatic: Man-Made Water Bodies

Current Threats

Habitat Threats:

Habitat Alteration

Invasion by Exotic Species

No Habitat Threats

Climate Change

Description of habitat threat(s): Change in rainfall resulting wet springs impact food supplies for adults returning form wintering grounds and adults feeding young. Competes for nest sites with introduced House Sparrow and European starling. Habitat requires maintenance of nest boxes by humans. Inadequate number of nest boxes erected to attract martins and support population viability.

Non-Habitat Threats:

Competition

Description of non-habitat threat(s): Competes with introduced house sparrow and European starling for nest sites. Inadequate number of nest boxes erected to attract martins and support population viability. Nest boxes may not be maintained adequately by owners.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Low	
Research	Distribution and Abundance	Medium	Support for gathering data from citizen scientists important, including Vermont ebird. Support education to ensure new martin houses are built and maintained.
Research	Threats and Their Significance	Medium	Maintain existing boxes in a manner to attract martins, reduce exotic species, and prevent disease.
Monitoring	Population Change	Medium	Continued monitoring needed to assess if declining trend in population is significant and warrants listing. Use of radio telemetry to determine specific habitat requirements.
Monitoring	Habitat Change	Low	Support citizens if needed, to ensure martin houses are constructed and maintained.
Monitoring	Monitor Threats	Medium	Monitoring of all limiting factors goes hand-in-hand with population monitoring and is critical to evaluate long-term viability and management needs of statewide population.

Common Name: **Purple Martin**
Scientific Name: **Progne subis**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Species Restoration	High	Establish artificial nest box program on public and private lands.	Presence/absence of breeding martins, number of young fledged, number of nests abandoned due to house sparrows and starlings.	Audubon-VT, VCE, BOVM, Cornell Lab of Ornithology, USFWS, NRCS	Nongame Fund, SWG, Neotropical Bird Conservation Act grants, National Fish and Wildlife Foundation grants, USFWS, NRCS
Awareness Raising and Communications	Medium	Educate public about nest box program, nest box maintenance, and Purple Martin Society	Number of cooperating homeowners who erect martin boxes	VFWD, VA, VCE	SWG, PR

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Common Name: **Gray Jay**
Scientific Name: **Perisoreus canadensis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1S2B,S1S2N **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

Partners In Flight (PIF) reports a continental population estimate of 20,000 birds based on Breeding Bird Survey (BBS) estimates. The Canadian estimate of 17,000 individuals is categorized as of medium quality while the American estimate of 3.4 million (sic) birds is categorized as high quality. Breeding Bird Survey (BBS) data for Vermont is nonexistent but survey data for Quebec report increases in population size (<1.5% annual increases since 1966). However, the same indices suggest a greater than 1.5% annual decrease for grey jay in the Maritime Provinces and northern New England states. The Second Breeding Bird Atlas (2003-07) reports a 14% decrease in breeding blocks (7 blocks to 6) since the first atlas (1982). Increased softwood harvest in northeastern Vermont between 1978 and 1984 heightened concerns for the Gray Jay's continued existence. The Scientific Advisory Group on Birds (SAG) proposed it be listed as threatened, but the proposal was rejected. Public lands and conservation easements acquired over the last 2 decades in prime gray jay range, along with higher than expected densities found by Barnard in his ongoing field studies (begun in 1991) have reduced this concern. However, concerns for the species are again increased due to projected effects of long-term climate change influences potentially decreasing the abundances and distribution of the already limited boreal habitat (southern edge of range). For this reason SAG recommends this species be reclassified from medium to a high priority assessment.

Distribution

Distribution limited to largest boreal forest patches of northeastern Vermont. Strongholds include the Victory, Nulhegan and Coaticook River Basins. Also occurs at high elevation coniferous forest.

Distribution by Biophysical Region:

Champlain Valley	Not Probable	**Southern VT Piedmont**	Not Probable
Champlain Hills	Not Probable	**Vermont Valley**	Not Probable
Northern Green Mtns	Not Probable	**Southern Green Mtns**	Not Probable
Northern VT Piedmont	Probable	**Taconic Mtns**	Not Probable
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Coniferous forests and nearby deciduous or mixed woodlands.

Common Name: **Gray Jay**
Scientific Name: **Perisoreus canadensis**
Species Group: **Bird**

Habitat Types:

Spruce Fir Northern Hardwood

Softwood Swamps

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Current Threats

Habitat Threats:

Habitat Alteration

Habitat Fragmentation

Description of habitat threat(s): Gray jays utilize all seral stages of coniferous forests, readily occupy managed landscapes, and readily visit bird feeders or take handouts directly from humans. Conversion of coniferous forests in Vermont strongholds unlikely, however, smaller occupied patches (if they exist) could be degraded by residential or commercial development.

Non-Habitat Threats:

Harvest or Collection

Description of non-habitat threat(s): Accidental capture by trappers has been reported in Ontario. Susceptibility to land trap losses depends on types of baits used (Strickland and Ouellet 1993).

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	1) Investigate minimum patch size required for successful breeding and map all potential breeding habitat. 2) Determine total minimum area of suitable coniferous forest patches necessary to support 500 breeding pairs of gray jays in northeastern Vermont.
Monitoring	Population Change	Medium	Monitor population trends via surveys in targeted habitats and track the number of sites inventoried for breeding gray jays.
Monitoring	Habitat Change	Medium	

Species Strategies

Strategy Type	*Strategy Priority*	*Strategy Description*	*Performance Measure*	*Potential Partners*	*Potential Funding Sources*
Technical Assistance, Training, Learning Networks	Low	Investigate the occurrence of gray jays accidentally caught in furbearer traps in Vermont and, if needed, educate trappers on baiting techniques to minimize losses.	Number of accidental losses.	ANR, VT Trappers Association	SWG, PR

Common Name: **Gray Jay**
Scientific Name: **Perisoreus canadensis**
Species Group: **Bird**

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Common Name: **Sedge Wren**
Scientific Name: **Cistothorus platensis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S1B **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Rangewide BBS population trends have been stable long-term and in the last ten years, although northeast populations have shown non-significant declines in recent years (Sauer et al. 2014), and the species' persistence as a breeding species in the Northeast is considered to be in jeopardy. In nearly all the states where it occurs, it is state-listed as endangered or threatened. Populations have evidently undergone dramatic declines in the latter part of 20th century after a northern expansion in range which was probably due to the clearing of forests in the 1800s. Land conversion in recent decades from old fields and pasturelands to forests or development has reduced nesting habitat. However, it appears that sedge wren populations today remain well below the level that available habitats could support, and the species is rare and local in Vermont (Renfrew 2013). Breeding pairs that are present in one year are not necessarily present in subsequent years (A. Strong, pers. obs.).

Distribution

Occasionally appear in June somewhere in Champlain Valley, location not consistent. Records during the second Breeding Bird Atlas were limited to the southern half of the Champlain Valley (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Probable	**Southern VT Piedmont**	Unknown
Champlain Hills	Unknown	**Vermont Valley**	Historic Records Only
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Dense, tall growths of sedges and grasses in wet meadows, hayfields, retired croplands, upland margins of ponds and marshes, coastal marshes, and sphagnum bogs. Avoids short, sparse, or open vegetative cover, flooded areas, and wetlands dominated by cattails (Herkert et al. 2001). In Vermont, Sedge Wrens have been observed in June on older hayfields (both well-drained and wet), in a ditch, and on ungrazed pasture (Perlut 2013).

Common Name: **Sedge Wren**
Scientific Name: **Cistothorus platensis**
Species Group: **Bird**

Habitat Types:

Marshes and Sedge Meadows

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Description of habitat threat(s): Early haying of grasslands perhaps not as critical as SEWR in VT may be second nesting attempts of birds breeding further north earlier in summer. Consequently, drainage ditches in wet hayfields and meadows may reduce habitat availability. Succession of grassland habitats and conversion of agricultural habitats to urban/suburban developments problematic. Habitat conversion is likely not as severe a problem as for other grassland species, as SEWR requires wet meadow habitat and at least to some degree protected through regulatory measures.

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Determine habitat requirements, including preferred soil moisture regimes, vegetation height/density/composition, specific nesting cover requirements, minimum effective habitat area.
Research	Basic Life History	High	Determine where VT birds are coming from.
Research	Other Research	High	Habitat Requirements: Define relationships between habitat use, invertebrate prey abundance and soil moisture, rainfall, wetland proximity, grassland type. There is potential to evaluate through landsat imagery, although substantial ground-truthing would be necessary.

Common Name: **Sedge Wren**
Scientific Name: **Cistothorus platensis**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and general public about grassland birds and management options to protect habitat	Continue grassland bird outreach and landowner networking programs	VFWD, Audubon-VT, VCE, UVM	SWG, PR
Protected Area Management	High	Maintain nesting habitat throughout breeding season by developing site specific conservation plans which include restricting mowing after July 15 on publicly owned lands (WMAs and state airports).	Maintain and increase current acreage under management on state lands	VFWD, NRCS, VTrans	SWG, PR
Compatible Resource Use	Medium	Maintain consistency of timing of cutting for potential habitat, as early season mowing of potential habitat is a problem in dry springs.		UVM, NRCS	NRCS (EQIP, CRP Grassland), USDA.
Habitat Restoration	Medium	Late season mowing of potential habitat would reduce problem of succession.	Long-term maintenance of wet meadow habitat.	UVM, NRCS.	NRCS (EQIP, CRP Grassland), USDA.

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Kibbe, D.P. 2013. The Second Atlas of Breeding Birds of Vermont. R. Renfrew, ed. University Press of New England, Hanover and London. 548pp.

Common Name: **Bicknell's Thrush**
Scientific Name: **Catharus bicknelli**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G4 **Global Trend:**
State Rank: S3B **State Trend:** Unknown
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Species extensively studied by VINS since 1992, but no baseline data before that, so population trends still poorly known. Recent data from Mountain Birdwatch project indicate that species experienced an annual regionwide decline of 9.1% from 2001-2004. A habitat specialist whose overall population trends and abundance are not well known. Conservation limiting factors on both breeding and wintering grounds, combined with rarity and occupancy of naturally fragmented habitats, place the species at conservation risk. A high priority for attention in VT.

