

Table 4. Density–area relationships for moth species in the U.S. data set, estimated either from the total data set ($DAR_{\text{slope 1}}$) or from a reduced data set that excluded small patches with zero density ($DAR_{\text{slope 2}}$)

Family	Species*	Main habitat [†]	Wing span [‡]	$DAR_{\text{slope 1}}$ (SE) [§]	$DAR_{\text{slope 2}}$ (SE) [§]
Arctiidae	<i>Cisseps fulvicollis</i>	Open	33	−0.06 (0.27)	−0.06 (0.27)
Arctiidae	<i>Clemensia albata</i>	Forest/Edge	20	0.29 (0.09)	0.29 (0.09)
Arctiidae	<i>Crambidia pallida</i>	Forest/Edge	22	−0.03 (0.12)	−0.03 (0.12)
Arctiidae	<i>Estigeme acrea</i>	Open	56.5	−0.10 (0.13)	−0.10 (0.13)
Arctiidae	<i>Halysidota tessellaris</i>	Forest	42.5	0.36 (0.13)	0.36 (0.13)
Arctiidae	<i>Haploa lecontei</i>	Open/Edge	43	0.14 (0.18)	0.14 (0.18)
Arctiidae	<i>Holomelina ferruginosa</i>	Open	27.5	0.27 (0.15)	0.27 (0.15)
Arctiidae	<i>Holomelina opella</i>	Open	28	−0.15 (0.19)	−0.15 (0.19)
Arctiidae	<i>Hyphantria cunea</i>	Forest/Edge	32	−0.04 (0.26)	−0.04 (0.26)
Arctiidae	<i>Hypoprepia fucosa</i>	Forest/Edge	30	−0.06 (0.12)	−0.06 (0.12)
Arctiidae	<i>Lophocampa caryae</i>	Forest	46	0.30 (0.32)	0.30 (0.32)
Arctiidae	<i>Pyrrharctia isabella</i>	Open	55	−0.27 (0.16)	−0.27 (0.16)
Arctiidae	<i>Spilosoma virginica</i>	Open	42	0.21 (0.10)	0.21 (0.10)
Epiplemlidae	<i>Calledapteryx dryopterata</i>	Forest	20	0.26 (0.13)	0.26 (0.13)
Geometridae	<i>Anavitrinella pampinaria</i>	Forest/Edge	28.5	0.07 (0.08)	0.07 (0.08)
Geometridae	<i>Campaea perlata</i>	Forest/Edge	39.5	0.17 (0.15)	0.17 (0.15)
Geometridae	<i>Ennomos subsignaria</i>	Forest/Edge	36	−0.05 (0.23)	−0.05 (0.23)
Geometridae	<i>Eubaphe mendica</i>	Forest/Edge	25.5	0.04 (0.16)	0.04 (0.16)
Geometridae	<i>Euchlaena irraria</i>	Forest/Edge	42.5	0.02 (0.16)	0.02 (0.16)
Geometridae	<i>Eulithis diversilineata</i>	Forest	30.5	−0.29 (0.14)	−0.29 (0.14)
Geometridae	<i>Eupithecia miserulata</i>	Open/Edge	16	−0.03 (0.11)	−0.03 (0.11)
Geometridae	<i>Heterophelps refusaria</i>	Forest	26.5	−0.45 (0.30)	−0.45 (0.30)
Geometridae	<i>Heterophelps triguttata</i>	Forest	21	0.27 (0.17)	0.27 (0.17)
Geometridae	<i>Hydrelia inortana</i>	Forest	19.5	0.30 (0.12)	0.30 (0.12)
Geometridae	<i>Hypagirtis unipunctata</i>	Forest/Edge	33.5	0.17 (0.07)	0.17 (0.07)
Geometridae	<i>Iridopsis larvaria</i>	Forest/Edge	31	−0.09 (0.14)	−0.09 (0.14)
Geometridae	<i>Itame pustularia</i>	Forest	22.5	0.67 (0.42)	0.67 (0.42)

