

***Conservation Assessment  
for  
Allegheny-spurge (Pachysandra procumbens Michx.)***



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*This Conservation Assessment was prepared to compile the published and unpublished information on the subject taxon or community; or this document was prepared by another organization and provides information to serve as a Conservation Assessment for the Eastern Region of the Forest Service. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject taxon, please contact the Eastern Region of the Forest Service - Threatened and Endangered Species Program at 626 East Wisconsin Avenue, Milwaukee, Wisconsin 53203.*

## Table of Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>4</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>4</b>
<b>NOMENCLATURE AND TAXONOMY .....</b>	<b>4</b>
<b>DESCRIPTION OF SPECIES .....</b>	<b>5</b>
<b>LIFE HISTORY .....</b>	<b>5</b>
<b>Reproduction .....</b>	<b>5</b>
<b>Ecology .....</b>	<b>6</b>
<b>Dispersal/Migration .....</b>	<b>6</b>
<b>Obligate Associations.....</b>	<b>6</b>
<b>HABITAT .....</b>	<b>6</b>
<b>Range-wide .....</b>	<b>6</b>
<b>National Forests .....</b>	<b>6</b>
<b>Site Specific.....</b>	<b>6</b>
<b>DISTRIBUTION AND ABUNDANCE . .....</b>	<b>7</b>
<b>Range-wide Distribution .....</b>	<b>7</b>
<b>State and National Forest Distribution.....</b>	<b>8</b>
<b>RANGE WIDE STATUS .....</b>	<b>8</b>
<b>POPULATION BIOLOGY AND VIABILITY .....</b>	<b>9</b>
<b>POTENTIAL THREATS.....</b>	<b>9</b>
<b>Present or Threatened Risks to Habitat .....</b>	<b>9</b>
<b>Over utilization .....</b>	<b>9</b>
<b>Disease or Predation .....</b>	<b>9</b>
<b>Inadequacy of Existing Regulatory Mechanisms .....</b>	<b>9</b>
<b>Other Natural or Human Factors .....</b>	<b>9</b>
<b>SUMMARY OF LAND OWNERSHIP &amp; EXISTING HABITAT PROTECTION.....</b>	<b>9</b>
<b>SUMMARY OF EXISTING MANAGEMENT ACTIVITIES.....</b>	<b>10</b>
<b>PAST AND CURRENT CONSERVATION ACTIVITIES .....</b>	<b>10</b>
<b>RESEARCH AND MONITORING .....</b>	<b>10</b>
<b>Existing Surveys, Monitoring, and Research.....</b>	<b>10</b>
<b>Survey Protocol .....</b>	<b>10</b>
<b>Research Priorities.....</b>	<b>10</b>
<b>REFERENCES.....</b>	<b>11</b>
<b>APPENDIX .....</b>	<b>14</b>
<b>LIST OF CONTACTS.....</b>	<b>15</b>
<b>Information Requests .....</b>	<b>15</b>
<b>Review Requests.....</b>	<b>16</b>

## EXECUTIVE SUMMARY

Allegheny-spurge, *Pachysandra procumbens* (Michx.), is a semi-evergreen, perennial herb or subshrub that spreads by rhizomes to form a ground cover. It grows in rich woods and rocky slopes on circumneutral soils over limestone, primarily in the southeastern United States, reaching the northwestern edge of its range in Indiana.

Allegheny-spurge has a Global Conservation Status rank of G4G5, indicating it is considered to be somewhere between demonstrably widespread, abundant and secure (G5) and apparently secure (G4). It is a Regional Forester Sensitive species on the Hoosier National Forest in Region 9. It also occurs on the William Bankhead National Forest in Alabama. It is reported for eleven states. Florida and Indiana list the plant as Endangered and North Carolina lists it as SR-P (State Rare, Peripheral to the range).

Based on Element Occurrence records from the six states that track *Pachysandra procumbens*, of 39 occurrences, 46% (18) are on protected or managed land, 15% (6) are on private land, and 38% (15) are on land of unknown ownership.

The Hoosier National Forest has three sites (one on an in-holding) with 1,001-10,000 plants each (Indiana Natural Heritage Database 2002). One site covers more than two acres with Allegheny-spurge the dominate ground cover.