Distribution

Distributed throughout high elevation montane forests of VT

Distribution by Biophysical Region:

Champlain Valley	Not Probable	**Southern VT Piedmont**	Not Probable
Champlain Hills	Not Probable	**Vermont Valley**	Not Probable
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Not Probable	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Montane forests dominated by balsam fir with lesser amounts of red spruce, heart-leafed white birch, and mountain ash. Often associated with recently disturbed areas undergoing vigorous succession, characterized by standing dead conifers and dense regrowth of balsam fir. Highest densities typically found in chronically disturbed stands of dense, stunted fir on exposed ridgelines or along human-created openings (e.g. ski trails) or in regenerating fir waves.

Habitat Types:

Spruce Fir Northern Hardwood

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Common Name: **Bicknell's Thrush**
Scientific Name: **Catharus bicknelli**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Alteration

Habitat Fragmentation

Impacts of Roads or Transportation Systems

Climate Change

Description of habitat threat(s): The primary problems in Vermont and the Northeast (there are other, likely more significant problems on the species' Caribbean wintering grounds) are degradation and fragmentation of montane forests. Atmospheric pollution may be affecting forest health, and climate change could profoundly impact long-term viability of montane balsam fir forests. Immediate problems include loss and fragmentation of habitat from ski area development, communications tower development, and wind turbine development.

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Mercury contamination may be a problem, as research has shown significantly higher atmospheric deposition rates in montane forests than in surrounding low elevation habitats. Recent research has indicated that Hg levels in adult BITH increase with age.

Common Name: **Bicknell's Thrush**
Scientific Name: **Catharus bicknelli**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Low	Habitat requirements are reasonably well known, though responses to human-created developments need study.
Research	Basic Life History	Medium	Much basic life history is known, but some aspects of ecology and demography need further study.
Research	Distribution and Abundance	Medium	Distribution is well-documented, but better information is needed on abundance and population ecology in different subhabitat types.
Research	Threats and Their Significance	Medium	1) Expand studies of mercury contamination in BITH and synergistic effects with other environmental stressors (such as calcium depletion); evaluate effects on reproductive success, behavior, survivorship. Design and implement expanded research program on multiple peaks (at least Stratton, Mansfield, and East Mt) 2) It is not known how developments affect local breeding populations.
Research	Population Genetics	High	Knowledge of natal dispersal and migratory connectivity could help elucidate population structure and guide conservation planning.
Research	Taxonomy	Low	Taxonomy, while still debatable to some, has been resolved and is not crucial to conservation.
Research	Other Research	High	1) Conduct research that will enable robust predictions of breeding densities in different sub-habitat types, which can be extrapolated across VT and entire breeding range to derive population estimates. Design specific studies that will quantify BITH breeding densities, correlate density measures with GIS habitat data to estimate overall population numbers in different montane forest subhabitat types. Use data to generate overall population estimates. 2) There are needs for additional research on the species' wintering grounds.
Monitoring	Population Change	High	Mountain Birdwatch is a critical, ongoing program to monitor population trends.
Monitoring	Habitat Change	High	Mountain Birdwatch will collect habitat information with bird population data, as a means to evaluate local changes that may be occurring. Landscape level monitoring of montane forest habitats is essential.
Monitoring	Range Shifts	High	Ongoing monitoring through Mountain Birdwatch will help assess distributional changes, as will programs underway in Quebec and Canadian Maritime provinces, where the species also breeds.
Monitoring	Monitor Threats	High	Landscape level studies of the impacts of development on montane forest species will be the onnly means to document changes that occur. The current strategy of reacting to site-specific projects (e.g. East Mountain wind farm) is unlikely to provide rigor rigorous information that can be applied across the species' range.
Monitoring	Other Monitoring Needs	High	Monitoring must be continued on the species' winter range.

Common Name: **Bicknell's Thrush**
Scientific Name: **Catharus bicknelli**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Technical Assistance, Training, Learning Networks	High	Identify the 15 core monitoring sites, ensure that funding is available to monitor them annually and indefinitely	Coordinate with Mountain Birdwatch program to ensure annual coverage of sites	VCE, VFWD, GMC, USFS	SWG, USFWS, GMNF
Compatible Resource Use	High	Evaluate impacts of human development (ski area expansion/construction, wind power, telecommunications facility) on Bicknell's Thrush and montane forest habitat, and use results to guide future development	Evaluate published results of past studies, implement new studies as appropriate to investigate development impacts, develop and periodically revise as necessary guidelines to minimize and mitigate impacts, monitor post-construction response of BITH	ANR, USFS, TNC, VCE	SWG, GMNF, USFWS
Habitat Restoration	Medium	Implement experimental habitat manipulation measures to evaluate the possibility of creating suitable habitat for BITH through artificial disturbance	Conduct controlled habitat manipulations of montane forest to mimic natural disturbance events (e.g., fir waves, catastrophic storm events); carefully monitor BITH and vegetation responses over time	VFWD, VFPR, GMNF, VCE	SWG, GMNF, NFWF
Planning & Zoning	High	Develop a planning process whereby explicit mitigation and management guidelines are specified. Further develop a means to ensure that these are followed and monitored, both in short- and long-term.	Formalize as policy existing recommendations for ski areas and develop new recommendations as research findings warrant. Establish accountability by land owners/managers to adopt specified measures.	ANR, USFS, VCE	SWG, PR
Publically-Owned Protected Areas	High	Identify top 15 breeding sites (those with largest habitat blocks and/or largest known breeding concentrations), specify these as highest priority for long-term protection/ conservation/monitoring. Ensure minimal or no further habitat loss at these sites	Use GIS to identify 15 largest montane forest habitat patches, review current protected status of each, assess further needs for long-term protection, develop site-specific plans for each site.	VFWD, USFS, TNC, VCE	State Wildlife Grants, GMNF, USFWS

Common Name: **Bicknell's Thrush**
Scientific Name: **Catharus bicknelli**
Species Group: **Bird**

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Strong, A.M, C.C. Rimmer, K.P. McFarland, and K. Hagen. 2002. Effects of mountain resorts on wildlife. Vermont Law Review 26:689-716.

Common Name: **Wood Thrush**
Scientific Name: **Hylocichla mustelina**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

The USGS Breeding Bird Survey (BBS) reports for the period 1966-2012 the Vermont Wood Thrush population experienced an estimated 3.5% annual decline. The same BBS reported annual Wood Thrush declines of 4.8% in New Hampshire and 2.8% in the New England/Atlantic Coast Region. Partners In Flight (PIF) estimates the continental population of 11,000,000 birds. The species is declining at similar rates in NH, ME, MA, and NY and throughout USFWS Region 5. A common but declining breeding species of northern hardwoods forests, in many ways an "umbrella" species that merits focused conservation attention in VT. Its decline may be due in part to maturation of northern hardwoods forests and the fragmentation of existing forests for human development. Certain forest management practices that encourage younger aged stands and conservation of forest blocks may help stabilize Wood Thrush declines. Factors on the species' Central American wintering grounds may also be involved in its declining populations. As a forest health umbrella species the Wood Thrush's re-catagorization to High Priority represents concerns for the future of the northern hardwood forest in the face of ever expanding human development.

Distribution

Distributed widely throughout state in n. hardwood forests

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Upland, mesic northern hardwood forests, Interior and edges of deciduous and mixed forests, especially well-developed, upland, mesic sites. Key elements for suitability include: trees > 16 in height, high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter

Habitat Types:

Northern Hardwood

Common Name: **Wood Thrush**
Scientific Name: **Hylocichla mustelina**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Fragmentation

Description of habitat threat(s): Forest fragmentation may introduce nest predators and cowbirds that lower reproductive success, especially in smaller, isolated patches

Non-Habitat Threats:

Pollution

Description of non-habitat threat(s): Acidification of northern hardwoods forests and consequent calcium depletion may affect population ecology of this species

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Habitat-specific data needed in relation to assess area sensitivity in VT
Research	Basic Life History	Medium	Age- and sex-specific survivorship and reproductive success in different forest subhabitats and patch sizes needed.
Research	Distribution and Abundance	Medium	Age- and sex-specific partitioning (relative abundance and density) in different forest subhabitats and patch sizes needed
Research	Threats and Their Significance	High	1) Need to understand relative importance of differing fragmentation effects on demography, productivity, and site persistence; also how species responds to different forestry practices. Conduct field studies in different forest types (successional stage, patch size and configuration, proximity to edge habitat), use results to guide conservation planning that incorporates forestry and sustainable development. 2) Investigate environmental stressors like mercury and calcium depletion in Wood Thrush, as a means to understand their synergistic role in avian population and forest health; use results to guide regulatory planning for Hg and acidic ion emissions. Conduct studies to measure levels of Hg and Ca in WOTH and in ecosystem food chain; correlate measures to WOTH demographics and reproductive success.
Monitoring	Population Change	High	Need continued, habitat-specific monitoring in core no. hardwoods habitats, both managed and unmanaged landscapes
Monitoring	Habitat Change	High	Need to document and understand impacts of landscape-level forestry practices and atmospheric pollution on species' population biology
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	

Common Name: **Wood Thrush**
Scientific Name: **Hylocichla mustelina**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Technical Assistance, Training, Learning Networks	Medium	Educate landowners, private foresters, local conservation and planning commissions about habitat conservation needs of Wood Thrush, as a means to guide sustainable land use practices and local regulations	Develop educational materials based on known information about Wood Thrush ecology, habitat needs and conservation in VT. Provide planning expertise to local planners, landowners, foresters.	VFWD, VFPR, USFS, TNC	Municipal planning grants, NFWF
Standards	High	Evaluate and refine current forestry practices as a means to promote optimal habitat suitability for this species, and to reverse population declines	Synthesize management studies from other parts of species' breeding range and evaluate applications to VT; conduct focused studies to assess species' response to differing forestry regimes	VFPR, VFWD, USFS, VT Assoc Loggers, private foresters, VWA, Coverts	NFWF, USFWS, SWG

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Schwenk, S.. 2013. Second Atlas of Breeding Birds of Vermont. Rosalind Renfrew, ed. 547 pp. University Press of New England.