Family	Species*	Main habitat[†]	Wing span[‡]	DAR_{slope 1} (SE)[§]	DAR_{slope 2} (SE)[§]
Geometridae	<i>Lambdina pellucidaria</i>	Forest/Edge	34.5	0.20 (0.20)	0.20 (0.20)
Geometridae	<i>Lytrosis unitaria</i>	Forest	51.5	0.24 (0.16)	0.24 (0.16)
Geometridae	<i>Melanolophia canadaria</i>	Forest/Edge	32	-0.10 (0.13)	-0.10 (0.13)
Geometridae	<i>Mellilla xanthometata</i>	Forest/Edge	18.5	0.13 (0.20)	0.13 (0.20)
Geometridae	<i>Metarranthis hypochraria</i>	Forest/Edge	37.5	0.90 (0.32)	0.51 (0.48)
Geometridae	<i>Nematocampa resistaria</i>	Generalist	22	0.11 (0.15)	0.10 (0.15)
Geometridae	<i>Orthonama centrostrigaria</i>	Open/Edge	20	0.02 (0.15)	0.02 (0.15)
Geometridae	<i>Orthonama obstipata</i>	Open	18.5	-0.18 (0.16)	-0.21 (0.17)
Geometridae	<i>Pero honestaria</i>	Forest/Edge	35	-0.29 (0.26)	-0.56 (0.31)
Geometridae	<i>Platylene olyzonaria</i>	Forest/Edge	22	0.54 (0.16)	0.41 (0.18)
Geometridae	<i>Pleuroprucha insulsaria</i>	Generalist	14	0.17 (0.17)	0.17 (0.17)
Geometridae	<i>Probole amicaria</i>	Forest/Edge	28.5	0.11 (0.20)	0.11 (0.20)
Geometridae	<i>Scopula limboundata</i>	Generalist	25	-0.04 (0.11)	-0.04 (0.11)
Geometridae	<i>Semiothisa aemulataria</i>	Forest/Edge	24	0.25 (0.10)	0.25 (0.10)
Geometridae	<i>Semiothisa bisignata</i>	Forest	24	0.41 (0.55)	
Geometridae	<i>Semiothisa fassinotata</i>	Forest	23.5	0.47 (0.23)	0.47 (0.23)
Geometridae	<i>Semiothisa multilineata</i>	Forest/Edge	24.5	0.81 (0.26)	0.33 (0.44)
Geometridae	<i>Semiothisa ocellinata</i>	Forest/Edge	24	-0.15 (0.19)	-0.15 (0.19)
Geometridae	<i>Semiothisa quadrinotaria</i>	Forest	24.5	0.18 (0.37)	0.18 (0.37)
Geometridae	<i>Sicya macularia</i>	Forest	29.5	0.23 (0.14)	0.23 (0.14)
Geometridae	<i>Xanthotype urticaria</i>	Open/Edge	35	-0.20 (0.15)	-0.20 (0.15)
Lasiocampidae	<i>Malacosoma americanum</i>	Forest/Edge	33	-0.21 (0.08)	-0.21 (0.08)
Lasiocampidae	<i>Malacosoma disstria</i>	Forest/Edge	30	0.28 (0.15)	0.28 (0.15)
Limacodidae	<i>Euclea delphinii</i>	Forest/Edge	25	0.35 (0.34)	0.27 (0.37)
Limacodidae	<i>Lithacodes fasciola</i>	Forest/Edge	21.5	-0.15 (0.18)	-0.21 (0.19)
Limacodidae	<i>Packardia elegans</i>	Forest	20	-0.39 (0.23)	-0.39 (0.23)
Limacodidae	<i>Packardia geminata</i>	Forest	21	0.73 (0.42)	-0.31 (0.72)
Limacodidae	<i>Tortricidia flexuosa</i>	Forest	20	0.35 (0.20)	0.27 (0.21)
Limacodidae	<i>Tortricidia testacea</i>	Forest	20.5	0.08 (0.19)	0.08 (0.19)
Lymantriidae	<i>Dasychira obliquata</i>	Forest/Edge	45	0.46 (0.26)	0.25 (0.32)