Allegheny-spurge is used for groundcover in the nursery trade. It is not known to what degree it is currently being collected in the wild.

*Pachysandra procumbens* is a rare plant with few known occurrences, but when it is found populations are usually vigorous and stable. Additional research directed at management of this plant may not be needed at this time.

## ACKNOWLEDGEMENTS

I would like to thank Science Librarian Barb Howes at Butler University for tireless assistance with references, Marcia Moore, Herbarium Assistant for help in all things and Butler student Kathy Fidler for research and clerical assistance. I am grateful to Kirk Larson, Botanist on the Hoosier National Forest, and to all agency personnel who provided information.

## NOMENCLATURE AND TAXONOMY

*Pachysandra procumbens* Michx.

**Published in:** *Flora Boreali-Americana* 2: 178, pl. 45, 1803.

**Common names:** Allegheny-spurge, Allegheny pachysandra, Mountain spurge

**Synonyms:** none.

**Family:** Buxaceae, Boxwood family

## DESCRIPTION OF SPECIES

Based on Gleason and Cronquist (1991), Radford et al. (1968) and others:

**Stems:** 1.5-4 dm, dying the following season;

**Leaves:** alternative, lower part of the stem with scale leaves only, upper leaves broadly ovate to rotund, 3-8 cm long, 3-6 cm wide, with a few coarse teeth above, abruptly narrowed below to a long petiole, dark green mottled with lighter green, pubescent, lower petioles 2-6 cm long, the upper shorter;

**Spikes:** 1-5, lateral from near the base, 5-10 cm;

**Flowers:** monoecious, staminate flowers terminal in the spike, pistillate basal, sepals and corolla absent, stamens 4, filaments, stigmas and styles white;

**Fruit:** a densely pubescent, 3-lobed circumscissile capsule 1.5 cm, 2 seeds in each locule.

*Pachysandra terminalis* Siebold & Zucc., is an ornamental from Asia that sometimes escapes. It has narrower leaves, terminal inflorescences, and bicarpellate, baccate, white fruits 6-7 mm (Gleason and Cronquist 1991).

## LIFE HISTORY

Allegheny-spurge is a semi-evergreen, perennial herb or subshrub that spreads by rhizomes to form a ground cover.

### Reproduction

Allegheny-spurge flowers in April and May. It reproduces asexually via rhizomes (Dirr and Alexander 1979). Inflorescence buds are formed in the fall. Plants that

die back to the ground will not produce flowers the next year (Dirr and Alexander 1979).

### **Ecology**

The species is hardy far north of its range (Dirr and Alexander 1979).

### **Dispersal/Migration**

No information found.

### **Obligate Associations**

No information found.

## **HABITAT**

### **Range-wide**

*Pachysandra procumbens* grows in rich woods (Gleason and Cronquist 1991), rocky slopes and circumneutral soils over limestone (Dirr and Alexander 1979).

### **National Forests**

On the Hoosier National Forest, it grows in mesic forests on steep, dry slopes (Hedge et al. 2002) along with *Hydrastis canadensis*, *Jeffersonia diphylla*, *Trillium recurvatum*, and *Veratum woodii* (Indiana Natural Heritage Database 2002). Populations are associated with limestone layers of interbedded limestone and acidic sandstone in southern Indiana (Steve Olson, pers. com.).

It is known from 5 localities on the William Bankhead National Forest in Alabama. Sites are described as limestone soils in oak dominated woodlands, along streams or ephemeral drains that flow into Horse Creek. Two sites have “many plants”, the others, no counts reported. Associated with *Polemonium reptans*, *Isopyrum biternatum*, *Trillium flexipes*, *Carex platyphylla*, or *C. plantaginea*, and *Hydrophyllum macrophyllum* (Kathryn Wallace, pers. com.; Alabama Natural Heritage Database 2004).

