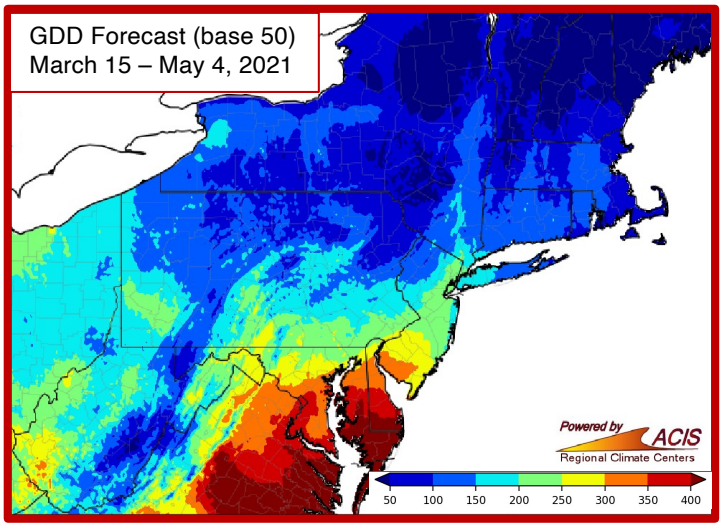

Pest Scouting Guide: (250-600 GDD_{50})

The information provided here gives **scouting ranges** for insect pests as well as forecasting of **GDD_{50} accumulation *predictions*** to help time scouting and treatment efforts. This document supports scouting, *it does **not** replace it*. Keeping good notes on pest development will help dial in scouting and treatment efforts at your local level.

Location specific GDD_{50} models can be obtained at: USPEST.org/dd/model_app and http://newa.cornell.edu/

Contact twaller@njaes.rutgers.edu) for information

Projected GDD50 accumulation as of 5/5/2021						
Region	Location	5-May	1-Jun	1-Jul	1-Aug	1-Sep
Southern	Upper Deerfield (NJ50)	308	665	1342	2184	2970
Central	Howell / Freehold (NJ10)	208	511	1132	1926	2660
Northern	High Point (NJ59)	127	315	767	1373	1928
Forecast: NOAA NCEP Coupled Forecast System model version 2 (CFSv2) forecast system (3.5 months) (USPEST.ORG)						

Redheaded flea beetle - life stage predictions for South, Central, and Northern New Jersey with material considerations

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Information compiled by Dr. Timothy J. Waller - Rutgers Cooperative Extension (2021)

