

Early-Mid Season Conifer Pest Scouting - Growing Degree-day Ranges					(0-600 GDD50) <small>(Zoom in to click on links)</small>	
Common name	Scientific name	GDD50 Range		GDD50 Reference	Developmental / Target Stage	Extension & Industry Resources
		min GDD	max GDD			
Conifer rust mites	Eriophyidae	7	22	4	Overwintering egg hatch	Pest Management: Conifer Rust Mites
Eastern pine weevil	Pissodes nemorensis	7	58	RU	Overwintering adults become active / parent egg laying	Pest Management: Eastern Pine Weevil
Taxus mealybug	Dysmicoccus wislizeni	7	91	2	Spring control of overwintering stage	Pest Management: Taxus Mealybug
Cottony taxus scale	Pulvinaria floccifera	7	91	6	Spring control of overwintering stage	Pest Management: Cottony Taxus Scale
Elongate hemlock scale	Florinia externa	7	120	2	Spring control of overwintering stage	Pest Management: Elongate Hemlock Scale
Spruce spider mite	Oligonychus ununguis	7	121	RU	Overwintering eggs hatch	Pest Management: Spruce Spider Mite
Pales weevil	Hylobius pales	7	121	RU	Overwintering adults become active / parent egg laying	Pest Management: Pales Weevil
White pine aphid	Cinara strobil	22	91	RU	Spring control of overwintering stage	Pest Management: White Pine Aphid
Pine bark adelgid	Pinus strobil	22	58	2	Spring control of overwintering stage	Pest Management: Pine Bark Adelgid
Spruce bud scale	Physoklepes piniae	22	120	2	Spring control of overwintering stage	Pest Management: Spruce Bud Scale
Juniper scale	Carulaspis juniperi	22	148	2	Spring control of overwintering stage	Pest Management: Juniper Scale
Eastern spruce gall adelgid	Adelges abietis	25	100	3	Spring control of overwintering stage	Pest Management: Eastern Spruce Gall Adelgid
Northern pine weevil	Pissodes approximatus	25	100	4	1st adults active	Pest Management: Northern Pine Weevil
Zimmerman pine moth	Diloryctria zimmermani	25	100	3	1st larvae active	Pest Management: Zimmerman Pine Moth
Cooley spruce gall adelgid	Adelges cooleyi	25	120	3	Spring control of overwintering stage	Pest Management: Cooley Spruce Gall Adelgid
White pine weevil	Pissodes strobil	25	220	4	1st adults active	Pest Management: White Pine Weevil
European pine sawfly	Neodiprion sertifer	35	145	2	Hatched larvae	Pest Management: European Pine Sawfly
Fletcher scale	Parthenolecanium cornutum	35	148	2	Spring control of overwintering stage	Pest Management: Fletcher Scale
European pine shoot moth / borer	Rhyacionia buoliana	50	220	4	1st larvae active	Pest Management: European Pine Shoot Moth / Borer
Pine tortoise scale	Toumeyella parvicornis	58	148	2	Crawler activity	Pest Management: Pine Tortoise Scale
Pine bark adelgid	Pinus strobil	58	618	2	Spring control of overwintering stage	Pest Management: Pine Bark Adelgid
Balsam twig aphid	Minidorsus obietinus	60	100	4	Egg hatch	Pest Management: Balsam Twig Aphid
Eastern pine shoot borer	Eucosma glorialis	75	200	4	1st adults active	Pest Management: Eastern Pine Shoot Borer
Cooley spruce gall adelgid	Adelges cooleyi	90	180	4	1st adults active - Douglas fir	Pest Management: Cooley Spruce Gall Adelgid
Balsam twig aphid	Minidorsus obietinus	100	150	4	Stem mothers present (control target)	Pest Management: Balsam Twig Aphid
Pine engraver (Ips bark beetle)	Ips spp.	100	150	4	1st adults active	Pest Management: Pine Engraver
European pine sawfly	Neodiprion sertifer	100	195	4	1st larvae active	Pest Management: European Pine Sawfly
