



3 Species of Greatest Conservation Need

A: Introduction and Selection Criteria

Five hundred and seventy species were determined to be Species of Greatest Conservation Need (SGCN) in Massachusetts, including:

- 172 vertebrates
 - 29 fishes
 - 5 amphibians
 - 20 reptiles
 - 95 birds
 - 23 mammals
- 115 invertebrates
 - 8 miscellaneous invertebrates
 - 10 freshwater mussels
 - 8 crustaceans
 - 27 dragonflies and damselflies
 - 9 beetles
 - 44 butterflies and moths
 - 9 bees
- 283 plants

Identifying Species of Greatest Conservation Need for this update followed much the same set of criteria as in the 2005 SWAP:

All species, including plants, listed under the authority of the Massachusetts Endangered Species Act (MESA) were included on the updated SWAP list. The MESA list is regularly updated; the list change procedure involves solicitation of comments on listing proposals from at least three external scientific reviewers and from the public. See <https://www.mass.gov/info-details/massachusetts-species-of-greatest-conservation-need-sgcn> or Appendix A for a full description of the MESA listing criteria and process.

- All species given a global rank of G1 through G3G4 (globally rare species) by NatureServe were considered for inclusion. See the explanation of abbreviations at the end of Table 3-2 for definition of global ranks. A few globally rare species that occur in Massachusetts were not included in the

current SWAP list. In general, these species are considered relatively secure in Massachusetts or to have significant taxonomic questions.

- The Northeast Fish and Wildlife Diversity Technical Committee's list of species of regional concern and responsibility (the RSGCN list; Terwilliger Consulting and Northeast Fish and Wildlife Diversity Technical Committee, 2013) was consulted for the groups they covered (vertebrates, freshwater mussels, tiger beetles, federally listed invertebrates). Most of the species they considered to be of high or very high regional concern or high or very high regional responsibility were included in our SWAP list, if they occur regularly in Massachusetts.
- The New England Wild Flower Society and its many partners across the region, joined as the New England Plant Conservation Program (NEPCoP), published the first regional rare plant list, *Flora Conservanda: New England*, in 1996 (Brumback and Mehrhoff, 1996). In 2009, NEPCoP began revision of *Flora Conservanda*; in 2013, the revision was published in *Rhodora*, the Journal of the New England Botanical Club (Brumback and Gerke 2013). The 2013 revision was checked to help determine which plants, beyond those already listed under MESA, would be included on the SWAP list.
- Birds: The highest priorities in the North American Waterbird Conservation Plan (Kushlan et al., 2002) and the Northern Atlantic Regional Shorebird Plan (Clark et al., 2000) were considered; most of these species were added to the Massachusetts list of SGCN if the species concerned occur regularly in the state. The Partners in Flight North American Landbird Conservation Plan (Rich et al., 2004) list of Watch List and Stewardship species for the Eastern Avifaunal Biome was consulted, as well. Mass Audubon recently summarized the data from the second Massachusetts Breeding Bird Atlas (Walsh and Petersen, 2013, Massachusetts Audubon Society, 2011, 2013); these data were scrutinized in detail. A recent analysis of Breeding Bird Survey data, both for the region and for Massachusetts, was also consulted.

The most significant change since the 2005 Massachusetts SWAP is the inclusion of plants in this update. Although plants are not mandated by Congress for inclusion in SWAPs, it is clear that many plant species are in just as much danger of decline as animals (Stein and Gravuer, 2008) and that

conservation of the breadth of biodiversity in our Commonwealth must include plants. Additionally, a recent summary of plants of conservation concern in New England (New England Wild Flower Society, 2015) demonstrates the precarious status of hundreds of native plants across the region. Therefore, we have included plants in this SWAP and consider their conservation to be of equal importance to the conservation of animals. **Note that plants make up about half of the total list of Massachusetts SGCN.**

Another major change is the addition of 36 more species of birds in this SWAP (four were dropped, as well). Since the 2005 SWAP, Mass Audubon conducted their second Breeding Bird Atlas (Walsh and Petersen 2013) across the Commonwealth. More than 650 volunteers worked over 43,000 hours to contribute to an updated understanding of the distribution and abundance of breeding birds in the state. After analysis of the new Atlas data, Mass Audubon published *State of the Birds 2011* and *State of the Birds 2013* (Massachusetts Audubon Society 2011, 2013), a summary of the striking changes in Massachusetts avifauna over the past thirty years and a discussion of the threats affecting our breeding birds. In combination with analyses of Breeding Bird Survey data (Sauer et al. 2014), it is clear—and quite sobering to note—that many more species of birds are declining rapidly across the state.