Family	Species*	Main habitat[†]	Wing span[‡]	DAR_{slope 1} (SE)[§]	DAR_{slope 2} (SE)[§]
Lymantriidae	<i>Dasychira vagans</i>	Forest/Edge	51.5	0.12 (0.23)	0.12 (0.23)
Megalopigidae	<i>Lagoa crispata</i>	Forest	32.5	0.58 (0.36)	0.41 (0.46)
Noctuidae	<i>Abagrotis alternata</i>	Generalist	38.5	0.16 (0.20)	-0.08 (0.19)
Noctuidae	<i>Acronicta inclara</i>	Forest/Edge	32	0.49 (0.35)	-0.02 (0.55)
Noctuidae	<i>Acronicta ovata</i>	Forest	31.5	0.35 (0.32)	0.35 (0.32)
Noctuidae	<i>Agrotis ipsilon</i>	Generalist	27.5	-0.22 (0.15)	-0.22 (0.15)
Noctuidae	<i>Allagrapha aerea</i>	Generalist	35	-0.10 (0.24)	-0.10 (0.24)
Noctuidae	<i>Allothria elonympha</i>	Forest/Edge	39	0.28 (0.28)	0.36 (0.47)
Noctuidae	<i>Anorthodes tarda</i>	Generalist	30	-0.05 (0.15)	-0.05 (0.15)
Noctuidae	<i>Baileya australis</i>	Forest/Edge	32	0.18 (0.20)	0.18 (0.20)
Noctuidae	<i>Baileya ophthalmica</i>	Forest	27.5	0.11 (0.41)	-0.15 (0.48)
Noctuidae	<i>Bleptina caradrinalis</i>	Forest	27	0.47 (0.30)	0.47 (0.30)
Noctuidae	<i>Bomolocha baltimoralis</i>	Forest/Edge	29	0.35 (0.31)	0.35 (0.31)
Noctuidae	<i>Bomolocia madefactalis</i>	Forest/Edge	28.5	0.00 (0.26)	0.00 (0.26)
Noctuidae	<i>Catocala paleogamma</i>	Forest	65	0.75 (0.31)	-0.04 (0.50)
Noctuidae	<i>Chytolita morbidalis</i>	Forest/Edge	32	0.14 (0.35)	0.14 (0.35)
Noctuidae	<i>Colocasia flavicornis</i>	Forest/Edge	46	0.48 (0.14)	0.48 (0.14)
Noctuidae	<i>Eudryas grata</i>	Forest/Edge	40.5	0.23 (0.20)	0.23 (0.20)
Noctuidae	<i>Feltia herelis</i>	Generalist	39	-0.31 (0.23)	-0.31 (0.23)
Noctuidae	<i>Galgula partita</i>	Generalist	42.5	-0.35 (0.15)	-0.35 (0.15)
Noctuidae	<i>Hypenodes fractilinea</i>	Forest/Edge	12.5	0.28 (0.22)	0.28 (0.22)
Noctuidae	<i>Hyperstrotia pervertens</i>	Forest	18	0.45 (0.20)	0.26 (0.24)
Noctuidae	<i>Idia aemula</i>	Generalist	25	0.10 (0.23)	0.10 (0.23)
Noctuidae	<i>Idia americalis</i>	Generalist	28	0.33 (0.15)	0.33 (0.15)
Noctuidae	<i>Idia lubricalis</i>	Generalist	30	0.15 (0.17)	0.15 (0.17)
Noctuidae	<i>Idia scobialis</i>	Generalist	35	0.53 (0.20)	0.53 (0.20)
Noctuidae	<i>Lacinipolia lorea</i>	Generalist	32.5	-0.04 (0.24)	-0.38 (0.25)
Noctuidae	<i>Lacinipolia renigera</i>	Generalist	25.5	-0.48 (0.22)	-0.48 (0.22)
Noctuidae	<i>Lascoria ambigualis</i>	Open/Edge	23	-0.13 (0.17)	-0.13 (0.17)
Noctuidae	<i>Lithacodia carneola</i>	Open/Edge	32.5	-0.24 (0.09)	-0.24 (0.09)
Noctuidae	<i>Lithacodia muscosula</i>	Open/Edge	22	-0.27 (0.10)	-0.27 (0.10)