Common Name: **Brown Thrasher**
Scientific Name: **Toxostoma rufum**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

BBS trend 1966-2012 for VT was –4.5 and for 2002-2012 was -3.77 (p = 0.25). The Second Vermont Breeding Bird Atlas showed a 47% decrease in breeding block occupation from the first atlas. These trends suggest recent declines remain similar to long-term declines and as such Brown Thrasher has been moved from Medium to High Priority. Species declining along with shrub dominated and successional habitats throughout the East as forests mature and suitable habitat is converted to non-forest/non-habitat use.

Distribution

Statewide

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Confident
Northern Green Mtns	Probable	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Thicket/shrub complexes; hedgerows and early successional habitat w/ high stem densities coupled with low (10%-30%) canopy coverage.

Common Name: **Brown Thrasher**
Scientific Name: **Toxostoma rufum**
Species Group: **Bird**

Habitat Types:

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Early Succession Other Types

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Impacts of Roads or Transportation Systems

Incompatible Recreation

Description of habitat threat(s): Losses of shrub dominated and early successional woody regeneration habitats due to conversion and forest maturation.

Non-Habitat Threats:

Trampling or Direct Impacts

Pollution

Description of non-habitat threat(s): Evidence exists that nest discovery/disturbance evokes high rate of abandonment; evidence exists that pesticide use in feeding areas resulted in substantial declines.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Effects of land management practices on nest site selection and productivity/mortality.
Research	Basic Life History	Medium	More comprehensive breeding ecology information.

Common Name: **Brown Thrasher**
Scientific Name: **Toxostoma rufum**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	High	Determine appropriate old field habitat targets for state and private lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, Power companies, VT Loggers Association	PR, EQIP, private grants
Awareness Raising and Communications	High	Initiate public education campaigns to highlight the need for active, management on public and private lands to create and maintain early successional shrubland habitat for the suite of shrubland birds.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	VFWD, Audubon, VCE, power companies	PR, EQIP, private grants

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Hunt, P. 2013. The Second Atlas of Breeding Birds of Vermont. R. Renfrew, ed. University Press of New England, Hanover and London. 548pp.

Common Name: **Blue-winged Warbler**
Scientific Name: **Vermivora pinus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S2S3B
State Trend: Increasing
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

National Breeding Bird Survey data indicate a 2.44% long term population decline in the New England/Mid-Atlantic region for Blue-winged Warbler (Sauer 2011). But, results of the Second Vermont Breeding Bird Atlas (Renfrew 2013) indicate a 125% increase in Blue-winged Warblers between this publication and the First Vermont Breeding Bird Atlas (Laughlin and Kibbe 1985). Species distribution has shifted since the early 1980s, and appears to be moving north. PA and MD observed declines in their recent atlases, while Ontario and NY had increases (Renfrew 2013). Species is listed as Special Concern due to small population size and declining habitat.

Distribution

The Second Vermont Breeding Bird Atlas (Renfrew 2013) reports Blue-winged Warbler distribution to be largely in the western biophysical regions that border New York State where 81% of the species records are found. The Northern Green Mountain and Southern Vermont Piedmont regions hold the remaining 5% and 14%, of the distribution respectively. The species likely occurs in other regions of the state during migration.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Unknown
Northern Green Mtns	Probable	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Confident
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Nests in brushy growth near the borders of swamps or streams, forest edges, abandoned fields and pastures, thickets, and second-growth woods. Prefers brushy old pastures and old fields with saplings < 3 m tall" (DeGraaf and Yamasaki 2001).

Common Name: **Blue-winged Warbler**
Scientific Name: **Vermivora pinus**
Species Group: **Bird**

Habitat Types:

Shrub Swamps

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Description of habitat threat(s): Succession of old field to forest, loss of habitat to development, and fragmentation are major problems.

Non-Habitat Threats:

Genetics

Predation or Herbivory

Description of non-habitat threat(s): Hybridization with Golden-winged Warbler. Although hybridizes extensively with Golden-winged Warbler, introgressive hybridization appears to be asymmetric with Blue-winged Warbler gene pool remaining largely "pure" (Gill et al. 2001). Competition between Blue-winged Warbler and Golden-winged Warbler appears to be leading to continual northward shift in the range of Golden-winged Warbler. Colonization of Golden-winged Warbler breeding sites by Blue-winged Warbler may have negative impacts on Golden-winged Warbler populations. Brown-headed Cowbird parasitism is also a signficant problem,

Common Name: **Blue-winged Warbler**
Scientific Name: **Vermivora pinus**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	Develop a better understanding of the characteristics of high quality habitat would be valuable, as are optimal management activities. Audubon VT and NRCS are working together to answer these questions.
Research	Distribution and Abundance	High	Likely more common in Vermont than Breeding Bird Atlas data suggest. Because habitat is transitory and song is not necessarily a good indicator of presence (because of hybridization) there is a need to characterize the species' distribution in the State. Audubon VT is currently doing some of this work.
Research	Threats and Their Significance	High	Understanding effects of Brown-headed Cowbirds, Golden-winged Warbler, development, and succession are necessary to manage and conserve the species in VT.
Monitoring	Population Change	Medium	Knowing how long a patch remains suitable would be useful, as is knowing how long after management Blue-winged Warbler will return to a site. Additionally, understanding how species interacts with Golden-winged Warbler presence and Brown-headed Cowbird parasitism would also be helpful.
Monitoring	Habitat Change	High	Quantify the relative importance of succession and development.
Monitoring	Range Shifts	Medium	Determine if the species is moving northward in VT and if there are areas that are "pure" Blue-winged Warbler sites.
Monitoring	Monitor Threats	Medium	Get better information about current limiting factors to habitat (development versus habitat succession). Implement periodic assessment (5 year?) of grassland/shrubland acreage in Vermont, likely through GIS analysis.

Common Name: **Blue-winged Warbler**
Scientific Name: **Vermivora pinus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Awareness Raising and Communications	Medium	Initiate education campaigns highlighting the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes. Use demonstration sites to educate public and professionals about BMPs	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	Audubon VT, NRCS, VFWD, Towns, land trusts, etc.	Private grants
Easements	High	Create at least one large (>1000 ha) management area dedicated to early successional species.	Acres of land purchase or conservation easements with dedicated management plan acquired.	UVM, NRCS, VFWD.	NRCS, USDA.
Habitat Restoration	High	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, NRCS, USFS, Audubon VT, Forest Products Association, VT Loggers	PR, EQIP,

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Common Name: **Golden-winged Warbler**
Scientific Name: **Vermivora chrysoptera**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G4 **Global Trend:**
State Rank: S2S3B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

National Breeding Bird Survey data show a long term Golden-winged Warbler population decline of 10.8% in the Northeast/Mid-Atlantic regions (Sauer 2011). Results of the Second Vermont Breeding Bird Atlas (Renfrew 2013) indicate a 7% decline between this effort and the First Vermont Atlas (Laughlin 1985). It is suspected the species has been negatively affected by Brown-headed Cowbird parasitism and hybridization with Blue-winged Warblers (Confer 1992), as well as forest succession (Renfrew 2013). Audubon Vermont surveys conducted in 2013 and 2014 found approximately 60 Golden-winged Warblers in the southern Champlain Valley, which is significantly more than the previously estimated population of 20 pairs (Audubon VT, unpubl. data). Partners in Flight report Golden-winged Warblers to be a Tier 2 species (Rosenberg and Wells 2005). It is likely that forest succession and development of abandoned agricultural habitat will continue to limit this species.

Distribution

The Second Vermont Breeding Bird Atlas indicates 100% of the confirmed nesting distribution of the species is found among the Champlain Valley, Vermont Valley, and Taconic Mountain biophysical regions (Renfrew 2013). The species may occur in other regions as migrant.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Confident
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Confident
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Preferred habitat in Vermont is a mosaic of shrub thickets, forbs, grasses, scattered trees or saplings, and forest edges (Confer 1992, and C. Smalling, pers. comm.). Also uses power line rights-of-way (ROWs) (Golden-winged Warbler Working Group 2013). The Golden-winged Warbler Working group (2013) recommends the following for optimal Golden-winged Warbler habitat, as long as the area is next to a primarily deciduous forest patch and non-active agriculture (such as row crops):

-- 30-70% tall shrubs and saplings (3–13 ft.) distributed unevenly
-- Herbaceous openings (mostly forbs and some grasses)
-- Deciduous trees (5–15/acre), creating 10–30% canopy cover

Common Name: **Golden-winged Warbler**
Scientific Name: **Vermivora chrysoptera**
Species Group: **Bird**

Habitat Types:

Early Succession Northern Hardwoods

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Description of habitat threat(s): Loss of habitat through development and succession. Habitat quality may decline with presence of Brown-headed Cowbird and Blue-winged Warbler.

Non-Habitat Threats:

Genetics

Description of non-habitat threat(s): Hybridization with Blue-winged Warbler may be causing range shifts and contribute to overall decline of the Golden-winged Warbler.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	A better understanding of the characteristics of high quality habitat would be valuable, as are optimal management activities. Audubon VT and NRCS are working together to answer these questions.
Research	Distribution and Abundance	High	Because habitat is transitory and song is not necessarily a good indicator of presence (because of hybridization) there is a need to characterize the species' distribution in the State. Audubon VT is currently doing some of this work.
Research	Threats and Their Significance	High	Understanding effects of cowbirds, BWWA, development, and succession are necessary to manage and conserve the species in VT.
Research	Population Genetics	Medium	Quantifying the genetic "pureness" of the VT population would be valuable, especially understanding N-S variation. Hybridization likely a factor.
Monitoring	Population Change	High	Knowing how long a patch remains suitable would be useful, as is knowing how long after management GWWA will return to a site. Additionally, understanding how species reacts to BWWA presence and BHCO parasitism would also be helpful.
Monitoring	Habitat Change	Medium	Quantify the relative importance of succession and development.
Monitoring	Range Shifts	Medium	Determine if the species being pushed northward in VT as a result of hybridization and genetic swamping by Blue-winged Warbler
Monitoring	Monitor Threats	Medium	Monitor the effects of Blue-winged Warbler, development, succession, and Brown-headed Cowbird . In particular better information about current limiting factors to habitat (development versus succession). Periodic assessment (5 year?) of early successional acreage in Vermont, possibly through GIS analysis.