Larch casebearer	Coleophora laricella	120	150	4	Egg hatch	Pest Management: Larch Casebearer
Nantucket pine tip moth	Rhyacionia frustrana	121	448	RU	1st generation egg hatch	Pest Management: Nantucket Pine Tip Moth
Gypsy moth	Lymnaea dispar	145	200	4	Egg hatch, 1st larvae	Pest Management: Gypsy Moth
Spruce spider mite	Oligonychus ununguis	150	175	4	1st egg hatch	Pest Management: Spruce Spider Mite
Spruce needleminer	Endothenia albolineana	150	200	4	1st larvae active	Pest Management: Spruce Needleminer
Balsam gall midge	Paratoposis tumifex	150	300	4	Adults laying eggs	Pest Management: Balsam Gall Midge
Spruce budworm	Choristoneura fumiferana	200	300	4	1st larvae active	Pest Management: Spruce Budworm
Cooley spruce gall adelgid	Adelges cooleyi	200	310	4	1st galls visible - Spruce	Pest Management: Cooley Spruce Gall Adelgid
Arborvitae leafminer	Argyresthia thuiella	245	360	RU	Larvae Treatments (1st generation)	Pest Management: Arborvitae Leafminer
Taxus mealybug	Dysmicoccus wislizeni	246	618	RU	Adults/Crawlers	Pest Management: Taxus Mealybug
Pine sawflies (Red-headed)	Neodiprion lecontei	246	1388	RU	Larvae (1st generation)	Pest Management: Pine Sawflies (Red-headed)
Eastern spruce gall adelgid	Adelges abietis	250	310	5	Egg hatch, galls begin forming (not a control target)	Pest Management: Eastern Spruce Gall Adelgid
Pine Needle Scale	Chionaspis pinifoliae	298	448	RU	Crawlers (1st generation) - control target	Pest Management: Pine Needle Scale
Pine eriophyid mites	Eriophyidae	298	533	5	Typical treatment window	Pest Management: Pine Eriophyid Mites
Pine root collar weevil	Hylobius radialis	300	350	4	1st adults active	Pest Management: Pine Root Collar Weevil
Turpentine beetle	Dendroctonus terebrans	300	350	4	Parent beetles colonizing brood material	Pest Management: Turpentine Beetle
Hemlock Woolly Adelgid	Adelges douglasi	350	350	RU	Eggs and 50th hatch	Pest Management: Hemlock Woolly Adelgid
Elongate Hemlock Scale	Florinia externa	360	700	RU	Crawlers (1st generation)	Pest Management: Elongate Hemlock Scale
Larch casebearer	Coleophora laricella	363	618	2,4	Nymphs active - typical treatment window	Pest Management: Larch Casebearer
Striped pine scale	Toumeyella sp.	400	500	3	Crawlers (1st generation)	Pest Management: Striped Pine Scale
Pine needle midge	Thecodiplosis brachyteroides	400	500	7	Adults (1st generation)	Pest Management: Pine Needle Midge
Pine tortoise scale	Toumeyella parvicornis	400	1000	4	Crawlers	Pest Management: Pine Tortoise Scale
Black Vine Weevil	Othiorhynchus sulcatus	400	2800	RU	Adults treatment	Pest Management: Black Vine Weevil
Hemlock looper	Lambdula ficeolaria	448	707	5	Typical treatment window	Pest Management: Hemlock Looper
Pine shoot beetle	Tomicus piniperda	450	500	4	Adults emerge, begin shoot feeding - control target	Pest Management: Pine Shoot Beetle
Pine Chafer (Anomala Beetle)	Anomala obliqua	450	600	7	Adults (1st generation)	Pest Management: Pine Chafer
Maskell scale	Lepidosaphes pallida	470	-	6	Crawlers (1st generation)	Pest Management: Maskell Scale
European pine shoot moth	Rhyacionia buoliana	480	710	5	Larvae Treatment	Pest Management: European Pine Shoot Moth
Cottony camellia / taxus scale	Pulvinaria floccifera	520	-	6	Crawlers (1st generation)	Pest Management: Cottony Camellia / Taxus Scale
Arborvitae leafminer	Argyresthia thuiella	523	700	RU	Adults (egg laying) - larvae treatments	Pest Management: Arborvitae Leafminer
