

Scientific Name (and synonyms): *Fitchiella robertsoni* (*Fitchiella robertsonii*)

Common Name: Robertson's Flightless Planthopper (An Issid Planthopper, Fitch's Planthopper, Fitch's Elephanthopper)

Classification: Animalia, Mandibulata, Insecta, Homoptera, Issidae

Current Wisconsin Status (and Rank): SC/N (S1?)

Other State/Province Rank: Indiana (S1), Wisconsin (S1S2), Ontario (SNR)

National/International Status: Not Ranked

Description

1. Physical description of the species:

Planthoppers are small beetle like insects including a beetle like snout, but are more closely related to insects like cicadas.

Fitchiella robertsoni typically

measures 3-5 mm (0.2 inches) in length and has a large, black margined process or "snout" that occupies much of the face. The forewings (also called "elytra") are extremely shortened, barely covering the first three abdominal segments. The elytra and body are light grayish to olive brown in color, with patches of blackish and brown forming a mottled pattern. The elytra veins are also margined in dark brown. The hindwings are absent, making the species flightless. The legs are light tan, dark brown, and grey.

F. robertsoni can only be confused with one other *Fitchiella* species, *F. fitchii* (see Doering, 1941). However, the latter species is either peach or a darker brown and larger, typically six to eight millimeters in length. The nasal process is also shorter and less bulbous. *Fitchiella fitchii* is known from only a handful of sites in the central Great Plains, where it can be locally common (Doering, 1941). All other *Fitchiella* species are black or blackish and occur in the American Southwest.

2. Controversial or unsettled taxonomic issues:

The taxonomy is very settled for this species.



3. Summary of (a) biology and natural history and (b) habitat requirements of the species:

Biology & Natural History: All Homoptera pass through a gradual metamorphosis in which each stage resembles a small adult. In winged species, the wings are at first minute and subsequently grow larger at each stage, with the adult stage being reached following the final molt (skin shedding event). However, with *Fitchiella*, the wings remain as small pads, incapable of flight. *F. robertsoni* adults appear in late summer (late-July through September). They feed, mate and (it is assumed) females lay eggs over a protracted period of several weeks to a few months or more. Eggs are laid either in plant tissues or on the ground near food plant(s). In the Hoosier National Forest, many adults apparently overwinter and are observed again in the early spring, presumably feeding and continuing to reproduce. Therefore, the adult brood period can last up to nine months. In the Hoosier NF, over wintering adults tend to disappear in sweep net samples by late June.

The primary food plant(s) of *F. robertsoni* are not well documented. K.G.A. Hamilton, working in Ontario, associates the species with *Aristida* spp. (3-awned grasses). R. Panzer and J. Bess working in Illinois and Indiana, associate it with *Orbexilum* spp. (legumes – no WI representatives).

This planthopper is not known to migrate, lacks wings, and is flightless. Given its specific habitat requirements and limited vagility, *F. robertsoni* rarely (if ever) leaves the native grasslands where it is found. The adults are rather sedentary, typically moving carefully among plants, oftentimes crawling through vegetation. The females lay numerous small eggs and probably disperse over a fairly small area during the course of their lives (~400 square feet) (Bess 2005).

Habitat Requirements: *F. robertsoni* appears to occur in only a few, closely related dry to dry-mesic grassland types throughout its range. Based on what is known about the collection sites, the habitats include gravel hill prairie, bedrock bluff prairie, sand prairie, sand dunes, and oak-pine barrens/savannas. Dozier (1932) reported sweeping eight adults and several nymphs of *F. robertsoni* from coarse grasses in a blackjack oak and shortleaf pine woodland in southern Mississippi. Hamilton (1998) found this species with a number of other prairie endemic Homoptera on sand dunes at an alvar (limestone bedrock