### **Site Specific**

The Hoosier National Forest, Tell City Ranger District has the following sites (one is on a private in-holding (Steve Olson, pers. com.) (Indiana Natural Heritage Database 2002):

Turkey Fork Site: Ravine slopes

Beechwood quad, Sections 6 and 7, Crawford County: North- and west-facing lower and mid slope along the Little Blue River

Beechwood quad, Sections 10, Crawford County: Dry-moist, south facing, 35+ degree sandstone slope, mid to upper slope, in filtered and shaded light along the Little Blue River

## DISTRIBUTION AND ABUNDANCE

### Range-wide Distribution

Allegheny-spurge is found primarily in the southeastern United States, reaching The northwestern edge of its range in Indiana (W-7). Gleason and Cronquist (1991) report it for Kentucky, West Virginia, and western North Carolina to northwestern Florida and southern Louisiana. It is considered very rare through most of its range, except in Tennessee, where it is considered secure (W-7).

It is cultivated in woodland gardens and occasionally naturalized in Pennsylvania. Although it is native as far north as West Virginia, there is no evidence that this species is native in Pennsylvania (Rhoads and Klein 1993; John Kunsman, pers. com.).

The plant is “locally common” at one site in Florida, the other two report 15 or fewer plants. These records are thought to accurately reflect the actual abundance of this species in Florida. (Linda Chafin, pers. com). Populations are bigger in NC, where three known occurrences have 100-1,000 stems.

It is rare in Louisiana and only occurs in the Tunica Hills on the east side of the Mississippi River about 40 miles north of Baton Rouge. The Tunica Hills were built by thick loess deposits and have many deep ravines that serve as refugia for some northern species (eg. *Panax quinquefolia*, *Asarum canadense*, *Actaea pachypoda*, *Pachysandra*) that migrated south in advance of the glaciers. There are 16 populations in the Louisiana Natural Heritage database. It's rare in the state but common enough in the Tunicas that that it is not targeted it specifically for inventory (Chris Reid, pers. com.).

*Pachysandra procumbens* is not listed in Kentucky because it is a fairly predictable component of the herbaceous ground cover in several counties in the southern middle of this state (predominantly limestone influenced soils) (Deborah White, pers. com.).

## **National Forest Distribution**

The Hoosier National Forest has three sites (one on an in-holding) with 1,001-10,000 plants each (Indiana Natural Heritage Database 2002). One site covers more than 2 acres with Allegheny-spurge the dominate ground cover. All three occurrences have been discovered since 1989. Plants were reported to be doing very well at these sites in 2002 (Hedge et al. 2002), in terms of both numbers and vigor. It is likely that additional occurrences will be found in the Forest based on the presence of additional rich, mesic, forest habitat.

Allegheny-spurge is also known from 5 localities on the William Bankhead National Forest in Alabama (Kathryn Wallace, pers. com.; Alabama Natural Heritage Database 2004).

## **RANGE WIDE STATUS**

Allegheny-spurge has a Global Conservation Status rank of G4G5 (W-7). This means it is considered to be somewhere between demonstrably widespread, abundant and secure (G5) and apparently secure (G4). Its national Conservation rank (N4N5) reflects the same status in the United States.

It is a Regional Forester Sensitive species on the Hoosier National Forest in Region 9. It also occurs on the William Bankhead National Forest in Alabama where it is considered locally rare (Kathryn Wallace, pers. com.). However, no management or tracking has been done for it there.

State rankings have Allegheny-spurge as SR (reported from the state, but without persuasive documentation that would provide a basis for either accepting or rejecting the species) in Virginia and S? (not enough information available to assess at this time, more field studies and/or specimen identification is needed) in Kentucky.

Four states (Florida, Indiana, North Carolina and South Carolina) rank the plant S1, indicating it is extremely rare; typically 5 or fewer known occurrences in the state, or only a few remaining individuals may be especially vulnerable to extirpation. It is ranked S2 (very rare; typically between 6 and 20 known occurrences; may be susceptible to becoming extirpated) in Louisiana and somewhere in between at S1S2 in Georgia. It is considered somewhat more common in Alabama (S2S3) and Tennessee (S4S5). A detailed listing of all state rankings is in the Appendix.

Florida and Indiana list the plant as Endangered (having only 1 -5 occurrences), giving it official protected status. It is tracked in North Carolina as SR-P (State Rare, Peripheral to the range), meaning it has 1-100 populations in the state and is substantially reduced in numbers by habitat destruction and that it is at the periphery of its range in the state.

## **POPULATION BIOLOGY AND VIABILITY**

No information found.