Family	Species*	Main habitat[†]	Wing span[‡]	DAR_{slope 1} (SE)[§]	DAR_{slope 2} (SE)[§]
Noctuidae	<i>Macrochilo absorptalis</i>	Open/Edge	23.5	-0.25 (0.19)	-0.25 (0.19)
Noctuidae	<i>Nigetia formosalis</i>	Forest/Edge	18	0.51 (0.23)	0.38 (0.26)
Noctuidae	<i>Ochropleura implecta</i>	Open/Edge	28.5	-0.44 (0.19)	-0.44 (0.19)
Noctuidae	<i>Ogdoconta cinereola</i>	Generalist	33	-0.29 (0.20)	-0.29 (0.20)
Noctuidae	<i>Orthodes crenulata</i>	Open/Edge	31.5	-0.30 (0.29)	-0.30 (0.29)
Noctuidae	<i>Palthis asopialis</i>	Forest/Edge	20	-0.13 (0.10)	-0.13 (0.10)
Noctuidae	<i>Pangrapta decoralis</i>	Forest	24	0.92 (0.43)	0.85 (0.54)
Noctuidae	<i>Peridroma saucia</i>	Generalist	46	-0.10 (0.16)	-0.10 (0.16)
Noctuidae	<i>Phalaenostola laurentioides</i>	Generalist	43	-0.30 (0.13)	-0.30 (0.13)
Noctuidae	<i>Plathypena scabra</i>	Open/Edge	39.5	-0.32 (0.18)	-0.32 (0.18)
Noctuidae	<i>Polia detracta</i>	Generalist	55	0.22 (0.18)	0.22 (0.18)
Noctuidae	<i>Polygrammate hebraicum</i>	Forest	31	0.93 (0.26)	0.45 (0.38)
Noctuidae	<i>Protolampra brunneicollis</i>	Generalist	42	-0.11 (0.32)	-0.11 (0.32)
Noctuidae	<i>Pseudaletia unipuncta</i>	Generalist	26.5	0.03 (0.14)	0.03 (0.14)
Noctuidae	<i>Pseudorthodes vecors</i>	Open	28.5	-0.37 (0.21)	-0.37 (0.21)
Noctuidae	<i>Renia discoloralis</i>	Forest/Edge	40	0.28 (0.23)	0.20 (0.25)
Noctuidae	<i>Spargaloma sexpunctata</i>	Open/Edge	27	-0.68 (0.23)	-0.68 (0.23)
Noctuidae	<i>Tarachidia erastrionides</i>	Open	36	-0.56 (0.24)	-0.56 (0.24)
Noctuidae	<i>Thioptera nigrofimbria</i>	Open	20	-0.42 (0.12)	-0.42 (0.12)
Noctuidae	<i>Xestia dolosa</i>	Generalist	34.5	-0.10 (0.09)	-0.10 (0.09)
Noctuidae	<i>Zale lunata</i>	Forest	47.5	-0.20 (0.31)	-0.20 (0.31)
Noctuidae	<i>Zanclognatha cruralis</i>	Forest/Edge	29.5	0.50 (0.25)	0.36 (0.30)
Noctuidae	<i>Zanclognatha laevigata</i>	Forest/Edge	30	0.50 (0.37)	0.37 (0.43)
Noctuidae	<i>Zanclognatha obscuripennis</i>	Forest/Edge	16.5	-0.44 (0.15)	-0.44 (0.15)
Noctuidae	<i>Zanclognatha ochreipennis</i>	Forest/Edge	56.5	0.67 (0.16)	0.65 (0.14)
Notodontidae	<i>Datana integerrima</i>	Forest/Edge	24	0.08 (0.19)	-0.19 (0.20)
Notodontidae	<i>Datana ministra</i>	Forest/Edge	23.5	0.45 (0.44)	0.40 (0.48)
Notodontidae	<i>Heterocampa umbrata</i>	Forest	25	0.52 (0.26)	0.27 (0.32)