Common Name: **Golden-winged Warbler**
Scientific Name: **Vermivora chrysoptera**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	High	Stabilize or reverse declining population trend for GWWA through habitat management via NRCS, USFWS funds, and private and corporate landowners	Population response to management, targeted surveys.	VFWD, NRCS, Audubon VT, VELCO, private & corporate landowners	NRCS, private and other public funding sources (NFWF)
Research	Medium	Determine if there are any habitats that are used solely by GWWA and prioritize for conservation. Research genetics of VT GWWA/BWWA population to determine the level of genetic swamping.	Stable population of GWWA in the presence of BWWA.	UVM, Audubon VT, VFWD.	NFWF. PR, SWG
Awareness Raising and Communications	Medium	Initiate education campaigns highlighting the need for active, even-age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes. Use demonstration sites to educate public and professionals about BMPs.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs	Audubon VT, NRCS, VFWD, Towns, land trusts	Private foundations
Habitat Restoration	High	Establish at least one large (>1000 ha) management area dedicated to early successional species.	Land purchase or conservation easements and dedicated management plan.	VFWD, NRCS, TNC.	SWG, NRCS

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Common Name: **Chestnut-sided Warbler**
Scientific Name: **Dendroica pensylvanica**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? No

Assessment Narrative:

This species is slowly declining in Vermont according to Breeding Bird Survey data. However, it was found widely distributed throughout the state in both breeding bird atlases. Most gains from the first atlas occurred in the Champlain Valley, including the Lake Champlain islands (Renfrew2013) .Shrub habitats are a necessary component for nesting either through succession of agricultural fields or periodic active forest management.

Distribution

Found in all regions of the state with increases noted mainly in the northern part of the Champlain Valley. Distribution has remained consistent between the two breeding bird atlases.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Forested or shrubby habitats during migration. The species requires shrubs for nesting mostly in early successional hardwood forests that are 1-3m in height (DeGraaf et. al. 2006). Highly specialized habitat for breeding, confined to early-successional deciduous forest ranging from wet to dry sites. This habitat can be provided using even-aged management, or uneven-aged forest management using group selection tree cutting that promotes shrub development. Not known to use coniferous forest habitats.

Common Name: **Chestnut-sided Warbler**
Scientific Name: **Dendroica pensylvanica**
Species Group: **Bird**

Habitat Types:

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Inadequate Disturbance Regime

Habitat Fragmentation

Description of habitat threat(s): Loss of successional habitats due to conversion to non-forested uses and suppression of natural disturbance (flood, fire), and reductions in active forest management.

Non-Habitat Threats:

Pollution

Loss of Prey Base

Description of non-habitat threat(s): Some indications that Lepidoptera larvae reductions due to pesticides and biological controls can decrease productivity.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Basic Life History	Medium	Basic research on breeding activities is needed, particularly to determine trends in re-nesting and lifetime broods/reproductive success

Common Name: **Chestnut-sided Warbler**
Scientific Name: **Dendroica pensylvanica**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative (modeled on NH's Small Landowner Grant program). Fund for > $50,000/yr with revenues from state lands forest management. This could offset landowner EQIP obligations.	Level of funds raised.	FWD	SWG
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	VFWD, USFS, USFWS	SWG, PR
Habitat Restoration	High	Stabilize or reverse declining population trend for Chestnut-sided warblers to realize and maintain a survey value of 14-15 per BBS route or between 120,000 to 180,000 individuals (Rosenberg 2004).	Population response to management, BBS surveys.	Audubon, VFWD	PR, EQIP
Habitat Restoration	Medium	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, VT Loggers	PR, EQIP

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Common Name: **Black-throated Blue Warbler**
Scientific Name: **Dendroica caerulescens**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Stable
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

BBS survey trends variable by time period. Survey-wide, significant positive long- (1966-2012, +2.26%) and short-term trends (2002-2012; +3.77%). Vermont shows non-significant increases in both long- and short-term periods. Slight (3%) increase in number of blocks with breeding evidence between first and second breeding bird atlases. Population likely secure. Primary breeding ground limiting factors result from consequences of fragmentation (by permanent land use changes) on reproductive success. Because winter range is restricted to the Caribbean, there is some concern over the effects of deforestation on these islands, particularly the Greater Antilles.

Distribution

From Kibbe (1985).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Large, continuous tracts of undisturbed deciduous or mixed deciduous/coniferous forests, often in hilly or mountainous terrain (Holmes 1994). " Uneven aged timber harvest methods such as selection or group cuts can effectively mimic the natural disturbance regime and seem to be compatible with Black-throated Blue Warbler conservation" (Burdett and Niemi 2003).

Habitat Types:

Northern Hardwood

Current Threats

Habitat Threats:

Conversion of Habitat

Common Name: **Black-throated Blue Warbler**
Scientific Name: **Dendroica caerulescens**
Species Group: **Bird**

Habitat Alteration

Habitat Fragmentation

Climate Change

Description of habitat threat(s): Productivity and density decrease in forest fragments. Susceptible to parasitism by Brown-headed Cowbirds in these forests when located in predominately agricultural landscapes. Habitat conversion through development or habitat alteration from clearcutting can limit species. Conversely, as forest regenerates from abandonment of agricultural lands, additional habitat will become available through succession.

Species susceptible to decreased overwinter survival rates with El Niño cycle droughts in the Caribbean (Sillett et al. 2000). Some evidence that ENSO cycles are becoming more extreme. Simulations of range shift in response to climate change suggests extirpation from Vermont by 2080 (National Audubon Society 2014).

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Distribution and Abundance	Medium	1) Compare changes in population trends across BBS routes in areas with different land use patterns. 2) More information is neede on distribution and overwinter survival in disturbed habitats on wintering grounds.
Research	Threats and Their Significance	High	Effects of fragmentation on breeding season productivity, particularly the effects of predation and cowbird parasitism should be further researched. Landscapes dominated by contigous forests have not consistently shown increased predation trends associated with relatively temporary disturbances, such as timber harvests; "It is critical to better comprehend the complex relationships that exist between nest predation, habitat fragmentation, and landscape context." (Burdett and Niemi 2003).
Monitoring	Population Change	Medium	A better assessment of population trends across a variety of landscape types is needed.
Monitoring	Habitat Change	High	1) Better information on land use change in Vermont would help concentrate development in areas that would be less likely to affect forest interior species. Trends in rate of forest loss and fragmentation across range should be investigated. 2) Continue to monitor populations at Hubbard Brook Experimental Forest (unfragmented), unevenaged-managed forests, and forest fragments in Vermont to better assess the effect of patch size and management on population trends using a source-sink framework

Common Name: **Black-throated Blue Warbler**
Scientific Name: **Dendroica caerulescens**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Compatible Resource Use	Medium	Where timber resource extraction and/or other habitat management goals requiring timber cutting are desired, uneven aged management, using selection harvests, should be employed on a portion of public lands	Amount of public forests designated for unevenaged management.	ANR, USFS, USFWS	SWG, PR
Habitat Restoration	Medium	Identify contiguous forests blocks w/mature components & encourage their conservation via easements or other financial incentives on private lands. Conserve contiguous forest blocks on public lands via appropriate long-range management plan designations.	Number and distribution of core forest blocks conserved on private and public lands.		

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Common Name: **Prairie Warbler**
Scientific Name: **Dendroica discolor**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S3B **State Trend:** Stable
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

BBS trend for eastern region, 1966-2012 = -2.04 and 2002-2012= -1.07. Significant declines in the US per BBS data 1966 -2012; less significant decline 2002-2012. Distribution during first Vermont Bird Atlas was limited to the eastern foothills but shifted in large part to the southern Champlain Valley during the second Vermont Breeding Bird Atlas. Second Breeding Bird Atlas showed a 66% increase in priority block occupancy (4 blocks to 7).

Distribution

Rare breeder in southern Champlain Valley and northern CT River drainage.

Distribution by Biophysical Region:

Champlain Valley	Probable	**Southern VT Piedmont**	Probable
Champlain Hills	Probable	**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Breeding habitat of early successional hardwood forest regeneration, old field, shrub/dune, upland shrub habitats; prefers open canopy (however uses closed canopy palustrine forest in Mid-Atlantic breeding areas). Utilizes, powerline corridors, Christmas tree farms and gravel pit/mine shrub habitats.

Common Name: **Prairie Warbler**
Scientific Name: **Dendroica discolor**
Species Group: **Bird**

Habitat Types:

Upland Shores

Outcrops and Alpine

Cliffs and Talus

Spruce Fir Northern Hardwood

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Hardwood Swamps

Softwood Swamps

Seeps and Pools

Early Succession Boreal Hardwoods

Early Succession Spruce-Fir

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Early Succession Other Types

Mine

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Description of habitat threat(s): Succession of old field habitats and forest maturation have caused habitat decline in parts of Vermont.

Non-Habitat Threats:

Parasites

Description of non-habitat threat(s): Parasitized by brown-headed cowbird.

Common Name: **Prairie Warbler**
Scientific Name: **Dendroica discolor**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	High	Effects of land management practices on nest site selection and productivity/mortality
Research	Basic Life History	Medium	More comprehensive breeding ecology information.

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	High	Determine appropriate old field habitat targets for state and private lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	Audubon, VFWD, NRCS, Ruffed Grouse Society, Wild Turkey Federation	PR, EQIP, private grants, power companies
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, management on public and private lands to create and maintain early successional shrubland habitat for the suite of shrubland birds.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	VFWD, Audubon, NRCS, VCE, power companies	PR, EQIP, Private grants, Power companies

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Common Name: **Bay-breasted Warbler**
Scientific Name: **Dendroica castanea**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5
Global Trend:
State Rank: S1B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Breeding evidence documented in three priority blocks during the first breeding bird atlas and four blocks during the second atlas, none of which were the same between atlases. Only three confirmed breeding records for the state. Breeding Bird Survey results are not available for Vermont. The species' trends are variable across regions. However, analyses of population trends from Canada (which supports 98% of the breeding population) suggests 3-5%/year declines depending on the time period analyzed (Venier et al. 2011).

Distribution

First breeding confirmation was near Sable Mountain, Granby (1980). Subsequently confirmed nesting at Wenlock Wildlife Management Area, Ferdinand (1987) and Brighton State Park, Brighton (1995) and four blocks during the second atlas.