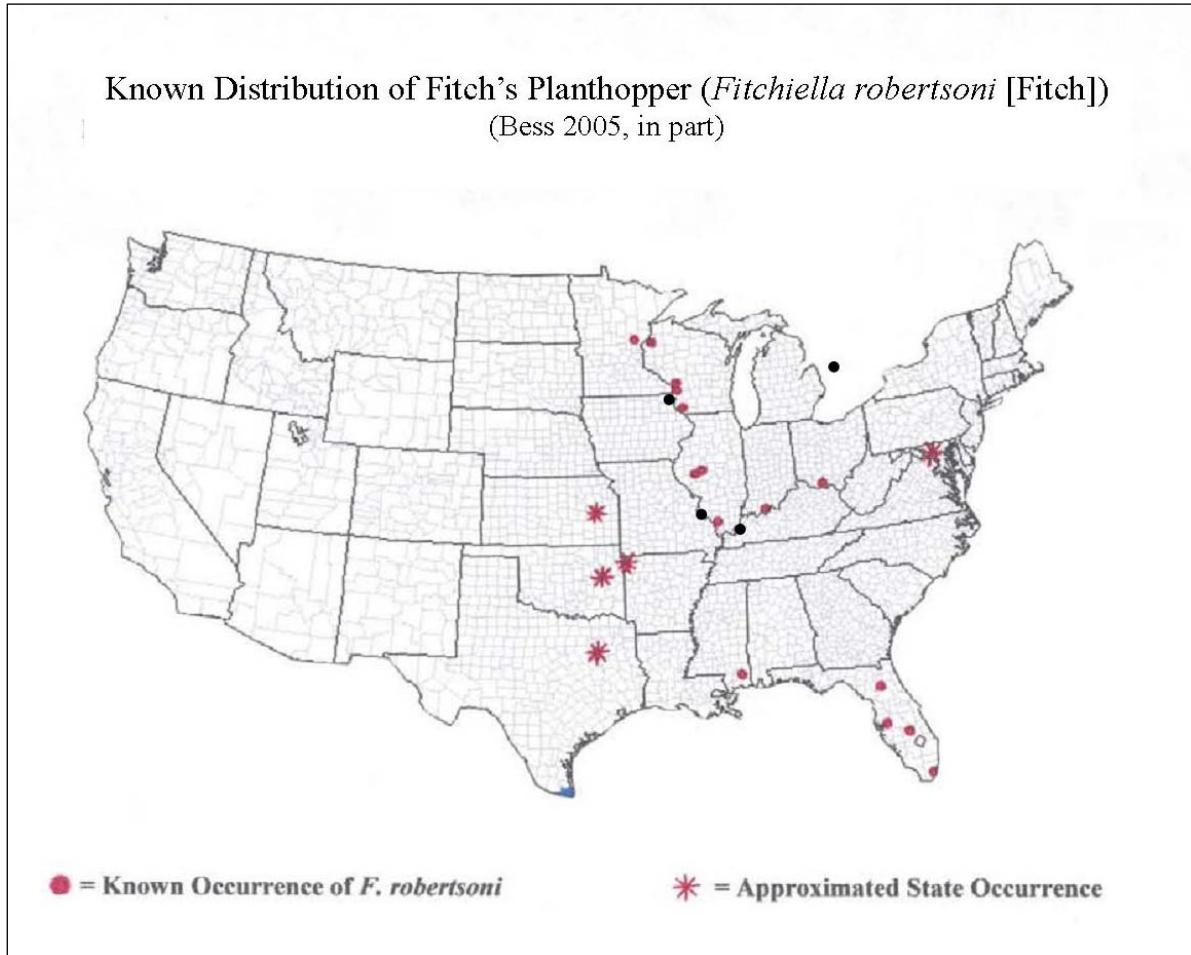
grassland) site along southern Lake Huron in Ontario, Canada. Osborn (1938) reported that the Ohio record came from Adams County and was collected by Knull in 1934. Adams County occurs in the extreme southeastern part of the state, along the Ohio River. The County is known to contain numerous barrens sites, many of which have large open, grass-dominated areas often called "prairies". It also occurs on dolomite bluff prairie along the Mississippi River in Wisconsin and Iowa, and in sand oak barren habitat in NW Wisconsin and east central Minnesota. In Indiana (Bess 2005), this species is found primarily in high quality, blackjack-post oak barrens on thin clay soils over limestone and sandstone bedrock along the Ohio River. Based on the known extant sites, *F. robertsoni* appears to be restricted to intact, high quality remnants of native grassland type ecosystems.

Population Condition

4. Global Distribution/Range:

F. robertsoni has been collected from a wide geographic region (Ontario, Arkansas, Florida, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Minnesota, Mississippi, Ohio, Oklahoma, Texas, and Wisconsin), but from only 29 locations across its range, and only 17 of those are extant observations made within the past 20 years. This is after years of intense field surveys on many hundreds of prairies and glades in the Upper Midwest by multiple people (Hamilton, Panzer, Bess, Wallner, and WIDNR).