Calendar date predictions for target range as of 4/26/2021

Growth Stage	Gen.	GDD50 TARGET RANGE -LOW-	GDD50 TARGET RANGE -HIGH-	SOUTH Upper Deerfield (NJ50) LOW (DATE)	SOUTH Upper Deerfield (NJ50) HIGH (DATE)	CENTRAL Howell (NJ10) LOW (DATE)	CENTRAL Howell (NJ10) HIGH (DATE)	NORTH High Point (NJ59) LOW (DATE)	NORTH High Point (NJ59) HIGH (DATE)	NOTES *Systemic (S) - Contact (C) - Biologicals (B) - Herbicides (H)*	Material / Compound Considerations (*Examples = no endorsements implied*) [IRAC GROUP #]
Egg hatch - larvae	1st	242	600	**2-May**	29-May	**10-May**	6-Jun	**24-May**	21-Jun	**(S) Initiate systemic treatments 1-month prior to adult activity** **(C) Contact materials may be used to knock-down larvae** **(B) Some bio-rational / logicals are effective on larvae** - Look for larval activity on the outside of root balls - Larvae may be active prior to this GDD50 timeframe	**SYSTEMIC** **Cyantraniliprole [28]** (Mainspring) **Chlorantraniliprole [28]** (Acelepryn) **Neonicotinoids [4A]** Dinotefuran (Safari 20SC) ; Thiomethoxam (Flagship 25 WG) ; Imidacloprid (Imidacloprid 2F, Marathon 1G, Marathon II) ; cyfuthrin [3A] + imidicloprid (Discus) **Organophosphates [1B]** Acephate (Orthene, Acephate 97UP)
Adults (feeding / laying eggs)	1st	517	1028	**24-May**	20-Jun	**1-Jun**	27-Jun	**16-Jun**	14-Jul	**(S/C/B) Start adult contact sprays - continue systemic treatments** **(H) Control weeds - adults will hide-in and feed-on them** - Adult feeding damage will be apparent - Scout to determine best time for applications - Use of agitator compounds may drive adults from hiding	
				POTENTIAL OVERLAP OF GENERATIONS / STAGES							
Egg hatch - larvae	2nd	1570	1860	**10-Jul**	21-Jul	**17-Jul**	29-Jul	**11-Aug**	27-Aug	**(S) Continue systemic treatments** **(C/B) Contact materials to target larvae *AND* adults** - Potential for considerable overlap of larvae - adult stages **(H) Control weeds - adults will hide in and feed on them**	**CONTACT** **Bifenthrin** [3A] (UP Star SC, Talstar Select) **Carbamates** [1A] - Carbaryl (Sevin SL) **Tolfenpyrad** [21A] (Hachi-Hachi SC) **Cyclaniliprole** [28] + **Flonicamid** [29] (Pradia)
Adults (feeding / laying eggs)	2nd	1878	2318	**22-Jul**	7-Aug	**30-Jul**	16-Aug	**28-Aug**	1-Oct	**(C/B) Adult contact sprays** **(S) * If pest pressure is high *** - continue systemic materials **(H) Control weeds - adults will hide-in and feed-on them** - Adult feeding damage will be apparent - Use of agitator compounds may drive adults from hiding	**BIOLOGICAL / BIORATIONAL** **Azadirachtin** (Aza-Direct, Azatin-O) **Beneficial nematodes** (Millennium) **Entomopathogenic fungi** (Ancora, BotaniGuard) **Agitator** (Captiva Prime)

*** A third generation of larvae and feeding adults is possible in the southern and central regions ***

Estimated using USPEST.org, 3.5-month CFSv2 based seasonal climate forecast, simple average growing degree-days, min temp: 50F, max temp: 95F.

Insect development growing degree-day ranges based on trials by Dr. Kunkel - Extension Specialist - University of Delaware

Boxwood Blight Risk Assessment as of 5/5/2021								
Region	Location	CODE	4-May	5-May	6-May	7-May	8-May	9-May
Southern	Upper Deerfield	NJ50	Infection Risk	Infection Risk	Very Low	Very Low	Very Low	Very Low
Central	Howell / Freehold	NJ10	Low	Low	Very Low	Very Low	Very Low	Very Low
Northern	High Point	NJ59	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
*Please check your local boxwood blight risk at (**https://uspest.org/risk/boxwood_app**)*								

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Nursery and Landscape Pest Scouting - Growing Degree-day Ranges

(240 - 600 GDD50)