Family	Species*	Main habitat [†]	Wing span [‡]	DAR _{slope 1} (SE) [§]	DAR _{slope 2} (SE) [§]
Notodontidae	<i>Lochmaeus bilineata</i>	Forest	37.5	0.40 (0.13)	0.40 (0.13)
Notodontidae	<i>Macrurocampa marthesia</i>	Forest	36	0.73 (0.19)	0.71 (0.20)
Notodontidae	<i>Nadata gibbosa</i>	Forest	22.5	0.45 (0.12)	0.34 (0.12)
Notodontidae	<i>Oligocentra lignicolor</i>	Forest	24.5	1.11 (0.33)	1.07 (0.41)
Notodontidae	<i>Peridea angulosa</i>	Forest	42.5	0.20 (0.11)	0.08 (0.09)
Notodontidae	<i>Peridea basitriens</i>	Forest	24.5	0.27 (0.10)	0.27 (0.10)
Notodontidae	<i>Schizura concinna</i>	Forest	35	0.84 (0.15)	0.84 (0.16)
Notodontidae	<i>Schizura ipomoeae</i>	Generalist	24	0.37 (0.34)	0.20 (0.40)
Notodontidae	<i>Symerista albifrons</i>	Forest	31.5	0.66 (0.29)	0.31 (0.41)
Oecophoridae	<i>Agonopteryx clemensella</i>	Open/Edge	22	0.33 (0.31)	-0.03 (0.40)
Oecophoridae	<i>Antaeotricha leucillana</i>	Generalist	29.5	-0.06 (0.08)	-0.06 (0.08)
Oecophoridae	<i>Psilocorsis quercicella</i>	Forest	42.5	0.47 (0.19)	0.47 (0.19)
Oecophoridae	<i>Psilocorsis reflexella</i>	Forest/Edge	35	-0.23 (0.20)	-0.23 (0.20)
Pyraloidea	<i>Aglossa cuprina</i>	Open/Edge	20	0.15 (0.10)	0.11 (0.10)
Pyraloidea	<i>Blepharomastix ranalis</i>	Open	24	0.22 (0.20)	0.22 (0.20)
Pyraloidea	<i>Crambus agitatellus</i>	Open	33	-0.31 (0.15)	-0.31 (0.15)
Pyraloidea	<i>Crambus caliginosellus</i>	Open	19.5	-0.29 (0.11)	-0.29 (0.11)
Pyraloidea	<i>Crocidophora tuberculalis</i>	Open	25.5	0.04 (0.11)	0.04 (0.11)
Pyraloidea	<i>Desmia funeralis</i>	Forest/Edge	20	0.31 (0.12)	0.31 (0.12)
Pyraloidea	<i>Helvibotys helvialis</i>	Open	18.5	-0.17 (0.21)	-0.17 (0.21)
Pyraloidea	<i>Herculia olinalis</i>	Forest	51.5	1.04 (0.32)	1.04 (0.32)
Pyraloidea	<i>Lipocosmodes fuliginosalis</i>	Unknown	18.5	-0.98 (0.40)	-0.98 (0.40)
Pyraloidea	<i>Microcrambus elegans</i>	Open	33.5	-0.40 (0.12)	-0.40 (0.12)
Pyraloidea	<i>Ostrinia nubilalis</i>	Open	25	-0.75 (0.13)	-0.75 (0.13)
Pyraloidea	<i>Palpita magniferalis</i>	Forest/Edge	21	0.02 (0.10)	0.02 (0.10)
Pyraloidea	<i>Pantographa limata</i>	Forest	21	1.13 (0.56)	0.32 (1.25)
Pyraloidea	<i>Scoparia biplagiialis</i>	Unknown	21.5	0.13 (0.13)	0.13 (0.13)
Pyraloidea	<i>Synclita oblitalis</i>	Open	28.5	-0.06 (0.23)	-0.06 (0.23)
Pyraloidea	<i>Udea rubigalis</i>	Generalist	30	-0.15 (0.09)	-0.15 (0.09)
Pyraloidea	<i>Xubida panalope</i>	Open	30.5	0.07 (0.27)	0.07 (0.27)