Finally, several species of bees were added. Since the 2005 SWAP, it has become evident that many pollinators, which as a group perform an essential ecosystem service, are declining rapidly worldwide (Heinz Center, 2013). While Massachusetts does not yet have sufficient information to assess all bees for inclusion as SGCN (but see Veit et al. in prep), the nine bees in the list of Species of Greatest Conservation Need, Table 3-2, are clearly demonstrated to be very uncommon or declining in the state. We expect that several other species of native bees will be demonstrated to meet SGCN inclusion criteria in the next decade, unfortunately, as researchers determine more precisely the distribution and abundance of these species in the state.

Note that the four species of bumblebees on the SGCN list are not assigned to any SWAP habitats. These formerly common, generalist species are likely victims of an exotic pathogen or pathogens brought in with imported hives (Cameron et al. 2011; Gillespie 2010). They are not associated with any one or even a few of

the 24 SWAP habitats, but formerly were likely to be found in most terrestrial landscapes across the state. Therefore, we have included them on the SGCN list, but not assigned them to SWAP habitats.

Species on the MESA list are considered the highest priority or tier; SWAP species not on the MESA list are considered of lower priority or tier.

For details on changes in SGCN species since the 2005 SWAP, see Section C, below.

B: Massachusetts Species of Greatest Conservation Need

Go to <https://www.mass.gov/info-details/massachusetts-species-of-greatest-conservation-need-sgcn> for a list of all the SGCN in Massachusetts, with their global rank, federal status, regional SGCN status, MESA status, other concerns and comments.

For an explanation of the SWAP Habitats, see Chapter 4. Details on each of these species, including a short description, their distribution and abundance in the state, habitat description, threats, and references, can be found in the online fact sheets (linked from the common names).

C: Changes in SGCN since 2005 SWAP

Table 3-2, below, summarizes the changes in Massachusetts SGCN since the 2005 SWAP.

Table 3-2: Summary of Changes to SGCN List.

	2005 Swap	2015 Update	Added since 2005	Deleted since 2005
Total number of species	262	570	339	31
Fishes	28	29	1	--
Amphibians	7	5	--	2
Reptiles	19	20	1	--
Birds	63	95	36	4
Mammals	20	23	5	2
Invertebrates	125	115	13	23
Plants	--	283	283	--

Rationale for additions:

- Fishes:
 - Spotfin Killifish: High regional responsibility and very high regional concern (Terwilliger Consulting and Northeast Fish and Wildlife Diversity Technical Committee, 2013).
- Reptiles:
 - Smooth Greensnake: Considered to be of high regional concern.
- Birds:
 - Northern Goshawk: Very high ranking for regional concern. The Massachusetts Breeding Bird Atlas calls it local and likely declining.
 - Blue-winged Teal: The Massachusetts Breeding Bird Atlas calls it very local and strongly declining.
 - Great Egret: This species has been increasing in numbers in recent years, but there are still very few breeding colonies in Massachusetts.
 - Purple Sandpiper: Very high ranking for regional concern.
 - Semi-palmated Sandpiper: High ranking for regional concern.
 - Cory's Shearwater: Part of global pattern of declines in colonial-nesting seabirds.
 - Chimney Swift: High ranking for regional concern. According to the Massachusetts Breeding Bird Atlas, it is very widespread and stable, but the Breeding Bird Survey data show it to be decreasing, both regionally and in Massachusetts.
 - Common Nighthawk: Very high ranking for regional concern. The Massachusetts Breeding Bird Atlas calls it very local and strongly declining.
 - Marsh Wren: Because of its limited breeding habitat, this species is considered to be local and vulnerable.
 - Black-billed Cuckoo: Very high ranking for regional concern. The Massachusetts Breeding Bird Atlas calls it somewhat local and likely declining.
 - Olive-sided Flycatcher: Very high ranking for regional concern. The Massachusetts Breeding Bird Atlas calls it very local and strongly declining.
 - Bobolink: Very high ranking for regional concern. The Massachusetts Breeding Bird Atlas calls it fairly widespread and likely increasing, but the Breeding Bird Survey data show it to be declining regionally. There is concern that it is showing up at many sites because breeding birds are being pushed out of suitable habitat by early mowing practices.
 - Horned Lark: High regional concern. The Massachusetts Breeding Bird Atlas calls it local and strongly declining.
 - Rusty Blackbird: This is a Partners in Flight (PIF) Watch List Species and of very high regional concern.
 - Atlantic Puffin: Part of global pattern of declines in colonial-nesting seabirds.
 - Wilson's Snipe: High regional concern. It is deemed local and likely increasing by the