Crop type	Common name	Latin name	GDD50 Range MIN (min: 50 °F)	GDD50 Range MAX (max: 95 °F)	GDD50 Reference	Developmental / Target Stage
Many	**Redheaded flea beetle**	***Systena frontalis***	**242**	**600**	**Unv. Del**	**First control target - egg hatch / larval activity**
Conifer	Arborvitae leafminer	*Argyresthia thuiella*	245	360	RU	Larvae Treatments (1st generation)
Prunus	American plum borer	*Euzophera semifuneralis*	245	440	5	Adult flight, egg laying
Boxwood	Boxwood mites	*Eurytetranychus buxi*	245	600	RU	All Stages
Lilac	Lilac leafminer	*Caloptilia syringella*	246	363	5	Larvae Treatments
Holly	Holly leafminer	*Phytomyza ilicis*	246	448	RU	Larvae Treatment
Yew	Taxus mealybug	*Dysmicoccus wistariae*	246	618	RU	Adults/Crawlers
Conifer	Pine sawflies (Red-headed)	*Neodiprion lecontei*	246	1388	RU	Larvae (1st generation)
Boxwood	Boxwood leafminer	*Monarthropalpusi flavus*	249	-	6	Adult emergence
Conifer	Eastern spruce gall adelgid	*Adelges abietis*	250	310	5	Egg hatch, galls begin forming *(not a control target)*
Birch	Birch Leafminer	*Fenusa pusilla*	275	375	4	Adults laying eggs
Boxwood	Boxwood Psyllid	*Cacopsylla busi*	290	440	RU	Nymphs
Conifer	Pine Needle Scale	*Chionaspis pinifoliae*	298	448	RU	Crawlers (1st generation) - control target
Locust	Locust leafminer	*Odontota dorsalis*	298	533	5	Typical treatment window
Conifer	Pine eriophyid mites	*Eriophyidae*	298	533	5	Typical treatment window
Malus	Redbanded leafroller	*Argyrotaenia velutinana*	298	618	5	Typical treatment window
Privet	Privet Rust Mites	*Aculus ligustri*	298	802	RU	All stages
Oaks	Kermes oak scale	*Allokermes spp.*	298	912	5	Typical treatment window
Conifer	Pine root collar weevil	*Hylobius radicis*	300	350	4	1st adults active
Conifer	Turpentine beetle	*Dendroctonus terebrans*	300	350	4	Parent beetles colonizing brood material
Spirea	Spirea aphid	*Aphis spiraecola*	326	-	6	Adults/nymphs
Conifer	Hemlock Woolly Adelgid	*Adelges tsugae*	350	350	RU	Eggs and 50% hatch
Malus, Prunus, many	Lesser peach tree borer	*Synanthedon pictipes*	350	375	4	Adult flight, egg laying
Rhododendron	Azalea Lacebug	*Stephanitis pyrioides*	350	646	RU	Adults (1st generation)
Dogwood, apple, pecan, elm, hickory, willow	Dogwood borer	*Synanthedon scitula*	350	850	4	adults, eggs, caterpillars
Conifer	Elongate Hemlock Scale	*Fiorinia externa*	360	700	RU	Crawlers (1st generation)
Elm	Elm Leaf Beetle	*Xanthogaleruca luteola*	363	530	RU	Larvae treatment (1st generation)
Conifer	Larch casebearer	*Coleophora laricella*	363	618	2,4	Nymphs active - typical treatment window
Many	Oystershell Scale	*Lepidosaphes ulmi*	363	707	RU	Crawlers
Walnut	Walnut blister mite	*Eriophyes erinea*	363	707	5	Typical treatment window
Beech	Woolly beech aphids	*Grylloprociphilus imbricator & Phyllaphis fagi*	363	7070	5	Typical treatment window
Conifer	Striped pine scale	*Toumeyella sp.*	400	500	3	Crawlers (1st generation)
Conifer	Pine needle midge	*Thecodiplosis brachynteroides*	400	500	7	Adults (1st generation)
Conifer	Pine tortoise scale	*Toumeyella parvicornis*	400	1000	4	Crawlers
Yews, Rhododendrons, many	Black Vine Weevil	*Otiorhynchus sulcatus*	400	2800	RU	Adults treatment
Basswood	Basswood lacebug	*Gargaphia tiliae*	415	-	6	Adults/nymphs
MANY	Fourlined plant bug	*Poecilocapsus lineatus*	435	-	6	Egg hatch / early instars
Many	Two-Spotted Mite	*Tetranychus urticae*	437	997	RU	Adults (build-up activity)