Family	Species*	Main habitat [†]	Wing span [‡]	DAR _{slope 1} (SE) [§]	DAR _{slope 2} (SE) [§]
Pyraloidea	<i>Acrobasis juglandis</i>	Forest/Edge	20	0.24 (0.15)	0.14 (0.16)
Pyraloidea	<i>Acrobasis palliolella</i>	Forest/Edge	28.5	0.40 (0.18)	0.40 (0.18)
Pyraloidea	<i>Arta statalis</i>	Generalist	32	0.88 (0.36)	0.80 (0.45)
Pyraloidea	<i>Eulogia ochrifrontella</i>	Forest	39.5	1.14 (0.35)	0.85 (0.65)
Pyraloidea	<i>Glyptocera consobrinella</i>	Unknown	25.5	0.52 (0.28)	0.26 (0.38)
Pyraloidea	<i>Nephoteryx vetustella</i>	Open/Edge	14	0.21 (0.35)	0.21 (0.35)
Pyraloidea	<i>Nephoteryx virgatella</i>	Open/Edge	20.5	0.14 (0.10)	0.14 (0.10)
Pyraloidea	<i>Peoria approximella</i>	Open/Edge	35	0.63 (0.38)	0.63 (0.38)
Pyraloidea	<i>Tosale oviplagalis</i>	Forest/Edge	16	0.17 (0.14)	0.16 (0.15)
Tortricidae	<i>Acleris chalybeana</i>	Open	27	-0.19 (0.20)	-0.40 (0.21)
Tortricidae	<i>Ancylis laciniana</i>	Open	32	0.31 (0.21)	0.31 (0.21)
Tortricidae	<i>Argyrotaenia velutinana</i>	Generalist	66	-0.57 (0.25)	-0.57 (0.25)
Tortricidae	<i>Choristoneura rosaceana</i>	Generalist	39	-0.09 (0.12)	-0.09 (0.12)
Tortricidae	<i>Coelostathma discopunctana</i>	Generalist	28.5	-0.29 (0.22)	-0.29 (0.22)
Tortricidae	<i>Dichrorampha bittana</i>	Forest/Edge	20	-0.01 (0.26)	-0.01 (0.26)
Tortricidae	<i>Endothenia hebesana</i>	Generalist	27.5	-0.42 (0.15)	-0.42 (0.15)
Tortricidae	<i>Hedya ochroleucana</i>	Forest/Edge	18.5	-0.20 (0.20)	-0.20 (0.20)
Tortricidae	<i>Olethreutes inoratana</i>	Forest	24	0.93 (0.31)	0.93 (0.31)
Tortricidae	<i>Olethreutes nigrana</i>	Forest	65	0.34 (0.41)	0.34 (0.41)
Tortricidae	<i>Olethreutes ochrosuffusana</i>	Generalist	33	0.00 (0.30)	-0.32 (0.33)
Tortricidae	<i>Olethreutes olivaceana</i>	Forest	31	0.22 (0.37)	0.22 (0.37)
Tortricidae	<i>Orthotaenia undulana</i>	Forest	47.5	-0.06 (0.13)	-0.06 (0.13)
Tortricidae	<i>Phaneta parmatana</i>	Open	36	-0.64 (0.31)	-0.64 (0.31)
Tortricidae	<i>Platynota idaeusalis</i>	Open	42	0.09 (0.24)	0.09 (0.24)
Tortricidae	<i>Proteoteras aesculana</i>	Generalist	27	0.03 (0.30)	-0.11 (0.35)
Yponmeutidae	<i>Atteva punctella</i>	Generalist	30	-0.31 (0.33)	-0.31 (0.33)
Yponmeutidae	<i>Yponmeuta multipunctella</i>	Forest/Edge	38.5	0.17 (0.23)	0.17 (0.23)

*Nomenclature according to ref. 1.

[†]Data from refs. 2-6.

[‡]Data from ref. 7 and references therein.

[§]Density estimates were based on samplings during June and August 2001 to accommodate phenological variation in moth community composition. To standardize the hours of trap operation, a consistent sampling interval was used in both seasons (1930-0600 Eastern daylight time¹). Because weather has a significant effect on moth flight behavior and light-trap efficiency, trapping was only performed on nights when the minimum temperature was 15.5–17.5°C, there was no precipitation, and ambient moonlight was low. We conducted three trapping rotations within each ecoregion (North Central Tillplain and Western Allegheny Plateau) during both early and late seasons. Each trapping rotation consisted of a single trap night within each forest site. On any given trap night, one cluster of three forest sites was randomly selected and one blacklight trap was placed in each site. We determined clusters *a priori* based on the spatial proximity of the sites to one another to reduce travel time during trap set-up. Within a sampling rotation, site clusters were randomly selected, so each cluster was only sampled once in a given rotation. Overall, a total of 126 samples were collected in early and late seasons combined, and despite the meteorological restrictions of sampling, we completed each full rotation of trapping in 7–9 days.

References

1. Hodges RW, Dominick T, Davis DR, Ferguson DC, Franclemont JG, Munroe EG, Powell JA, eds (1983). Check List of the Lepidoptera of America North of Mexico (E.W. Classey and the Wedge Entomological Research Foundation, London).
 2. Forbes WTM (1923) Lepidoptera of New York and Neighboring States. Part 1: Primitive Forms (Cornell University Agricultural Experiment Station, Ithaca, NY).
 3. Forbes WTM (1948) Lepidoptera of New York and Neighboring States. Part 2: Geometridae, Lymantriidae, Sphingidae, Notodontidae (Cornell University Agricultural Experiment Station, Ithaca, NY).
 4. Covell CV (1983) Eastern Moths (Houghton Mifflin Company, Boston, MA).
 5. Miller WE (1987) Guide to the Olethreutine Moths of Midland North America (Tortricidae). Handbook 660 (United State Department of Agriculture, Washington, DC).
 6. Summerville KS, Boulware MJ, Veech JA, Crist TO (2003) *Conserv Biol* 17:1045–1057.
 7. Summerville KS, Wilson TD, Veech JA, Crist TO (2006) *Diver Distrib* 12:91–99.
-