- Massachusetts Breeding Bird Atlas; it has also been shown to be increasing on Massachusetts Breeding Bird Survey routes. However, its breeding habitat is still very limited.
- Red-throated Loon: Red-throated Loons, which winter off the Massachusetts coast, are of highest priority in the Waterbird Plan.
 - Purple Finch: The Massachusetts Breeding Bird Atlas data show this species to be absent from 227 blocks it bred in 25 years ago; the Atlas calls its current status fairly widespread and strongly declining.
 - Herring Gull: There are only a few breeding colonies of this species in Massachusetts.
 - Great Black-backed Gull: There are only a few breeding colonies of this species in Massachusetts.
 - Black-and-white Warbler: The Massachusetts Breeding Bird Atlas calls this species very widespread and likely declining.
 - Northern Gannet: May be part of global pattern of declines in colonial-nesting seabirds.
 - Nashville Warbler: The Massachusetts Breeding Bird Atlas calls it local and strongly declining.
 - Cliff Swallow: The Massachusetts Breeding Bird Atlas calls this species local and strongly declining.
 - Double-crested Cormorant: There are only a few breeding colonies of this species in Massachusetts.
 - Red Phalarope: Part of global pattern of declines in Arctic-nesting shorebirds.
 - Red-necked Phalarope: Part of global pattern of declines in Arctic-nesting shorebirds.
 - Scarlet Tanager: High regional responsibility and high regional concern.
 - Glossy Ibis: Highest priority in the Waterbird Plan.
 - Purple Martin: The Massachusetts Breeding Bird Atlas calls this species very local and strongly declining.
 - Sooty Shearwater: Ranked Near Threatened on the IUCN Red List. Part of global pattern of declines in colonial-nesting seabirds.
 - Manx Shearwater: Part of global pattern of declines in colonial-nesting seabirds.
 - Bank Swallow: High regional concern. The Massachusetts Breeding Bird Atlas calls it somewhat local and strongly declining.
 - Cerulean Warbler: This is a Partners in Flight Watch List species and of very high regional concern.
 - Chestnut-sided Warbler: The Massachusetts Breeding Bird Atlas calls this species widespread and likely declining.
 - Willet: Very high regional concern. Although the Massachusetts Breeding Bird Atlas showed it to be strongly increasing, it is restricted to a habitat, salt marsh, under threat from sea level rise.
 - Mammals:
 - Little Brown Myotis, Northern Long-eared Bat, Tricolored Bat: All three of these species were virtually extirpated from Massachusetts by white-nose syndrome. All three were recently added to the MESA list, at the Endangered level, as a result.
 - Big Brown Bat: Because Big Brown Bats often hibernate in hibernacula that are not likely to be affected by white-nose syndrome, they are likely not to be as heavily impacted as the three bats above. However, the extent of impact is as yet unknown and it seems prudent to add them to the SWAP list at this point.
 - Northern Flying Squirrel: The current distribution of this species in Massachusetts is not well understood; there have been few recent records. Given its apparent preferences for northern forests, which are likely to be affected by climate change at the southern edge of their range in the state, it seems likely this species' distribution will be affected as well.
 - Invertebrates:
 - Alewife Floater: The glochidial hosts for this mussel are river herring, which are experiencing significant declines in recent years. Alewife Floater distribution in Massachusetts seems to be tied to good connectivity; several hundred years of dam construction in the state has destroyed many formerly intact herring runs.
 - Eastern Lampmussel: Surveys for mussels over the past fifteen years have documented fewer sites for this species than some of the other mussels on the MESA list. Further, it is often locally abundant in habitats supporting MESA-listed mussels and may represent an important indicator of habitat change.

