

Conifer Pest Growing Degree Day Table

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Arborvitae leafminers	<i>Argyresthia spp.</i>	larvae in mines, 1st generation	245 - 360	<u>250, 300, 350</u>	150 - 260	<u>150, 200, 250, 300</u>
		2nd generation	533 - 700	<u>500, 550, 600, 650, 700</u>	533 - 700	<u>500, 550, 600, 650, 700</u>
		3rd generation	1700 - 2100	<u>1700, 1750, 1800, 1850, 1900, 1950, 2000, 2050, 2100</u>	1800 - 2200	<u>1800, 1850, 1900, 1950, 2000, 2050, 2100, 2150, 2200</u>
Bagworm	<i>Thyridopteryx ephemeraeformis</i>	larvae			600 - 900	<u>600, 650, 700, 750, 800, 850, 900</u>
Balsam gall midge	<i>Paradiplosis tumifex</i>	adults laying eggs	150 - 300	<u>150, 200, 250, 300</u>	120 - 299	<u>100, 150, 200, 250, 300</u>
		galls apparent	550 - 700	<u>550, 600, 650, 700</u>		
Balsam twig aphid	<i>Mindarus abietinus</i>	egg hatch	60 - 100	<u>50, 100</u>	58 - 120	<u>50, 100, 150</u>
		stem mothers present (control target)	100 - 140	<u>100, 150</u>		
Cooley spruce gall adelgid (Douglas fir)	<i>Adelges cooleyi</i>	1st adults active	90 - 180	<u>100, 150, 200</u>	120 - 190	<u>100, 150, 200</u>
		1st nymphs (control target)	90 - 150	<u>100, 150</u>		
		2nd nymphs (control target)	600 - 1000	<u>600, 650, 700, 750, 800, 850, 900, 950, 1000</u>	1500 - 1775	<u>1500, 1550, 1600, 1650, 1700, 1750, 1800</u>
Cooley spruce gall adelgid (Spruce)	<i>Adelges cooleyi</i>	1st adults active (control target)	25 - 120	<u>50, 100, 150</u>	22 - 92	<u>50, 100</u>
		1st galls visible	200 - 310	<u>200, 250, 300</u>	1850 - 1950	<u>1850, 1900, 1950</u>
Cooley spruce gall adelgid	<i>Adelges cooleyi</i>	2nd adults active	1500 - 1600	<u>1500, 1550, 1600</u>	1500 - 1775	<u>1500, 1550, 1600, 1650, 1700, 1750, 1800</u>

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Cottony taxus scale	<i>Pulvinaria floccifera</i>	nymph (dormant treatment)			7 - 91	<u>50, 100</u>
		crawler			802 - 1388	<u>800, 850, 900, 950, 1000, 1050, 1100, 1150, 1200, 1250, 1300, 1350, 1400</u>
Eastern pine shoot borer	<i>Eucosma gloriola</i>	1st adults active	75 - 200	<u>50, 100, 150, 200</u>	N/A	
Eastern spruce gall adelgid	<i>Adelges abietis</i>	1st adults active (control target)	25 - 100	<u>50, 100</u>	22 - 170	<u>50, 100, 150, 200</u>
		egg hatch, galls begin forming	250 - 310	<u>250, 300, 350</u>		
		2nd adults active (control target)	1500 - 1600	<u>1500, 1550, 1600</u>		
Elongate hemlock scale	<i>Fiorinia externa</i>	adult (dormant treatment)			7 - 120	<u>50, 100</u>
		crawler			360 - 700	<u>350, 400, 450, 500, 550, 600, 650, 700</u>
					2515 - 2625	<u>2500</u>
Euonymus scale	<i>Unaspis euonymi</i>	egg hatch, 1st generation	400 - 575	<u>400, 450, 500, 550, 600</u>	35 - 120	<u>50, 100, 150</u>
		egg hatch, 2nd generation	1900 - 2050	<u>1900, 1950, 2000, 2050</u>	533 - 820	<u>500, 550, 600, 650, 700, 750, 800, 850</u>
					1150 - 1388	<u>1150, 1200, 1250, 1300, 1350, 1400</u>
European pine sawfly	<i>Neodiprion sertifer</i>	1st larvae	100 - 195	<u>100, 150, 200</u>	78 - 220	<u>50, 100, 150, 200, 250</u>

