

Early-Mid Season Conifer Pest Scouting - Growing Degree-day Ranges (0-600 GDD50)

Common name	Scientific name	GDD50 Range		GDD50 Reference	Developmental / Target Stage
		MIN <i>min: 50 °F</i>	MAX <i>max: 95 °F</i>		
Conifer rust mites	<i>Eriophyidae</i>	7	22	4	Overwintering eggs hatch
Eastern pine weevil	<i>Pissodes nemorensis</i>	7	58	RU	Overwintering adults become active / prevent egg laying
Taxus mealybug	<i>Dysmicoccus wistariae</i>	7	91	2	Spring control of overwintering stage
Cottony taxus scale	<i>Pulvinaria floccifera</i>	7	91	6	Spring control of overwintering stage
Elongate hemlock scale	<i>Fiorinia externa</i>	7	120	2	Spring control of overwintering stage
Spruce spider mite	<i>Oligonychus ununguis</i>	7	121	RU	Overwintering eggs hatch
Pales weevil	<i>Hyllobius pales</i>	7	121	RU	Overwintering adults become active / prevent egg laying
White pine aphid	<i>Cinara strobil</i>	22	91	RU	Spring control of overwintering stage
Pine bark adelgid	<i>Pineus strobi</i>	22	58	2	Spring control of overwintering stage
Spruce bud scale	<i>Physokermes piceae</i>	22	120	2	Spring control of overwintering stage
Juniper scale	<i>Carulaspis juniperi</i>	22	148	2	Spring control of overwintering stage
Eastern spruce gall adelgid	<i>Adelges abietis</i>	25	100	3	spring control of overwintering stage
Northern pine weevil	<i>Pissodes approximatus</i>	25	100	4	1st adults active
Zimmerman pine moth	<i>Dioryctria zimmermani</i>	25	100	3	1st larvae active
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>	25	120	3	Spring control of overwintering stage
White pine weevil	<i>Pissodes strobi</i>	25	220	4	1st adults active
European pine sawfly	<i>Neodiprion sertifer</i>	35	145	1	Hatched larvae
Fletcher scale	<i>Parthenolecanium fletcheri</i>	35	148	2	Spring control of overwintering stage
European pine shoot moth / borer	<i>Rhyacionia buoiana</i>	50	220	4	1st larvae active
Pine tortoise scale	<i>Toumeyella parvicornis</i>	58	148	2	Crawler activity
Pine bark adelgid	<i>Pineus strobi</i>	58	618	2	Spring control of overwintering stage
Balsam twig aphid	<i>Mindarus abietinus</i>	60	100	4	Egg hatch
Eastern pine shoot borer	<i>Eucosma gloriola</i>	75	200	4	1st adults active
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>	90	180	4	1st adults active - Douglas fir
Balsam twig aphid	<i>Mindarus abietinus</i>	100	150	4	Stem mothers present (control target)
Pine engraver (Ips bark beetle)	<i>Ips spp.</i>	100	150	4	1st adults active
European pine sawfly	<i>Neodiprion sertifer</i>	100	195	4	1st larvae active
Larch casebearer	<i>Coleophora laricella</i>	120	150	4	Egg hatch
Nantucket pine tip moth	<i>Rhyacionia frustrana</i>	121	448	RU	1st generation egg hatch
Gypsy moth	<i>Lymantria dispar</i>	145	200	4	Egg hatch, 1st larvae
Spruce spider mite	<i>Oligonychus ununguis</i>	150	175	4	1st egg hatch
Spruce needleminer	<i>Endothenia albolineana</i>	150	200	4	1st larvae active
Balsam gall midge	<i>Paradiplosis tumifex</i>	150	300	4	Adults laying eggs
Spruce budworm	<i>Choristoneura fumiferana</i>	200	300	4	1st larvae active
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>	200	310	4	1st galls visible - Spruce
Arborvitae leafminer	<i>Argyresthia thuiella</i>	245	360	RU	Larvae Treatments (1st generation)