- Eastern Pearlshell: This mussel has been designated of high concern regionally. Its habitat is coldwater rivers and streams, which are threatened by warming caused by development and, probably, by climate change. Its life history characteristics – it is very long-lived, up to a century – leave it vulnerable to rapid environmental changes.
- Sandplain Heterocampa: This was rediscovered in Massachusetts in 2004 and is of conservation concern throughout its small and fragmented global range. It was added to the MESA list in 2011.
- Walsh’s Anthophora: This bee is very uncommon in Massachusetts.
- Macropis Cuckoo Bee: This parasitic bee is extremely rare globally.
- Oil-collecting Bees (three *Macropis* species): These bees are specialists on *Lysimachia* (yellow loosestrifes) and are very uncommon in Massachusetts.
- Bumble Bees (four *Bombus* species): These four bees, formerly common and widespread in Massachusetts, have apparently suffered severe declines in the past decade.
- Plants:
 - All 283 plants in the 2015 SWAP were added since the 2005 SWAP. Most of these plants are on the MESA list; others are known to be very rare or experiencing strong declines across the state in recent decades.

Rationale for deletions:

- Amphibians:
 - Four-toed Salamander: Increased and more effective survey efforts over the past decade have led to the documentation of many new populations of this species, with a total of at least 240 populations across most of the state. As a result, Massachusetts has delisted this species from protection under MESA and it no longer needs listing as a SGCN.
 - Spring Salamander: This species’ range in Massachusetts is largely in the hilly western part of the state, where development pressure is low and significant acreage is conserved as protected open space. Fifty-four occurrences have been documented, with the likelihood of many more. Therefore, it was removed from the MESA and SWAP lists.
- Birds:
 - Sharp-shinned Hawk: Historical threats to this species have now diminished substantially and current trends in forest succession favor it as well. The Massachusetts Breeding Bird Atlas found it nesting in 123 more blocks than 25 years ago. Therefore, it has been removed from both the MESA and the SWAP lists.
 - Green Heron: This species is widespread across Massachusetts and likely increasing, according to the Massachusetts Breeding Bird Atlas data.
 - Henslow’s Sparrow: Reconsideration of the historical and current data on occurrences of this species in Massachusetts has led to the conclusion that it has never been a regular (non-vagrant, non-transient) component of the state’s avifauna. Therefore, Massachusetts is proposing to delist this species under MESA and it no longer needs to be listed as a SGCN.
 - Willow Flycatcher: Breeding Bird Surveys and the update of the Massachusetts Breeding Bird Atlas have shown this species to be increasing significantly across the state in the past decade or so. Therefore, it no longer needs listing as a SGCN.
- Mammals:
 - Beach Vole: This has been removed from the SGCN list because of the unresolved taxonomic issues.
 - Harbor Porpoise: This species has recovered its numbers substantially on the Massachusetts coast over the past 15 years and no longer needs listing as a SGCN.
- Invertebrates:
 - Mount Everett Pond Sponge: Although this species is given a G-rank of G3 by NatureServe, little is known about it in Massachusetts and it is certainly undersurveyed in the state. Without more information on its status in Massachusetts, it seems prudent to drop it from the SWAP list in order to focus conservation actions on better-known species.
 - Stoneflies: These species were removed because there are insufficient data to determine their status in Massachusetts.
 - Walker’s Limpet: Recent molecular data indicate this species is conspecific with the more common Fragile Ancyloid (*Ferrissia fragilis*). Therefore, it was removed from the MESA and SWAP lists.
 - Olive Vertigo: Surveys in the past decade have revealed there to be at least 24 occurrences of

this species in Massachusetts, with many more likely. The species appears to be widespread across the state and to have broader habitat tolerance than previously thought. Therefore, it was removed from the MESA and SWAP lists.