Birch	Bronze Birch Borer	*Agrilus anxius*	440	880	RU	Adults (egg laying)
Boxwood	Boxwood Leafminer	*Monarthropalpusi flavus*	448	700	RU	Larvae treatment
Rhododendron	Azalea whitefly	*Pealius azaleae*	448	700	5	Adults/nymphs
Oak	Oak skeletonizer	*Bucculatrix ainsliella*	448	707	5	Typical treatment window
Conifer	Hemlock looper	*Lambdina fiscellaria*	448	707	5	Typical treatment window
Conifer	**Pine shoot beetle**	***Tomicus piniperda***	**450**	**500**	**4**	**Adults emerge; begin shoot feeding - control target**
Conifer	Pine Chafer (Anomela Beetle)	*Anomala oblivia*	450	600	7	Adults (1st generation)
Many	Gypsy moth	*Lymanttria dispar*	450	900	4	Caterpillar to pupation - control target missed
Juniper	Maskell scale	*Lepidosaphes pallida*	470	-	6	Crawlers (1st generation)
Conifer	European pine shoot moth	*Rhyacionia buoliana*	480	710	5	Larvae Treatment
Malus, Prunus, many	**Peach Tree Borer**	***Synanthedon sp.***	**500**	**600**	**RU**	**Adults - emerge (1st treatment both types)**
Rhododendron	Rhododendron Borer	*Synanthedon rhododendri*	509	696	RU	Adults emerge
Many	White prunicola scale	*Psedaulacaspis prunicola*	513	-	6	Crawlers (1st generation)
Many	**Redheaded flea beetle**	***Systena frontalis***	**517**	**1028**	**Unv. Del**	**Adults - feeding / laying eggs**
Many	Cottony camellia / taxus scale	*Pulvinaria floccifera*	520	-	6	Crawlers (1st generation)
Birch	Birch Leafminer	*Fenusa pusilla*	530	700	RU	Larvae (2nd generation)
Conifer	Arborvitae Leafminer	*Argyresthia thuiella*	533	700	RU	Adults (egg laying) - larvae treatments
Euonymus	Euonymus Scale	*Unaspis euonymil*	533	820	RU	Crawlers (1st generation)
Oak	Oak blotch leafminers	*Cameraria spp. ; Tisheria spp.*	533	912	5	Typical treatment window
Maple	Greenstriped mapleworm	*Dryocampa rubicunda*	533	1645	5	Control target
Conifer	Balsam gall midge	*Paradiplosis tumifex*	550	700	4	Galls apparent
Conifer	Juniper scale	*Carulaspis juniperi*	550	700	7	Egg hatch
Malus, Prunus, many	Greater peach tree borer	*Synanthedon exitiosa*	575	710	4	Adult emergence
Conifer	Cryptomeria scale	*Aspidiotus cryptomeriae*	600	800	3	First crawler emergence
Conifer	**Bagworm**	***Thyridopteryx ephemeraeformis***	**600**	**900**	**RU**	**Larvae (early instars) - ONLY CONTROL WINDOW**
Conifer	Cooley spruce gall adelgid	*Adelges cooleyi*	600	1000	7	Nymphs active - Douglas fir (control target)

Note: Growing degree-day values utilize daily average air temperatures with a minimum temperature threshold (a.k.a. 'base') of 50F = GDD50 (max. temp. threshold set at 95F). These values are accumulated from a biofix date, such as January or March 1st in the NE USA. Provided GDD50 are scouting ranges and should be truthed.

Daily GDD50 =
(Max + Min temp.) / 2 - 50 *(min temp. threshold)*

References

RU	Rutgers Cooperative Extension - Landscape IPM Notes
2	http://ccetompkins.org/resources/using-growing-degree-days-for-insect-management
3	https://extension.psu.edu/ipm-basics-for-christmas-trees#section-2
4	https://www.canr.msu.edu/ipm/agriculture/christmas_trees/gdd_of_conifer_insects
5	https://www.agriculture.nh.gov/publications-forms/documents/landscape-pests.pdf
6	https://extension.umd.edu/ipm/pest-predictive-calendar-landscapenursery
7	https://www.canr.msu.edu/ipm/agriculture/christmas_trees/gdd_of_landscape_insects
Unv. Del.	Coorespondance with Dr. Kunkel (University of Delaware)

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