## **POTENTIAL THREATS**

### **Present or Threatened Risks to Habitat**

In Georgia, the chief threats are likely to be from exotic species, either feral hogs or competitors like Japanese honeysuckle and Chinese privet (Jim Allison, pers. com.).

### **Over utilization**

Allegheny-spurge is “one of the most handsome plants for groundcover use”, but it has been considered hard to propagate (Dirr and Alexander 1979). It is not known to what degree it is currently being collected in the wild.

### **Disease or Predation**

No information found.

### **Inadequacy of Existing Regulatory Mechanisms**

No information found.

### **Other Natural or Human Factors**

Trampling has killed plants in Kentucky (Campbell et al 1995).

## **SUMMARY OF LAND OWNERSHIP & EXISTING HABITAT PROTECTION**

Based on Element Occurrence records from the six states that track *Pachysandra procumbens*, of 39 occurrences, 46% (18) are on protected or managed land, 15% (6) are on private land, and 38% (15) are on land of unknown ownership.

AL: 12 occurrences. Five on the William Bankhead National Forest, four on land managed by the Tennessee Valley Authority, one at a boat landing that is “getting some protection from the Army Corps of Engineers”, one on private land and one of unknown ownership (Alabama Natural Heritage Database 2004).

FL: 3 occurrences, all last observed in the 1990's (one was originally seen in 1944). One is in a state park, one at a boat landing, ownership of the other is unknown (Linda Chafin, pers. com).

GA: Allegheny-spurge is known from about 8 sites in NW Georgia and the western Piedmont. (Jim Allison, pers. com.)

IN: Four occurrences, two on the Hoosier National Forest, one on an in-holding in the Forest. Ownership of the 4<sup>th</sup> site is not known.

LA: Sixteen occurrences, several on a state Wildlife Management Area (Christopher Reid, pers. com.).

NC: There are only 3 current occurrences, all on private land (Misty Franklin, pers. com.).

SC: 10 occurrences (South Carolina Natural Heritage Database). One extirpated, 1 protected in a Heritage Preserve, 4 in Jocassee Gorges of the Eastatoe Gorge Natural Area (SC DNR), others of unknown ownership.

## **SUMMARY OF EXISTING MANAGEMENT ACTIVITIES**

None known.

## **PAST AND CURRENT CONSERVATION ACTIVITIES**

None known.

## **RESEARCH AND MONITORING**

### **Existing Surveys, Monitoring, and Research**

None known.

### **Survey Protocol**

N/A

### **Research Priorities**

Allegheny-spurge is a rare plant with few known occurrences, but when it is found populations are usually vigorous and stable. It seems to be widespread but local, and fairly common where it does occur (Steve Olson, pers. com.). Additional research may not be needed at this time.

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## APPENDIX

State Heritage Status ranks (from W-7).

Alabama	S2S3	Mississippi	S3
Florida	S1	North Carolina	S1
Georgia	S1S2	Pennsylvania	SR
Indiana	S1	South Carolina	S1
Kentucky	S?	Tennessee	S4S5
Louisiana	S2		

S1: Extremely rare; typically 5 or fewer known occurrences in the state, or only a few remaining individuals may be especially vulnerable to extirpation.

S2: Very rare; typically between 6 and 20 known occurrences; may be susceptible to becoming extirpated.

S3: Rare to uncommon; typically 21 to 50 known occurrences; S3 ranked species are not yet susceptible to becoming extirpated in the state but may be if additional populations are destroyed.

S4: Common; apparently secure under present conditions; typically 51 or more known occurrences, but may be fewer with many large populations; usually not susceptible to immediate threats.

S5: Very common; demonstrably secure under present conditions.

SX: Species has been determined or presumed to be extirpated. All historical occurrences have been searched, or all known sites have been destroyed and a thorough search of potential habitat has been completed.

SR: Reported from the state, but without persuasive documentation that would provide a basis for either accepting or rejecting the species.

S?: Not enough information available to assess at this time, more field studies and/or specimen identification is needed.

SH: Possibly extirpated (historical); occurred historically and there is some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years.

SU: Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

HYB: Unranked because it represents an interspecific hybrid, not a species.

## LIST OF CONTACTS

### Information Requests

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## **Review Requests**

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