- Vernal Physa: Although this species is given a G-rank of G3 by NatureServe, little is known about it in Massachusetts and it is certainly undersurveyed in the state. Without more information on its status in Massachusetts, it seems prudent to drop it from the SWAP list in order to focus conservation actions on better-known species. Also, its habitat (vernal pools) is targeted by several other SWAP species.
- Feminine Clam Shrimp: It is unclear whether this species is native to Massachusetts and, for that matter, exactly what its distribution in Massachusetts is, because it is very undersurveyed. Therefore, it has been dropped from the SWAP list for lack of sufficient information.
- Zebra Clubtail: Increased and more effective survey efforts over the past decade have led to the documentation of many new populations of this species. As a result, Massachusetts has delisted this species from protection under MESA and it no longer needs listing as a SGCN.
- Arrow Clubtail: Increased and more effective survey efforts over the past decade have led to the documentation of many new populations of this species. As a result, Massachusetts has delisted this species from protection under MESA and it no longer needs listing as a SGCN.
- New England Bluet: Increased and more effective survey efforts over the past decade have led to the documentation of many new populations of this species, with a total of at least 80 populations across most of the state. As a result, Massachusetts has delisted this species from protection under MESA and it no longer needs listing as a SGCN.
- Little Bluet: NatureServe has changed the global rank of this species from G3G4 to G4. Coupled with its relatively secure status in Massachusetts (S3), it has been dropped from the SWAP list. Also, its known locations in Massachusetts are also the sites for several other *Enallagma* which remain on the SWAP list.
- Sylvan Hygrotus Diving Beetle: At the time of the 2005 SWAP, the G-rank for this species was GH. Currently, the G-rank is GU. Because the status of this species is unknown and because so little is known about diving beetles in general in Massachusetts, it is not appropriate to designate this as a SGCN at this time.
- Spiny Oakworm: Recent field work indicates that this species is abundant and secure on Nantucket, Martha's Vineyard, the Massachusetts Military Reservation at the base of Cape Cod, and in the Plymouth County pitch pine/scrub oak barrens. In addition, on the vineyard, it has broad habitat and host preferences. Therefore, it was removed from the MESA and SWAP lists.
- Coastal Plain Apamea Moth: This species has not been documented in Massachusetts in over 32 years, despite extensive, targeted searches at the historical site and in other appropriate habitat. Therefore, it was removed from the MESA and SWAP lists.
- Straight Lined Mallow Moth: The host plants for the larvae of this moth have recently been determined to be hazelnuts, which are widespread and abundant species in many habitats across the state. No negative trends in population size, number of populations, amount of habitat, or state distribution have been documented. No threats have been documented to the persistence of this species in the state. Therefore, it was removed from the MESA and SWAP lists.
- Three-lined Angle Moth: This species is apparently extirpated from Massachusetts; there have been no records in over 30 years. The site of the single previous occurrence has been surveyed multiple times. Therefore, it was removed from the MESA and SWAP lists.
- Oak Hairstreak: From the late 1990s to date, this species has expanded its range across the state, and is now only absent from Nantucket. It is not restricted to undisturbed natural habitats; adults nectar in old fields and vacant lots, powerline or pipeline cuts, abandoned gravel pits and landfills, plant nurseries, and suburban yards. Therefore, it was removed from the MESA and SWAP lists.
- A Noctuid Moth (*Hadena ectypa*): This species has expanded its range into southwestern New England (western Connecticut and

western Massachusetts) by adapting to use a nonnative, weedy larval host plant, *Silene vulgaris* (Nelson 2012). It is likely that it uses this new host plant elsewhere, or will in the future, further expanding its geographic range and making its global status more secure.

- Two-striped Cord Grass Moth: This species is undersurveyed, and a G-rank of G4 is probably more accurate than its current NatureServe G-rank of G3G4. This is based on a slow but steady accumulation of incidental records in Massachusetts when sampling in or near appropriate habitat (freshwater marshes). Targeted sampling would almost certainly prove that it is undersurveyed.
- West Virginia White: A rank of G3G4 is probably more appropriate than its current NatureServe G-rank of G3?. Despite its apparent rarity and demonstrated threats across its range, this species has a several strongholds where it is currently ranked S3S4, including Massachusetts, Vermont, North Carolina, and Tennessee. Targeted survey effort would likely demonstrate S4 status in one or more of these states, and therefore G4 status as well.
- Plain Schizura: This species is undersurveyed, and a G rank of G4 is probably more accurate. This is based on a slow but steady accumulation of incidental records in Massachusetts when sampling in or near appropriate habitat, which is various dry-soil habitats (sandplains or rocky summits and ridges). Targeted sampling would almost certainly prove that it is undersurveyed.
- Northeastern Pine Zale: This is another species that was undersurveyed, but records accumulated and its status was changed from G3G4 to G4. In Massachusetts, it occurs throughout the southeastern part of the state (Plymouth, Barnstable, Dukes, and Nantucket counties), as well as in Essex County.