Distribution by Biophysical Region:

Champlain Valley	Unknown	**Southern VT Piedmont**	Unknown
Champlain Hills	Unknown	**Vermont Valley**	Unknown
Northern Green Mtns	Confident	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Mainly breeds in dense, boreal forests of mature spruce and fir; also inhabits old mixed-wood stands and prefers moist, swampy areas to dry, upland locations. (Mayasich and Niemi 2002). Dramatic increases reported in response to outbreaks of spruce budworm (Choristoneaura fumiferana)."Foraging microhabitat preferences are the inner portions of mid-level branches that are among the large lichen-covered (scant foliage) limbs of conifers; also the inner portions of conifer branches among the dead limbs at lower heights." (Mayasich and Niemi 2002).

Common Name: **Bay-breasted Warbler**
Scientific Name: **Dendroica castanea**
Species Group: **Bird**

Habitat Types:

Spruce Fir Northern Hardwood

Softwood Swamps

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Fragmentation

Description of habitat threat(s): Some suggestion that Bay-breasted Warblers are susceptible to habitat conversion of wintering ground habitat. Additionally, conversion of natural forests to plantations of black spruce (Picea mariana) and jack pine (Pinus banksiana) plantations decrease habitat quality as these species are less susceptible to spruce-budworm (a key food resources for the Bay-breasted Warbler) outbreaks. Loss and fragmentation of late successional, lowland spruce-fir forest; management practices that favor short-cutting cycles preventing establishment of late successional habitat.

Description of non-habitat threat(s): Possible impacts from aerial spraying for spruce budworm (declines following application of organophosphate insecticides documented in New Brunswick in 1970s)

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Specific habitat association in VT needs better documentation
Research	Basic Life History	Medium	
Research	Distribution and Abundance	High	Not well documented in VT. A targeted survey of this and other late successional, lowland boreal forest birds is needed. Virtually no information exists now.
Research	Threats and Their Significance	High	Need to understand landscape level limiting factors (primarily via timber harvesting) to persistence of late successional, lowland boreal forests and population biology of this species
Research	Population Genetics	Low	
Research	Taxonomy	Low	
Monitoring	Population Change	High	Traditional monitoring methods (BBS, VT Forest Bird Monitoring Program) do not adequately cover this species. Need to document trends in VT via a targeted survey of lowland boreal forests.
Monitoring	Habitat Change	High	Need to understand landscape level changes and limiting factors (primarily via poorly-planned timber harvesting) to persistence of late successional, lowland boreal forests. Quantify extent of current suitable breeding habitat.
Monitoring	Range Shifts	Low	
Monitoring	Monitor Threats	Medium	

Common Name: **Bay-breasted Warbler**
Scientific Name: **Dendroica castanea**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Publically-Owned Protected Areas	Medium	Identify potential areas on public lands for designation as reserve or no-cut status (including some areas where wildfires and insect outbreaks would not be controlled).	Number of sites and total area of designated reserves.	ANR, USFS, USFWS, UVM, TNC	SWG, PR
Habitat Restoration	Medium	Apply increased rotation ages to some managed spruce-fir forests on public lands.	Number of sites and total area with increased rotation ages.	ANR, USFS, USFWS	SWG, PR
Species Restoration	Medium	Determine current management regimes, and ensure that overall management is compatible with goal of maintaining or increasing current population levels. No PIF target was set for VT as "Population numbers are unavailable at this time" (Rosenberg 2004).			

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Common Name: **Blackpoll Warbler**
Scientific Name: **Dendroica striata**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S4S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** No

Assessment Narrative:

The breeding distribution for Blackpoll Warbler appears to not have changed much in last 25 years. However, data indicates significant changes within the distribution have occurred. This is also the case in Vermont. The species occupied 33 priority 1 blocks during the first Vermont atlas (1982) and 28 priority 1 blocks during the second atlas (2013). But during that interval, priority block gains numbered 8 while losses numbered 13. Blackpolls are found largely among the high elevation spruce-fir forests of the Green Mountains. Elevations greater than 2800 feet most often provide the greatest area of montane forest, the blackpoll's preferred habitat. Although the population appears to have been static during the last 30 years threats such as habitat loss to human development and accumulated environmental toxins such as mercury are likely an important factor in the species' long-term status. Current climate change models project the warbler's preferred montane forest habitat will decrease in size as it recedes northward. This suggests a seriously imperiled future for the species.

Distribution

This species is a high elevation species that breeds above 2800 feet in Vermont. It is detected throughout Vermont during spring and fall migration. Recent work by VCE biologists and biologists in Nova Scotia used geotrackers to show these birds fly non-stop over the Atlantic Ocean an average of 2540 km to the Greater Antilles or the northeastern coast of South America.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

In Vermont Blackpoll Warblers breed in dense thickets within montane forests dominated by balsam fir, with lesser amounts of spruce, white birch, and mountain ash.

Habitat Types:

Spruce Fir Northern Hardwood

Early Succession Spruce-Fir

Common Name: **Blackpoll Warbler**
Scientific Name: **Dendroica striata**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Energy Infrastructure and Development

Habitat Alteration

Habitat Fragmentation

Climate Change

Description of habitat threat(s): Audubon's climate model suggest that this species will be effected by climate change as the spruce-fir habitat is shifting upslope, requiring the and the species breeding range to contract or shift north. Other potential problems include loss and fragmentation of montane forests from ski area, wind power and telecommunications development. Collision mortalities have been documented with wind energy facilities and telecommunication towers.

Non-Habitat Threats:

Pollution

Trampling or Direct Impacts

Description of non-habitat threat(s): Atmospheric pollution, including airborne mercury, could impact the species directly, as well as damage its habitat. Collision mortalities have been documented with buildings.

Common Name: **Blackpoll Warbler**
Scientific Name: **Dendroica striata**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	Habitat needs reasonably well known, although population structure in different sub habitat types (krummholz, regenerating chronically disturbed forests, taller stature and more open forests, transitional spruce-fir-birch forests) not well known.
Research	Basic Life History	High	Demographics and breeding success need more study, especially in different sub habitat types.
Research	Distribution and Abundance	Medium	Fairly well known, although relative abundance in different sub habitat types needs to be better quantified. Conduct research that will enable robust predictions of breeding densities in different sub-habitat types, which can be extrapolated across breeding range to derive population estimates. Documenting shift range may be necessary if climate change has a big impact on Vermont's high elevation habitat.
Research	Threats and Their Significance	High	1) Species' susceptibility and response to habitat fragmentation and conversion from development (ski area, wind turbines, telecommunications facilities) needs to be better understood. Evaluate impacts of human development (ski area expansion/construction, wind power, telecommunications facility) on montane forest habitat, and use results to guide future development. 2) Impacts of atmospheric pollutants (e.g. mercury) and possible role of calcium depletion should be studied.
Research	Population Genetics	Low	Genetic structure of breeding populations in Northeast, and relation to core breeding populations in Canada interesting, but probably not crucial for conservation.
Research	Taxonomy	Low	Genetic structure of breeding populations in Northeast, and relation to core breeding populations in Canada interesting, but probably not crucial for conservation.
Monitoring	Population Change	High	Species poorly monitored by traditional methods like BBS. VCE Mountain Birdwatch program monitors adequately, but must be maintained for long-term. Very important to monitor this species as an avian indicator of montane forests. Continue long-term monitoring at a minimum of 15-20 sites in VT to document population trends. Support for gathering data form citizen scientists important.
Monitoring	Habitat Change	High	Important to document habitat changes in concert with population changes.
Monitoring	Range Shifts	Medium	This should be covered by a regional monitoring program (i.e. Mountain Birdwatch).
Monitoring	Monitor Threats	Medium	Important to monitor limiting factors like development, atmospheric pollution, mercury burdens, climate change, impacts of collisions.

Common Name: **Blackpoll Warbler**
Scientific Name: **Dendroica striata**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Planning & Zoning	Medium	Develop a planning process whereby explicit mitigation and management guidelines are specified. Further develop a means to ensure that these are followed, and results monitored, both in short- and long-term.			
Research	High	Monitor development, atmospheric pollution, mercury burdens, climate change, impacts of collisions.		VCE, Audubon, BOVM, FWS	SWG
Habitat Restoration	High	Identify 10-15 core breeding sites and ensure that a long-term protection plan exists for each.	The number of sites protected		

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Common Name: **Cerulean Warbler**
Scientific Name: **Dendroica cerulea**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G4 **Global Trend:**
State Rank: S1B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Strong significant long-term decline (-4.2%) based on survey-wide BBS data. No data from Vermont.

Historic population at the mouth of the Lamoille River appears to be extirpated. In 2002-2004, singing males have been located in Niquette Bay State Park, Highgate, and near Colchester Pond. More populations may be discovered as Vermont's forests continue to mature (and the second breeding bird atlas is completed), however declines throughout its range suggest that this species will never be common in Vermont. Preliminary survey data from the wintering range suggest that it can be found in a diversity of forest types in Columbia, Venezuela, Ecuador, and Peru (Hamel 2000).

Distribution

Data from Ellison (1985).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Unknown
Champlain Hills		**Vermont Valley**	Unknown
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

As summarized by Hamel (2000), this species requires a closed canopy, presence of scattered tall, old growth canopy trees, and distinct layering of foliage from ground cover to canopy. Area sensitivity varies by area with minimum patch size 20-30 ha in Ohio to 700 ha in Middle Atlantic States to 1,600 ha in the Mississippi Alluvial Valley, but breeding occurs in 10 ha patches in Ontario (summarized by Hamel 2000).

Habitat Types:

Northern Hardwood

Oak-Pine Northern Hardwood

Floodplain Forests

Common Name: **Cerulean Warbler**
Scientific Name: **Dendroica cerulea**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Fragmentation

Description of habitat threat(s): Area sensitive in parts of its range, suggesting fragmentation a problem to population. Development or harvest of mature upland forests will decrease available habitat.