Known <i>Fitchiella robertsoni</i> populations (Henderson 2011)			
State/Province	>1990	<1940	total
Arkansas		1	1
Illinois	4		4
Indiana	3	1	4
Iowa	1		1
Kentucky	1		1
Florida		4	4
Kansas		1	1
Maryland		1	1
Minnesota	3		3
Mississippi		1	1
Ohio		1	1
Oklahoma		1	1
Texas		1	1
Wisconsin	4		4
Ontario	1		1
TOTAL	17	12	29



5. State Distribution/Range:

F. robertsoni has been found on the bluffs along the Mississippi River and in the sand country of NW Wisconsin. Range extent = 10,620 sq km; Area of occupancy = 16 sq km.

6. Number of Occurrences:

There are only 4 occurrences known in WI.

7. Number of Viable/"Good" Occurrences:

Unknown.

8. Population Size (if known):

Unknown.



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Source:
WNIH database
(William A. Smith)

9. Extent of field surveys:

From 1995 to 2005, an intense search of nearly 200 prairie remnants was made in WI, by WI DNR personnel and K.G.A. Hamilton of Agriculture Canada, looking for prairie-restricted leaf and plant hoppers. *F. robertsoni* is very distinctive (easy to ID) and the adults are active for 2-3 months. Therefore, delectability should not be a major problem with this species.

Trends**10. Short-term Trend:**

Unknown

11. Long-term Trend:

Prior to European settlement of the continent, *F. robertsoni* apparently occurred on native grasslands across eastern North America. Fire suppression, and the rapid transformation of the Nation's barrens and hill prairies to pasture and intensive row crop agriculture, followed the westward expansion of European colonials in the mid-1800's. This led to a rapid reduction in habitat acreage for *F. robertsoni* and other grassland species. Today, this planthopper exists as a small collection of isolated populations on small isolated remnants of prairie and oak/pine barrens.

Threats**12. Known threats:**

Today, continuing fragmentation and loss of habitat to tree/shrub invasion and aggressive non-native plants are the primary threats to this species. Grazing can also compromise the intact, high quality plant communities that the species seems to require. Most plant and leaf hoppers have life histories that make them vulnerable to fire. Exactly where *F. robertsoni* spends the winter and in what stage, is not known for certain in WI, nor has research or monitoring been done to quantify its response to fire. The species appears to be a weak disperser. Therefore, it is

possible that over use of fire could be a threat. Yet there is ample evidence that the species survives or recovers from fire (Bess 2005). It is found on fire managed sites in WI. Therefore, cautious use of fire, not prohibition, is in order until more is known.

Management/Research Needs

13. Management actions (species, habitat, or people management):

Increase the size and floristic quality of habitat, both at and adjacent to known populations, but also sites with apparently suitable habitat in close geographic proximity (within 10 miles) to the known populations. When burning remnants, leave portions unburned in any given year.

14. Research, surveys, and monitoring needed:

- 1) Conduct focused investigations into what the host plants are in WI for this planthopper.
- 2) Conduct research quantifying *F. robertsoni* response to fire; vulnerability, degree of in situ survival, rate of population recovery and/or recolonization, etc.
- 3) Search for new populations by conducting focused surveys of sites with good populations of the confirmed host plants.
- 4) Investigate the possible link between native plant community quality (intactness) and the presence/absence of *F. robertsoni*. This may include consideration of land use/management factors affecting the vegetation such history of grazing or other disturbances, and fire history.

Economic Impacts

15. Probable costs from the proposed status change:

Unknown.

Additional Information

16. The U.S. Forest Service – Eastern Region conducted a conservation assessment of *F. robertsoni* in 2005.

Proposed changes in Wisconsin protection Status & rank

17. Proposed Wisconsin Protection Status (End, Thr, SC): Threatened

18. Basis for proposed WI status change (summary of #s 4 -12):

This recommendation is based on the fact that *F. robertsoni* has been looked for on over 200 sites in WI, and has only been found on 4, and is only known from 13 other extant populations throughout its range. Adults are active for an extended period of time and are relatively easy to collect and identify, therefore a simple lack of detection is not likely the major reason for the lack of documented sites. However, knowing the host plant would likely improve detection. The fact that the 4 sites in WI are high quality, intact remnants, (this also seems to be the case at most other extant locations) begs the question “Is this species restricted to high quality remnants?” If so, extreme rarity of suitable habitat may be a limiting factor for the species.