D: Comparison to Regional Lists

Animals

The regional list of Species of Greatest Conservation Need (Terwilliger Consulting and Northeast Fish and Wildlife Diversity Technical Committee, 2013) covers vertebrates, freshwater mussels, tiger beetles, and federally listed invertebrates from other taxonomic groups. Each of the species on this list (abbreviated RSGCN) has been assigned a very high/high/low rank for regional responsibility and regional concern. There are 366 species or subspecies on the regional list with high to very high rankings for both regional responsibility and regional concern.

The Massachusetts list of SGCN includes 143 of the 366 taxa of regional SGCN (note that the Massachusetts list counts Blue-spotted and Jefferson Salamanders as two species, but the regional list counts them as one taxon).

Of the 366 taxa on the regional list of highest priority SGCN, 200 do not occur regularly in Massachusetts as migrating, breeding, or over-wintering species, and therefore were not included on the Massachusetts list of SGCN.

Twenty-four other highest priority regional animal SGCN, however, do occur regularly (or breed in very small numbers) in Massachusetts, but were not included on the Massachusetts SGCN list. The reasons for these exclusions are given below:

- Fishes
 - Mummichog: considered S5, secure, in Massachusetts.
 - Redbreast Sunfish: considered S4, apparently secure, in Massachusetts.
- Amphibians
 - Northern Dusky Salamander: considered S4S5, apparently secure to secure, in Massachusetts.
 - Northern Two-lined Salamander: considered S5, secure, in Massachusetts.
 - Spring Salamander: This species' range in Massachusetts is largely in the hilly western part of the state, where development pressure is low and significant acreage is conserved as protected open space. Fifty-four occurrences have been documented, with the likelihood of many more. Therefore, it was removed from the MESA and SWAP lists.
- Fowler's Toad: considered S4, apparently secure, in Massachusetts.
- Birds
 - Cattle Egret: Only one nesting colony was found during the recent Massachusetts Breeding Bird Atlas. Thus, while this species teeters on the edge of being a regular breeding species in the state, on balance it is not.
 - Little Blue Heron: This species appears to be at the very northern edge of its breeding range in Massachusetts. Thus, on balance, it is not a regular breeder in the state.
 - Red-shouldered Hawk: widespread and reasonably common as a breeding species; considered S4, apparently secure, in Massachusetts.
 - Veery: considered S5, secure, in Massachusetts; described as very widespread and likely increasing in the Massachusetts Breeding Bird Atlas results.
 - Brown Creeper: described as widespread and likely increasing in the Massachusetts Breeding Bird Atlas results; considered S5, secure, in Massachusetts.
 - Willow Flycatcher: considered S4, apparently secure, in Massachusetts. Described in the Massachusetts Breeding Bird Atlas results as fairly widespread and strongly increasing.
 - Acadian Flycatcher: described in the Massachusetts Breeding Bird Atlas results as local and strongly increasing. However, note that it is ranked S2 in Massachusetts.
 - Yellow-breasted Chat: This species appears to be at the very northern edge of its breeding range in Massachusetts. Thus, on balance, it is not a regular breeder in the state.
 - Marbled Godwit: This is a very rare but regular migrant through the state and therefore not a regular component of the Massachusetts avifauna.
 - Clapper Rail: This is a rare, but possibly regular, breeding species in Massachusetts. Ranked S2 both as a breeding species and as a migrant.
 - Black-throated Blue Warbler: described as fairly widespread and likely increasing in the results of the Massachusetts Breeding Bird Atlas.