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Species has been relatively well-studied on its breeding range, including recent studies from Ontario. However, better summaries of this information may lead to directed searches for new populations in Vermont. Better information about habitat requireme
Research	Basic Life History	Medium	Also relatively well-studied, however more information about non-breeding social system, particularly as to whether or not they are an obligate flock follower.
Research	Distribution and Abundance	High	1) Directed surveys in Vermont are necessary to better understand their present status in the state. 2) Better information on distribution in Vermont will be critical to conserving the species and predicting future distribution. Intensively monitor (as le
Research	Threats and Their Significance	Low	Presumably habitat quality in Vermont will increase as forests mature. However, some information on minimum patch size would help in understanding the effects of development.
Monitoring	Population Change	High	Population trends in Vermont will be difficult to assess without more information on distribution. But all known local populations should be carefully monitored.
Monitoring	Habitat Change	Low	As forest regenerates from abandonment of agricultural lands, habitat will become available through succession. Population response of CERW will be difficult to assess. Forest growth models might be useful in helping to predict future occurrences in the s

Common Name: **Cerulean Warbler**
Scientific Name: **Dendroica cerulea**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Identify contiguous forests blocks w/mature components & encourage their conservation via easements or other financial incentives on private lands. Conserve contiguous forest blocks on public lands via appropriate long-range management plan designations.	Number and distribution of core forest blocks conserved on private and public lands	ANR, USFS, USFWS, VHCB, VLT, TNC	SWG, PR, VHCB
Easements	Medium	Maintain of large forest tracts, particularly in Champlain Valley and Taconic regions.	Maintenance of large forest tracts, particularly in Champlain Valley and Taconic regions.	TNC, VFWD, Forest Legacy program	TNC

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Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S4B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

In Vermont the results from the second Breeding Bird Atlas indicate this bird is declining in Vermont. Block occupancy dropped 31% between the Atlases. Regional atlases and breeding bird surveys have also demonstrated a decline throughout the region over the past 30 years. As the climate and the forests change this species may be at a greater risk, not only on its breeding grounds, but also on its wintering grounds.

Distribution

Canada Warblers are found throughout Vermont. The Canada Warbler is considered a neotropical migrant and migrates migrates form its breeding grounds to northern South America

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

A wide range of coniferous and deciduous forests, and mixed forests at all elevations, but especially mid-slopes in Green Mountains. Uses both mature and regenerating forest. Seem to prefer a dense understory with moss, and an uneven forest floor. Hummocks, roots, and debris are used to hide the nest and fledglings. Clearcuts and shelterwood cuts received more use than mature forest in northern New Hampshire. First appear in clearcuts 5 years after harvest, become common after 15 years and remain abundant until the next cutting cycle.

Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

Habitat Types:

Spruce Fir Northern Hardwood

Northern Hardwood

Softwood Swamps

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Habitat Fragmentation

Climate Change

Description of habitat threat(s): Forest succession, loss of forested wetlands, and development all may influence suitable nesting sites. Climate change may alter the plant structure increasing the likelihood that the birds move further north (and out of Vermont to breed). Significant problems may occur on South American wintering grounds (mid-slope of Andes Mts)

Non-Habitat Threats:

Trampling or Direct Impacts

Pollution

Description of non-habitat threat(s): Atmospheric pollution, including airborne mercury, could impact the species directly, as well as damage its habitat. Although not well documented, collisions with glass buildings and wind towers can be a source of mortality for migrating, especially with birds that migrate at night

Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S4B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

In Vermont the results from the second Breeding Bird Atlas indicate this bird is declining in Vermont. Block occupancy dropped 31% between the Atlases. Regional atlases and breeding bird surveys have also demonstrated a decline throughout the region over the past 30 years. As the climate and the forests change this species may be at a greater risk, not only on its breeding grounds, but also on its wintering grounds.

Distribution

Canada Warblers are found throughout Vermont. The Canada Warbler is considered a neotropical migrant and migrates migrates form its breeding grounds to northern South America

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

A wide range of coniferous and deciduous forests, and mixed forests at all elevations, but especially mid-slopes in Green Mountains. Uses both mature and regenerating forest. Seem to prefer a dense understory with moss, and an uneven forest floor. Hummocks, roots, and debris are used to hide the nest and fledglings. Clearcuts and shelterwood cuts received more use than mature forest in northern New Hampshire. First appear in clearcuts 5 years after harvest, become common after 15 years and remain abundant until the next cutting cycle.

Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

Habitat Types:

Spruce Fir Northern Hardwood

Northern Hardwood

Softwood Swamps

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Habitat Fragmentation

Climate Change

Description of habitat threat(s): Forest succession, loss of forested wetlands, and development all may influence suitable nesting sites. Climate change may alter the plant structure increasing the likelihood that the birds move further north (and out of Vermont to breed). Significant problems may occur on South American wintering grounds (mid-slope of Andes Mts)

Non-Habitat Threats:

Trampling or Direct Impacts

Pollution

Description of non-habitat threat(s): Atmospheric pollution, including airborne mercury, could impact the species directly, as well as damage its habitat. Although not well documented, collisions with glass buildings and wind towers can be a source of mortality for migrating, especially with birds that migrate at night

Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

Research and Monitoring Needs

Type	Need	Priority	Description
Research	Habitat Requirements	Medium	These are reasonably well known overall, but important to understand ecological and demographic differences in core populations that inhabit in prime habitats vs. smaller, more peripheral populations in patchy, secondary habitats
Research	Basic Life History	High	Nest success and productivity are poorly understood, as is age structure of populations in different habitat types. Need to understand demographics in secondary habitats (i.e. small patches) vs. those in core habitats
Research	Distribution and Abundance	Low	
Research	Threats and Their Significance	High	Need continued research on effects of forestry practices on populations in both prime and secondary habitats. Research on effects of climate change.
Research	Taxonomy	Low	Taxonomic research led to the recent name change.
Monitoring	Population Change	High	Need to ensure a long-term monitoring program that adequately samples this species, to clearly document declines or increases. Support of Vermont ebird for gathering data from citizen scientists important.
Monitoring	Habitat Change	High	Important to know how species responds to both natural and human-caused habitat changes
Monitoring	Range Shifts	Medium	Ability to shift range may be necessary if climate change has a big impact on Vermont forests
Monitoring	Monitor Threats	medium	

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Habitat Restoration	Medium	Design and implement forest management strategies to enhance habitat suitability.	Area of potential habitat with long-range management plans which provide for beneficial forms of active forest management.	VFWD, USFS, USFWS	SWG, PR
Planning & Zoning	Medium	Conserve large tracts of core breeding habitats (mid-slope mixed forests, cedar swamps, red maple-conifer swamps).	Number of large forest tracts conserved via public ownership, easements, or town planning/zoning	ANR, USFS, USFWS, Town and RPCs	SWG, PR

Common Name: **Canada Warbler**
Scientific Name: **Wilsonia canadensis**
Species Group: **Bird**

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Common Name: **Eastern Towhee**
Scientific Name: **Pipilo erythrophthalmus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Species declining across region due to conversion of necessary early successional/shrub dominated habitats to either non-forest condition or via maturation of forest cover to an unsuitable forest age structure.

Distribution

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills		**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Early-successional/shrub/edge habitats, both mesic and xeric, characterized by dense shrub-small tree cover near ground and well-developed litter layer. Cover may be continuous or discontinuous patches interspersed w/in more open ground. Overstory trees may or may not be present, however open-canopied woodlands are favored over closed canopy coverage.

Habitat Types:

Shrub Swamps

Early Succession Boreal Hardwoods

Early Succession Pine and Hemlock

Early Succession Northern Hardwoods

Early Succession Upland Oak

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Common Name: **Eastern Towhee**
Scientific Name: **Pipilo erythrophthalmus**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Habitat Alteration

Inadequate Disturbance Regime

Habitat Fragmentation

Description of habitat threat(s):

Description of non-habitat threat(s): Possible nest parasitism by cowbirds.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Basic Life History	High	Studies on reproductive success and demography especially desireable in northeastern U.S. To acquire baseline data via marked birds.

Species Strategies

Strategy Type	*Strategy Priority*	*Strategy Description*	*Performance Measure*	*Potential Partners*	*Potential Funding Sources*
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative (modeled on NH's Small Landowner Grant program). Fund for > $50,000/yr with revenues from state lands forest management. This could offset landowner EQIP obligations.	Level of funds raised.	FWD	SWG, PR
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes.	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.	VCE, VA, USFS	SWG, PR
Habitat Restoration	Medium	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon, Forest Products Association, VT Loggers	PR, EQIP

Common Name: **Eastern Towhee**
Scientific Name: **Pipilo erythrophthalmus**
Species Group: **Bird**

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Common Name: **Field Sparrow**
Scientific Name: **Spizella pusilla**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Significant long-term population declines in Vermont of 5.3 percent annually 1966-2003, and 4.3 percent annually in the ten years following the first SWAP, 2004-2013 (Sauer et al. 2014). Atlas block occupancy declined by 39% between the first (1979-85) and second (2003-07) Vermont breeding bird atlases (Renfrew 2013).

Distribution

Widely distributed in eastern and western Vermont on either side of the Green Mountains, except in the Northeastern Highlands (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Grasslands with scattered, shrubby vegetation with elevated perches. Habitat declines as woody encroachment progresses. Can be found in orchards and Christmas tree farms (Carey et al. 1994). Areas close to suburban development are avoided (Carey et al. 2008). In Vermont, often found in overgrown meadows dominated by juniper (Renfrew 2013).

Habitat Types:

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Common Name: **Field Sparrow**
Scientific Name: **Spizella pusilla**
Species Group: **Bird**

Description of habitat threat(s): Primary problems to the species are likely due to succession of old fields and conversion of agricultural habitat to urban/suburban development.

Non-Habitat Threats:

Predation or Herbivory

Description of non-habitat threat(s): Parasitism is a possible limiting factor, more information needed.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	A better understanding of optimal stem densities and mowing rotations would inform specific management strategies. Better habitat-specific demographics would enable a more thorough understanding of when and why habitat decreases in quality for FISP.
Research	Threats and Their Significance	Medium	Species could be heavily parasitized by cowbirds. More intensive demographic data would elucidate BHCO limiting factor.
Monitoring	Population Change	High	Improved monitoring would elucidate population distribution and trends. A BBS-type survey route for early successional species could help monitor FISP, BWWA, GWWA, BRTH, PRAW, etc.