19. Proposed SRANK: S1

20. Proposed WI NHI tracked/watched/not tracked: Track

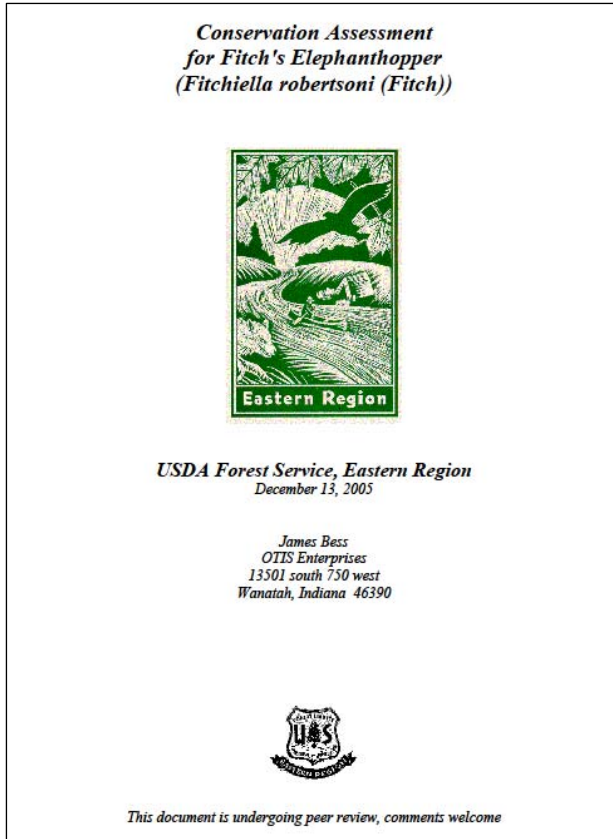
References

21. List of references used in completing the status assessment, including personal communications and "gray literature":

Bess, James. 2005. Conservation Assessment for Fitch’s Elephanthopper (*Fitchiella robertsoni* [Fitch]). USDA Forest Service, Eastern Region.

Doering, K.C. 1941. Contributions to the taxonomy of the Subfamily Issinae in America north of Mexico (Fulgoridae, Homoptera). Part IV. Bulletin of the University of Kansas. Science Bulletin. Lawrence. 27:185-233.

Hamilton, K. 1998. Distribution patterns of "short-horned" bugs in the mixedwood plains ecozone. In: Assessment of species diversity in the mixedwood plains ecozone.
<http://www.naturewatch.ca/Mixedwood/homopter/homopt8.htm>



Name of preparer(s) and the date prepared: Rich Henderson (9/7/2011)

Reviewed and edited by: Terrell J. Hyde and William A. Smith

Wisconsin NatureServe Element Rank Calculator Results (printed 3/5/2012)

Factor Categories and Weights		Conservation Rank Factor			Comments		
Rarity	weight: 0.5	Rarity1	1	Range Extent	E	E = 5,000-20,000 sq km (~2,000-8,000 sq mi)	12,150 sq km (occupied local watersheds)
			2	Area of Occupancy:	BC	ONLY 1 OF FOLLOWING 3	4 grid cells or 16 sq km
				Direct est. (ecosystems) OR			
				4 km ² grid cells (species) OR	BC	BC = 2-5 4-km ² grid cells	
				1 km ² grid cells (linear species)			
	Rarity2	1	Number of Occurrences	A	A = 1 - 5	4 EOs	
		2	Population Size				
		2	Good Viability:	B	ONLY 1 OF FOLLOWING 2	Viability has not been assessed, however estimated that few have at least good viability.	
			Number of Occurrences OR	B	B = Very few (1-3) occurrences with excellent or good viability or ecological integrity		
		Percent Area					
X	1	Environmental Specificity (opt.)					
Trends	0.3	Trend/Threat	2	Short-term Trend	U	U = Unknown	
			1	Long-term Trend	CE	CE = Decline of 30 - 80%	Habitat loss and degradation.
Threats	0.2	Trend/Threat	1	Threat Impact	C	C = Medium	Continuing habitat loss and degradation
			X	1	Intrinsic Vulnerability (opt.)		

Calculated Rank	S2
Assigned Rank*	S1S2
Rank Adjustment Reasons	
Assigned Rank Reasons	Few sites in WI and rangewide; restricted to high quality prairies.
Rank Author	William A. Smith and Rich Henderson (2011)