- Blackburnian Warbler: a widespread and fairly common breeding species in the western half of Massachusetts, although quite sporadic in the eastern half.
- Black-throated Green Warbler: described as widespread and likely increasing in the results of the Massachusetts Breeding Bird Atlas.
- Mammals
 - Star-nosed Mole: considered S5, secure, in Massachusetts.
 - Woodland Jumping Mouse: considered S5, secure, in Massachusetts.
 - Hairy-tailed Mole: considered S5, secure, in Massachusetts.
 - Beach Vole: As noted above, this has been removed from the SGCN list because of the unresolved taxonomic issues.
 - Harbor Porpoise: As noted above, this species has recovered its numbers substantially on the Massachusetts coast over the past 15 years and no longer needs listing as a SGCN.

Plants

The regional list of plants in need of conservation, *Flora Conservanda* (Brumback and Gerke 2013), covers higher vascular plant taxa in the six New England states. Each species on this list has been assigned to a division within the list, depending on its global, regional, or local rarity and other factors. There are 590 taxa on the 2013 *Flora Conservanda*.

The Massachusetts list of SGCN includes 150 taxa identified in the *Flora Conservanda* as Division 1 through Division 4, and ten additional taxa identified as IND (as yet indeterminate status), for a total of 160 plant species considered to be of regional concern.

Of the 590 taxa in the *Flora Conservanda*, 350 do not occur in Massachusetts, are Historic in the state, or are not native to the state, and therefore were not included on the Massachusetts list of SGCN (with the exception of Seabeach Amaranth, which is being reintroduced to the state).

Seventy-one other regional plant species of conservation concern do occur in Massachusetts, but were not included on the Massachusetts SGCN list. These taxa are listed below. If the state rank (S-rank) of a taxon is S4 or S5 in Massachusetts, the taxon is secure enough that its inclusion as a SGCN is not warranted. If the S-rank has not been determined or is S1 through S3, the taxon is usually on the Massachusetts Natural

Heritage & Endangered Species Program Plant Watch List, but insufficient information is available to determine whether the taxon deserves inclusion as a SGCN. (This Watch List has no regulatory status; it is simply a list of the plants NHESP botanists think may be of concern in the state, as a way to organize tracking of the taxa.) Note that this means there may very well be additional plant taxa that could be on the Massachusetts SGCN list if sufficient field or herbarium work were undertaken. The notes on county distribution below come from Cullina et al. 2011.

- *Amelanchier nantucketensis*: considered S3S4, between vulnerable and apparently secure, in Massachusetts; on the state plant Watch List.
- *Artemisia campestris* ssp. *caudata*: considered S4, apparently secure, in Massachusetts.
- *Athyrium asplenioides*: considered S2? in Massachusetts; on the state plant Watch List.
- *Bartonia paniculata*: considered S4, apparently secure, in Massachusetts.
- *Betula nigra*: considered S3 in Massachusetts; on the state plant Watch List.
- *Bolboschoenus novae-angliae*: considered S2? in Massachusetts; on the state plant Watch List.
- *Botrychium oneidense*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Calamagrostis canadensis* var. *macouniana*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Cardamine concatenata*: considered S4, apparently secure, in Massachusetts.
- *Cardamine maxima*: considered S2? in Massachusetts; on the state plant Watch List.
- *Carex bicknellii*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Carex debilis*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Carex eburnea*: considered S3, vulnerable, in Massachusetts; known only from Berkshire County.
- *Carex emoryi*: considered S1 in Massachusetts; on the state plant Watch List.
- *Carex molesta*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Carex muehlenbergii* var. *enervis*: considered S4, apparently secure, in Massachusetts.
- *Carex sparganioides*: considered S3S4, somewhere between vulnerable and apparently secure, in Massachusetts.