Taxus mealybug	<i>Dysmicoccus wistariae</i>	246	618	RU	Adults/Crawlers
Pine sawflies (Red-headed)	<i>Neodiprion lecontei</i>	246	1388	RU	Larvae (1st generation)
Eastern spruce gall adelgid	<i>Adelges abietis</i>	250	310	5	Egg hatch, galls begin forming (not a control target)
Pine Needle Scale	<i>Chionaspis pinifoliae</i>	298	448	RU	Crawlers (1st generation) - control target
Pine eriophyid mites	<i>Eriophyidae</i>	298	533	5	Typical treatment window
Pine root collar weevil	<i>Hyllobius radialis</i>	300	350	4	1st adults active
Turpentine beetle	<i>Dendroctonus terebrans</i>	300	350	4	Parent beetles colonizing brood material
Hemlock Woolly Adelgid	<i>Adelges tsugae</i>	350	350	RU	Eggs and 50% hatch
Elongate Hemlock Scale	<i>Fiorinia externa</i>	360	700	RU	Crawlers (1st generation)
Larch casebearer	<i>Coleophora laricella</i>	363	618	2,4	Nymphs active - typical treatment window
Striped pine scale	<i>Toumeyella sp.</i>	400	500	3	Crawlers (1st generation)
Pine needle midge	<i>Thecodiplosis brachyteroides</i>	400	500	7	Adults (1st generation)
Pine tortoise scale	<i>Toumeyella parvicornis</i>	400	1000	4	Crawlers
Black Vine Weevil	<i>Otiorynchus sulcatus</i>	400	2800	RU	Adults treatment
Hemlock looper	<i>Lambdina fiscellaria</i>	448	707	5	Typical treatment window
Pine shoot beetle	<i>Tomicus piniperda</i>	450	500	4	Adults emerge; begin shoot feeding - control target
Pine Chafer (Anomala Beetle)	<i>Anomala obliqua</i>	450	600	7	Adults (1st generation)
Maskell scale	<i>Lepidosaphes pallida</i>	470	-	6	Crawlers (1st generation)
European pine shoot moth	<i>Rhyacionia buoliana</i>	480	710	5	Larvae Treatment
Cottony camellia / taxus scale	<i>Pulvinaria floccifera</i>	520	-	6	Crawlers (1st generation)
Arborvitae Leafminer	<i>Argyresthia thuiella</i>	533	700	RU	Adults (egg laying) - larvae treatments
Balsam gall midge	<i>Paradiplosis tumifex</i>	550	700	4	Galls apparent
Juniper scale	<i>Carulaspis juniperi</i>	550	700	7	Egg hatch
Cryptomeria scale	<i>Aspidiotus cryptomeriae</i>	600	800	3	First crawler emergence
Bagworm	<i>Thyridopteryx ephemeraeformis</i>	600	900	RU	Larvae (early instars) - ONLY CONTROL WINDOW
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>	600	1000	7	Nymphs active - Douglas fir (control target)
<p>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.</p> <p>Daily GDD50 = $(\text{Max} + \text{Min temp.}) / 2 - 50$ (min temp. threshold)</p>	References	RU	Rutgers Cooperative Extension - Landscape IPM Notes		
		2	http://csetomplains.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-landscape-nursery		
		7	https://www.canr.msu.edu/ipm/agriculture/christmas_trees/gdd_of_landscape_insects		

Projected GDD50 accumulation as of 5/5/2021					The information provided here gives scouting ranges for insect pests as well as forecasting of GDD50 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 GDD50 models can be obtained at: USPEST.org/dd/model_app and http://newa.cornell.edu/ Contact Tim Waller (twaller@njaes.rutgers.edu) for more information
Region	Location	5-May	1-Jun	1-Jul	
Southern	Upper Deerfield (NJ50)	308	665	1342	
Central	Howell / Freehold (NJ10)	208	511	1132	
Northern	High Point (NJ59)	127	315	767	

Forecast: NOAA NCEP Coupled Forecast System model version 2 (CFV2) forecast system (3.5 months) (USPEST.ORG)