Common Name: **Field Sparrow**
Scientific Name: **Spizella pusilla**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Finance	Medium	Create a state-funded, private lands, early successional habitat improvement initiative (modeled on NH's Small Landowner Grant program). Fund for > $50,000/yr with revenues from state lands forest management. This could offset landowner EQIP obligations.	Level of funds raised.	VFWD	PR
Habitat Restoration	High	Stabilize declining population trend for Field Sparrows.	Population response to management, BBS surveys.	VFWD, NRCS, TNC.	NRCS
Awareness Raising and Communications	Medium	Initiate public education campaigns to highlight the need for active, even age forest management on public and private lands to create and maintain seedling/sapling forest habitat complexes	Number of media outlets reached, number of audiences reached, number of media products developed, number of participants in programs.		
Habitat Restoration	High	Determine appropriate old field habitat targets for state lands and restore and maintain old field habitats where needed to increase suitable ES songbird habitat.	Number of acres positively affected by management. Population response to management.	ANR, USFS, Audubon-VT, Forest Products Association, VT Loggers	PR, EQIP

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Common Name: **Vesper Sparrow**
Scientific Name: **Pooecetes gramineus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S3B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

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In Vermont a 10.9 percent per year decline in 1966-2003, and losses of 7.2 percent annually in the decade since the first SWAP, 2004-2013 (Sauer et al. 2014). Vermont atlas block occupancy declined from 35 to 11 (69%) from the first (1979-85) to second (2003-07) atlas (Renfrew 2013). Also long-term decline survey-wide (Sauer et al. 2014). The generally small size of farming operations in VT seem as though they should create sufficient habitat to support a larger population in the state. The relative rarity of this species suggests that their habitat requirements may be somewhat more specialized than currently understood.

Distribution

An uncommon breeder in Vermont that is sparse and widely distributed. Most records are from the southwestern Champlain Valley (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Unknown
Northern Green Mtns	Probable	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Unknown
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☑ General Literature ☑

Breeds in dry, open habitats with short, sparse, and patchy herbaceous vegetation; some bare ground; and low to moderate shrub or tall forb cover. In the East, suitable habitats include reclaimed surface mines, crop and haylands, weedy roadsides, natural meadows, and grasslands (Jones and Cornely 2002). In Vermont, suitable habitat generally occurs in agricultural and other human-modified landscapes such as airports, and should be at least 20 hectares (Renfrew 2013).

Common Name: **Vesper Sparrow**
Scientific Name: **Pooecetes gramineus**
Species Group: **Bird**

Habitat Types:

Open Peatlands

Marshes and Sedge Meadows

Wet Shores

Shrub Swamps

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Lawns, Gardens, and Row Crops

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Description of habitat threat(s): Early hay harvest and more intensive management of other row crops substantially reduces nesting success. Conversion of agricultural habitats to urban/suburban development also a problem. Old field succession and farm abandonment also decreasing habitat availability.

Description of non-habitat threat(s):

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	High	Better information about precise habitat requirements, in particular nest site selection would be helpful for ascertaining potential habitat and developing management recommendations.
Research	Distribution and Abundance	High	Conduct focused surveys, including in areas where they were found during the second atlas, to obtain better information about population distribution in VT.
Monitoring	Population Change	High	Population monitoring, particularly in response to changing agricultural and development practices.
Monitoring	Habitat Change	Medium	Understanding habitat-specific demographic parameters would help us assess management options.

Common Name: **Vesper Sparrow**
Scientific Name: **Pooecetes gramineus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and general public about grassland birds and management options to protect habitat.	Develop a grassland bird outreach program	VFWD, Audubon-VT, VCE, UVM	SWG, PR
Market Forces	Medium	Enroll land into EQIP, CRP Grassland as well as FRPP programs to reduce the Impact of development on this species.		NRCS, VHCB	NRCS
Conservation Payments/Financial Incentives	Medium	Conserve grassland/shrubland habitats on private lands.	Number and total area of sites conserved.	USDA, USFWS, VHCB	FSA, SWG, VHCB

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Common Name: **Grasshopper Sparrow**
Scientific Name: **Ammodramus savannarum**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S2B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Currently listed as Threatened in Vermont. Species has declined throughout region due primarily to loss of grassland habitat and agricultural intensification (early mowing regimes). BBS data show a significant long- (1966-2012; -2.86%/year) and short-term (2002-2012; -2.79%). The species is too rare to assess trends in Vermont; data from the second breeding bird atlas showed a 75% decline in number of blocks with breeding evidence, but the sample size is small (4 blocks to 1 block; Renfrew 2013). Only two or three locations in Vermont consistently support more than a few breeding pairs.

Distribution

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Probable	**Vermont Valley**	Unknown
Northern Green Mtns	Probable	**Southern Green Mtns**	Confident
Northern VT Piedmont	Unknown	**Taconic Mtns**	Unknown
Northeastern Highlands	Unknown		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☐ General Literature ☑

Grasslands, pastures, old fields and airports with minimal grass and litter cover and patches of bare ground. Specific habitat use patterns vary geographically (Vickery 1996). In most locations the species is area-sensitive, with occupancy significantly reduced in patches less than 30 ha (Vickery et al. 1994).

Habitat Types:

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Other Cultural

Current Threats

Habitat Threats:

Conversion of Habitat

Habitat Succession

Common Name: **Grasshopper Sparrow**
Scientific Name: **Ammodramus savannarum**
Species Group: **Bird**

Habitat Alteration

Habitat Fragmentation

Description of habitat threat(s): Direct loss of nesting habitat due to habitat conversion and agricultural intensification (mowing regimes)

Non-Habitat Threats:

Trampling or Direct Impacts

Description of non-habitat threat(s): Early and frequent mowing regimes directly impact nesting and reproductive success. Insufficient information on statewide population size.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Habitat Requirements	Medium	Determine habitat requirements specific to Vermont
Research	Basic Life History	Low	
Research	Distribution and Abundance	High	Accurately determine population size and location of breeding pairs statewide
Research	Threats and Their Significance	High	Determine impacts of habitat loss and agricultural practices on distribution and nesting success.
Research	Population Genetics	Low	
Monitoring	Population Change	High	Accurately determine population size and trend information throughout the state an particularly at known nesting locations (airports).
Monitoring	Habitat Change	High	Determine statewide changes in grassland habitats and agricultural practices. Identify habitat changes at known nesting locations (airports)
Monitoring	Monitor Threats	High	Monitor limiting factors at current nesting locations (airports) including habitat loss due to development of the site and mowing prcatices.

Common Name: **Grasshopper Sparrow**
Scientific Name: **Ammodramus savannarum**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Technical Assistance, Training, Learning Networks	High	Educate agricultural community and individuals with grasslands about grassland birds and management options.	Development of a grassland bird outreach program	VFWD, Audubon-VT, VINS, UVM	
Protected Area Management	High	Maintain nesting habitat throughout breeding season by developing site-specific conservation plans which include restricting field mowing until after July 15th on publicly owned lands (WMAs and state airports)	Maintain and increase current acreage under management on state lands	VFWD, Audubon-VT, NRCS, Vtrans	VFWD, Vtrans
Conservation Payments/Financial Incentives	High	Maintain nesting habitat throughout breeding season by restricting field mowing until after July 15th	Increase protection of available habitat through enrollment in EQIP and CRP Grassland	VFWD, Audubon-VT, NRCS	
Habitat Restoration	High	Maintain grassland habitat in suitable locations through active management of woody vegetation within Grassland Bird Focus Areas.	Increase and maintain available habitat in suitable locations	VFWD, private landowners	
Conservation Payments/Financial Incentives	High	Protect privately owned known nesting sites and suitable grassland habitat from development and agricultural intensification by creating Grassland Bird Focus Areas to concentrate management efforts (see the Vermont Grassland Bird Management Plan).	Development of Grassland Bird Focus Areas and increase protection of available habitat through enrollment in EQIP and CRP Grassland.	VFWD, Audubon-VT, NRCS, private landowners	USFWS
Conservation Payments/Financial Incentives	High	Maintain large tracts (> 100 acres) of suitable grassland habitat for entire suite of grassland bird species.	Increase protection of available habitat through enrollment in EQIP and CRP Grassland	VFWD, Audubon-VT, NRCS	

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Common Name: **Bobolink**
Scientific Name: **Dolichonyx oryzivorus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: Medium Priority

Global Rank: G5 **Global Trend:**
State Rank: S5B **State Trend:** Declining
Extirpated in VT? No **Regional SGCN?** Yes

Assessment Narrative:

Significant long-term population declines both in VT and survey-wide. Although Vermont atlas block occupancy changed little (Renfrew 2013), abundance declined by 2.6 percent annually from 1966 to 2003, and 2.4 percent per year since the first SWAP, 2004-2013 (Sauer et al. 2014). Much of VT hayed grasslands are likely population sinks. Main threats are loss and degradation of quality habitat, including fragmentation, due to field succession and conversion to development after farms are lost, and intensive management of hay fields (more frequent mowing).

Distribution

Distributed throughout Vermont, most abundant in lowlands of Champlain Valley, less so in other areas of the state in open landscapes that include fields not under intensive rowcrop production.

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Confident	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☐ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Grasslands, primarily managed for hay or to a lesser extent, low-intensity grazing. Generally avoids alfalfa, row crops, and grass habitats with standing water. More common in larger (> 5ha), more blocky (as opposed to linear) fields, and in relatively less forested landscapes with large expanses of grassland habitat. Social attraction also plays a role in habitat selection.

Habitat Types:

Marshes and Sedge Meadows

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Common Name: **Bobolink**
Scientific Name: **Dolichonyx oryzivorus**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Energy Infrastructure and Development

Habitat Succession

Habitat Alteration

Habitat Fragmentation

Invasion by Exotic Species

Climate Change

Description of habitat threat(s): Greatest problems are the frequency and timing of hayfield mowing, the succession of agricultural land, and the conversion of agricultural land to development. Fragmentation of grasslands limits patch size and openness of landscape, which is important for nesting Bobolinks. Bobolink distribution expected to shift northward due to climate change, although models need to be refined. Takeover of hayfields and other grasslands by exotic plants such as parsnip and chervil renders habitat unsuitable

Non-Habitat Threats:

Pollution

Trampling or Direct Impacts

Predation or Herbivory

Description of non-habitat threat(s): Pesticides on migration and wintering grounds, predation of eggs and nestlings, direct mortality from mowing

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Threats and Their Significance	Medium	1) Demographic model of climate change impacts to predict future distribution. 2) Determine relative contribution of seasonal survival of juveniles and adults, and immigration/emigration, to improve assessments of relative importance of productivity and survival in determining population size
Research	Other Research	High	Determine most effective use of resources to maximize acreage of quality nesting habitat using combination of approaches for different types of landowners and interests.
Monitoring	Population Change	High	Determine if the Champlain Valley is a source or sink for Bobolink.
Monitoring	Habitat Change	High	Better information is necessary regarding the timing of hay mowing in landscapes with various proportions of agriculture throughout VT.