- *Ceanothus herbaceus*: the S-rank of this species is variously given as S4, SNR, and SE; nonetheless, it appears to be secure in the state.
- *Cirsium horridulum* var. *horridulum*: considered S2S3 in Massachusetts; on the state plant Watch List.
- *Crataegus schizophylla*: considered S1 in Massachusetts; on the state plant Watch List.
- *Crataegus succulenta*: the status of this taxon in Massachusetts is undetermined; known from two counties.
- *Cuscuta coryli*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Cuscuta gronovii*: the status of this taxon in Massachusetts is undetermined; it is documented from all counties.
- *Cuscuta polygonorum*: considered S1? in Massachusetts; on the state plant Watch List.
- *Cyperus retrosus*: considered S1? in Massachusetts; on the state plant Watch List.
- *Dicentra canadensis*: considered S4, apparently secure, in Massachusetts.
- *Dichanthelium acuminatum* ssp. *acuminatum*: considered S1? in Massachusetts; on the state plant Watch List.
- *Elymus macgregorii*: considered S2? in Massachusetts; on the state plant Watch List.
- *Elymus villosus* var. *arkansanus*: the status of this taxon in Massachusetts is undetermined.
- *Eleocharis rostellata*: considered S2? in Massachusetts; on the state plant Watch List.
- *Eleocharis tuberculosa*: considered S4, apparently secure, in Massachusetts.
- *Euphorbia nutans*: considered S4, apparently secure, in Massachusetts.
- *Fuirena pumila*: considered S3, vulnerable, in Massachusetts; on the state plant Watch List.
- *Heteranthera dubia*: considered S2S3 in Massachusetts; on the state plant Watch List.
- *Hudsonia tomentosa*: considered S4, apparently secure, in Massachusetts.
- *Hypopitys lanuginosa*: the status of this taxon in Massachusetts is undetermined; only known from Barnstable County.
- *Ilex glabra*: considered S4, apparently secure, in Massachusetts.
- *Juncus biflorus*: considered S1? in Massachusetts; on the state plant Watch List.
- *Juncus torreyi*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Lactuca hirsuta*: considered S2S3 in Massachusetts; on the state plant Watch List.
- *Lechea minor*: considered S2S3 in Massachusetts; on the state plant Watch List.
- *Lonicera sempervirens* var. *sempervirens*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List. As this species is commonly offered in the nursery trade, it is difficult to determine whether an occurrence is native or exotic.
- *Lythrum alatum* ssp. *alatum*: considered S1? in Massachusetts; on the state plant Watch List.
- *Muhlenbergia sobolifera*: considered S4, apparently secure, in Massachusetts.
- *Oenothera fruticosa* ssp. *fruticosa*: the status of this taxon in Massachusetts is undetermined; it is not clear if there are any native occurrences.
- *Paronychia canadensis*: considered S4, apparently secure, in Massachusetts.
- *Paronychia fastigiata* var. *fastigiata*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Paspalum setaceum* var. *psammophilum*: considered S2S3 in Massachusetts; on the state plant Watch List.
- *Phragmites americanus*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Pilea fontana*: considered S3S4, between vulnerable and apparently secure, in Massachusetts.
- *Pityopsis falcata*: considered S4, apparently secure, in Massachusetts.
- *Podophyllum peltatum*: the status of this taxon in Massachusetts is undetermined; it is unclear whether there are any native stands of it in the state.
- *Polygonum erectum*: considered S3S4, between vulnerable and apparently secure, in Massachusetts.
- *Ranunculus hispidus*: the status of this taxon in Massachusetts is undetermined; it is known from four counties.
- *Rhododendron viscosum*: considered S5, secure, in Massachusetts.
- *Ribes rotundifolium*: considered S1? in Massachusetts; on the state plant Watch List.
- *Rorippa aquatica*: the status of this taxon in Massachusetts is undetermined; it is only known from Berkshire County.

- *Rubus cuneifolius*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Sagina decumbens* ssp. *decumbens*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Salix candida*: considered S3 in Massachusetts; on the state plant Watch List.
- *Scirpus georgiana*: considered S4?, apparently secure?, in Massachusetts.
- *Scutellaria parvula* var. *missouriensis*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Sorghastrum nutans*: considered S4S5, apparently secure to secure, in Massachusetts.
- *Sparganium androcladum*: considered S3? in Massachusetts; on the state plant Watch List.
- *Stachys hispida*: considered S4, apparently secure, in Massachusetts.
- *Stachys hyssopifolia*: considered S3S4, between vulnerable and apparently secure, in Massachusetts; on the state plant Watch List.
- *Triglochin maritima*: considered S4, apparently secure, in Massachusetts.
- *Triosteum aurantiacum* var. *aurantiacum*: considered S4, apparently secure, in Massachusetts.
- *Viola subsinuata*: considered S1S2 in Massachusetts; on the state plant Watch List.
- *Wolffiella gladiata*: the status of this taxon in Massachusetts is undetermined; on the state plant Watch List.
- *Xyris smalliana*: considered S3? in Massachusetts; on the state plant Watch List.