Balsam gall midge	Paratoposis tumifex	550	700	4	Galls apparent	Pest Management: Balsam Gall Midge
Juniper scale	Carulaspis juniperi	550	700	7	Egg hatch	Pest Management: Juniper Scale
Cryptomeria scale	Aspidiotus cryptomeriae	600	800	3	First crawler emergence	Pest Management: Cryptomeria Scale
Bagworm	Thyridopteryx ephemeraeformis	600	900	RU	Larvae (early instars) - ONLY CONTROL WINDOW	Pest Management: Bagworm
Cooley spruce gall adelgid	Adelges cooleyi	600	1000	7	Nymphs active - Douglas fir (control target)	Pest Management: Cooley Spruce Gall Adelgid
Note: Growing degree-day values utilize daily average air temperature with a minimum temperature threshold of 5.0. "Sum" of 500 = GDD50 (max. temp. threshold set at 95.0). These values are accumulated from 1st of March, such as January or March 1st in the NE US. Provided GDD50s are ranging ranges and should be treated as such.		References		Rugers Cooperative Extension - Landscape IPM Notes Pest Management: Conifer Rust Mites Pest Management: Eastern Pine Weevil Pest Management: Taxus Mealybug Pest Management: Cottony Taxus Scale Pest Management: Elongate Hemlock Scale Pest Management: Spruce Spider Mite Pest Management: Pales Weevil Pest Management: White Pine Aphid Pest Management: Pine Bark Adelgid Pest Management: Spruce Bud Scale Pest Management: Juniper Scale Pest Management: Eastern Spruce Gall Adelgid Pest Management: Northern Pine Weevil Pest Management: Zimmerman Pine Moth Pest Management: Cooley Spruce Gall Adelgid Pest Management: White Pine Weevil Pest Management: European Pine Sawfly Pest Management: Fletcher Scale Pest Management: European Pine Shoot Moth / Borer Pest Management: Pine Tortoise Scale Pest Management: Pine Bark Adelgid Pest Management: Balsam Twig Aphid Pest Management: Eastern Pine Shoot Borer Pest Management: Cooley Spruce Gall Adelgid Pest Management: Balsam Twig Aphid Pest Management: Pine Engraver Pest Management: European Pine Sawfly Pest Management: Larch Casebearer Pest Management: Nantucket Pine Tip Moth Pest Management: Gypsy Moth Pest Management: Spruce Spider Mite Pest Management: Spruce Needleminer Pest Management: Balsam Gall Midge Pest Management: Spruce Budworm Pest Management: Cooley Spruce Gall Adelgid Pest Management: Arborvitae Leafminer Pest Management: Taxus Mealybug Pest Management: Pine Sawflies (Red-headed) Pest Management: Eastern Spruce Gall Adelgid Pest Management: Pine Needle Scale Pest Management: Pine Eriophyid Mites Pest Management: Pine Root Collar Weevil Pest Management: Turpentine Beetle Pest Management: Hemlock Woolly Adelgid Pest Management: Elongate Hemlock Scale Pest Management: Larch Casebearer Pest Management: Striped Pine Scale Pest Management: Pine Needle Midge Pest Management: Pine Tortoise Scale Pest Management: Black Vine Weevil Pest Management: Hemlock Looper Pest Management: Pine Shoot Beetle Pest Management: Pine Chafer Pest Management: Maskell Scale Pest Management: European Pine Shoot Moth Pest Management: Cottony Camellia / Taxus Scale Pest Management: Arborvitae Leafminer Pest Management: Balsam Gall Midge Pest Management: Juniper Scale Pest Management: Cryptomeria Scale Pest Management: Bagworm Pest Management: Cooley Spruce Gall Adelgid		
Daily GDD50 = $\sum (T_{avg} - 5.0)$ (Min temp. threshold)						
[Max + Min temp.] / 2 - 5.0 (min temp. threshold)						