Common Name: **Bobolink**
Scientific Name: **Dolichonyx oryzivorus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Easements	Medium	Reduce the amount of grassland habitat being lost to development through strategic acquisition of grassland easements.	Grassland acreage enrolled in easements	NRCS	NRCS, USDA.
Conservation Payments/Financial Incentives	High	Decrease nest losses due to early mowing regimes on fields used for animal forage via EQIP conservation payments. Continue outreach to landowners about incentive programs	Increase in proportion and total area of grasslands in which hay cutting is delayed.	NRCS, UVM, VCE, Audubon-VT	NRCS, USDA
Species Restoration	High	Implement the Vermont grassland bird management and recovery plan (LaBarr et al. 2013)		VFWD, UVM, TNC, NRCS.	SWG, PR, NRCS
Technical Assistance, Training, Learning Networks	High	Improve outreach to (and exchange of information among) landowners with flexibility (e.g., those primarily interested in preventing succession).	Number of acres under a a late-mowing management regime, number of landowners contacted	UVM, NRCS, Audubon-VT, VCE	NRCS, USDA

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Common Name: **Eastern Meadowlark**
Scientific Name: **Sturnella magna**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S5B
State Trend: Declining
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

Upgraded from medium to high priority. One of the most severely declining population trends of grassland bird species throughout its range. In Vermont Eastern Meadowlark populations have declined by 9.6 percent annually from 1966 to 2003 (Sauer et al. 2014), and since the first SWAP, meadowlarks have disappeared from much of Vermont except in the Champlain Valley, which supports most of the remaining population. Between the first and second Vermont Breeding Bird atlas, the species was lost from 63 of 155 (55%) blocks (Renfrew 2013). Regrowth of abandoned farmlands and agricultural intensification resulting in grassland habitat loss, fragmentation, and degradation are the primary causes of declines.

Distribution

Sparsely distributed in relatively large open agricultural (or airfield) areas throughout much of the state, except in the Champlain and Vermont valleys, where it is fairly common in open, agricultural areas with suitable nesting habitat. Nearly absent from southeastern Vermont (Renfrew 2013).

Distribution by Biophysical Region:

Champlain Valley	Confident	**Southern VT Piedmont**	Confident
Champlain Hills	Confident	**Vermont Valley**	Confident
Northern Green Mtns	Unknown	**Southern Green Mtns**	Unknown
Northern VT Piedmont	Confident	**Taconic Mtns**	Confident
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☑ Regional Literature ☑ General Literature ☑

Meadows, old fields, hayfields with thick layer of dead grass. Requires large, open landscapes, large patches of grasslands (>10ha). Can occur at airports with compatible mowing program.

Habitat Types:

Grasslands, Hedgerows, Old Field, Shrub, or Orchard

Other Cultural

Common Name: **Eastern Meadowlark**
Scientific Name: **Sturnella magna**
Species Group: **Bird**

Current Threats

Habitat Threats:

Conversion of Habitat

Energy Infrastructure and Development

Habitat Succession

Habitat Alteration

Habitat Fragmentation

Invasion by Exotic Species

Description of habitat threat(s): Loss and degradation of habitat due to frequent mowing of hayfields, habitat loss due to succession of farmland to forest, conversion of grassland habitat to development and potentially, solar panel arrays. Takeover of hayfields and other grasslands by exotic plants such as parsnip and chervil renders habitat unsuitable.

Non-Habitat Threats:

Trampling or Direct Impacts

Description of non-habitat threat(s): Direct mortality due to mowing.

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Other Research	Medium	Determine whether Vermont habitats in the Champlain Valley are sources or sinks
Monitoring	Population Change	High	Species no longer tracked well with BBS methods. Carry out more intensive, standardized monitoring scheme to track population status in the state and determine important breeding areas and compatible management practices.

Common Name: **Eastern Meadowlark**
Scientific Name: **Sturnella magna**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Conservation Payments/Financial Incentives	High	Maintain nesting habitat by delaying mowing until after July 15th	Increased protection of habitat through enrollment in EQIP and CRP Grassland	VFWD, Audubon VT, NRCS	
Technical Assistance, Training, Learning Networks	High	Educate agricultural community, landowners, and general public about grassland birds and management options to protect habitat	Continue grassland bird outreach and networking programs	VFWD, Audubon, VCE, UVM	SWG, PR
Protected Area Management	High	Maintain nesting habitat throughout the breeding season by developing site specific conservation plans which include restricting mowing until after July 15 on publicly owned lands (WMAs, state airports).	Maintain and increase current acreage under management on state and federal lands	VFWD, Audubon-VT, VCE, USFWS NRCS Vtrans	SWG, NRCS
Habitat Restoration	High	Maintain grassland habitat in suitable locations through active management of woody vegetation within focal grassland areas.	Increase and maintain available habitat in suitable locations	VFWD, Audubon-VT, VCE, NRCS, USFWS	USFWS, NRCS
Conservation Finance	High	Decrease nest losses due to early mowing regimes on fields used for animal forage via EQIP conservation payments. Continue outreach to landowners about incentive programs.	Increase in acreage in which hay cutting is delayed.	NRCS, UVM, VCE, Audubon-VT	NRCS
Conservation Finance	High	Focus efforts on relatively large fields (>50 acres) of suitable grassland habitat in open landscapes	Strategic enrollment in EQIP	NRCS	NRCS

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Common Name: **Rusty Blackbird**
Scientific Name: **Euphagus carolinus**
Species Group: **Bird**

Conservation Assessment

Final Assessment: High Priority

Global Rank: G5
Global Trend:
State Rank: S3B
State Trend: Unknown
Extirpated in VT? No
Regional SGCN? Yes

Assessment Narrative:

The continental Rusty Blackbird population has undergone a precipitous decline since the 1966 beginning of the Breeding Bird Survey (BBS) and most significantly in the last 20 years. In eastern North America its decline has been most significant at the southern edge of its breeding range (Maine, New Hampshire, and Vermont). From BBS estimates, Partners in Flight (PIF) estimates there are 5,000,000 Rusty Blackbirds in North America with 20% of them residing in the US. PIF categorizes this estimate as a medium quality. This is likely due to the species' preference for remote boreal coniferous forests near water's edge. The Second Atlas of Breeding Birds of Vermont (2002-07) reported a 26% decline in occupied blocks. The majority of the decline occurred within the Northern Vermont Piedmont biophysical region. In addition to the significant loss of population there is concern among biologists that climate change projections estimate a decline in boreal forest that includes the blackbird's New England habitat. In light of these foreboding estimates Vermont listed the species as endangered in 2014.

Distribution

"Rusty Blackbirds are local and uncommon summer residents of the Northeast Highlands, the North Central region, and the Green Mountains." (Nichols 1985)

Distribution by Biophysical Region:

Champlain Valley	Probable	**Southern VT Piedmont**	Probable
Champlain Hills	Probable	**Vermont Valley**	Probable
Northern Green Mtns	Probable	**Southern Green Mtns**	Confident
Northern VT Piedmont	Confident	**Taconic Mtns**	Probable
Northeastern Highlands	Confident		

Distribution by Watershed:

Habitat Description

Habitat Information is based on the following:

Limited Local Knowledge ☑ Extensive Local Knowledge ☐ Regional Literature ☐ General Literature ☑

Wooded swamps, tree-bordered marshes, beaver ponds, boreal bogs and stream borders with alder and willow thickets (DeGraff and Rudis 1986). "Disturbance can be favorable to this species; e.g., nests found in modest openings regenerating from clearcuts (Ellison 1990)" (Avery 1995).

Common Name: **Rusty Blackbird**
Scientific Name: **Euphagus carolinus**
Species Group: **Bird**

Habitat Types:

Hardwood Swamps

Softwood Swamps

Shrub Swamps

Early Succession Boreal Conifers

Early Succession Spruce-Fir

Early Succession Northern Hardwoods

Current Threats

Habitat Threats:

Conversion of Habitat

Description of habitat threat(s): Permanent residence and/or vacation home development on lakeshores/pondshores may reduce available habitat.

Non-Habitat Threats:

Harvest or Collection

Description of non-habitat threat(s): "Substantial mortality to local populations may occur when Rusty Blackbirds are in mixed-species winter roosts subjected to blackbird control in the s. U.S.(Stickley et al. 1986)" (Avery 1995).

Research and Monitoring Needs

Type	*Need*	*Priority*	*Description*
Research	Basic Life History	Low	Some evidence of colonial nesting, however nesting by widely-separated individuals seems to prevails in Vermont. Factors governing how habitat might influence whether Rusty Blackbirds nest singly or colonially should be investigated (Avery 1995).
Research	Distribution and Abundance	Medium	More complete surveys of the distribution of breeding Rusty Blackbirds in Vermont are warranted to obtain a better estimate of it's true status.
Research	Threats and Their Significance	Low	
Monitoring	Population Change	Medium	
Monitoring	Habitat Change	Low	
Monitoring	Monitor Threats	Medium	Shoreline development in the Rusty Balckbird strongholds in Vermont should be monitored.

Common Name: **Rusty Blackbird**
Scientific Name: **Euphagus carolinus**
Species Group: **Bird**

Species Strategies

Strategy Type	Strategy Priority	Strategy Description	Performance Measure	Potential Partners	Potential Funding Sources
Easements	Medium	Known nesting habitats should be monitored over time to track impacts from development. Easements should be considered to protect important breeding habitats from development. PIF Vermont target population is 226 breeding individuals.	Number of sites identified and conserved.	VFWD, VCE, VA, VHCB	SWG, VHCB
Policy & Regulations	Low	Assist PIF with efforts to reduce mortality from pesticides used on wintering grounds.	Reduction in mortalities due to pesticides	PIF, USFWS	USFWS, USDA, SWG

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