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
European pine shoot moth	<i>Rhyacionia buoliana</i>	1st larvae	50 - 220	<u>50, 100, 150,</u> <u>200, 250</u>	34 - 121	<u>50, 100, 150</u>
		adults active	700 - 800	<u>700, 750, 800</u>	480 - 710	<u>450, 500, 550, 600,</u> <u>650, 700, 750</u>
		egg hatch	900 - 1000	<u>900, 950,</u> <u>1000</u>		
Gypsy moth	<i>Lymantria dispar</i>	egg hatch, 1st larvae	145 - 200	<u>150, 200</u>	90 - 448	<u>100, 150, 200, 250,</u> <u>300, 350, 400, 450</u>
		young caterpillars	450	<u>450</u>		
		pupation	900 - 1200	<u>900, 950,</u> <u>1000, 1050,</u> <u>1100, 1150,</u> <u>1200</u>		
Hemlock eriophyid (rust) mite	<i>Nalepella tsugifolia</i>	N/A			7 - 450	<u>50, 100, 150, 200,</u> <u>250, 300, 350, 400,</u> <u>450</u>
Hemlock looper	<i>Lambdina fiscellaria</i>	N/A			448 - 707	<u>450, 500, 550, 600,</u> <u>650, 700</u>
Hemlock scale	<i>Abgrallaspis ithacae</i>	N/A			35 - 121	<u>50, 100, 150</u>
					1388 - 2154	<u>1350, 1400, 1450,</u> <u>1500, 1550, 1600,</u> <u>1650, 1700, 1750,</u> <u>1800, 1850, 1900,</u> <u>1950, 2000, 2050,</u> <u>2100, 2150</u>
Introduced pine sawfly	<i>Diprion similis</i>	1st larvae	400 - 600	<u>400, 450, 500,</u> <u>550, 600</u>	N/A	

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Jack pine budworm	<i>Choristoneura pinus pinus</i>	young larvae feeding	300 - 350	<u>300, 350</u>	N/A	
		large larvae feeding-defoliation apparent	650 - 700	<u>650, 700</u>		
Jack pine sawfly	<i>Neodiprion banksianae</i>	eggs; young larvae	100 - 200	<u>100, 150, 200</u>	N/A	
		larger larvae consuming needles	275 - 500	<u>250, 300, 350, 400, 450, 500</u>		
Juniper scale	<i>Carulaspis juniperi</i>	egg hatch	550 - 700	<u>550, 600, 650, 700</u>	22 - 148	<u>50, 100, 150</u>
					707 - 1260	<u>750, 800, 850, 900, 950, 1000, 1050, 1100, 1150, 1200, 1250</u>
Juniper webworm	<i>Dichomeris marginella</i>		N/A		1645 - 1917	<u>1650, 1700, 1750, 1800, 1850, 1900, 1950</u>
Larch casebearer	<i>Coleophora laricella</i>	egg hatch	120 - 150	<u>100, 150</u>	363 - 618	<u>350, 400, 450, 500, 550, 600, 650</u>
					2375 - 2805	<u>2350, 2400, 2450, 2500</u>
Larch sawfly	<i>Pristiphora erichsonii</i>		N/A		192 - 299	<u>150, 200, 250, 300</u>
Nantucket pine tip moth	<i>Rhyacionia frustrana</i>		N/A		121 - 448	<u>100, 150, 200, 250, 300, 350, 400, 450</u>
					1514 - 1917	<u>1500, 1550, 1600, 1650, 1700, 1750, 1800, 1850, 1900</u>

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Northern pine weevil	<i>Pissodes nemorensis</i>	1st adults active	25 - 100	<u>50, 100</u>	7 - 192	<u>50, 100, 150, 200</u>
		2nd adults active	1200 - 1400	<u>1200, 1250, 1300, 1350, 1400</u>		
Pales weevil	<i>Hylobius pales</i>	1st adults active	25 - 100	<u>50, 100</u>	7 - 121	<u>50, 100, 150</u>
		2nd adults active	1200 - 1400	<u>1200, 1250, 1300, 1350, 1400</u>		
Pine bark adelgid	<i>Pineus strobi</i>	N/A			22 - 58	<u>50</u>
					58 - 618	<u>50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650</u>
Pine engraver	<i>Ips sp.</i>	1st adults active	100 - 150	<u>100, 150</u>	N/A	
Pine eriophyid mites	<i>Eriophyidae</i>	N/A			298 - 533	<u>300, 350, 400, 450, 500, 550</u>
Pine needle miner	<i>Exoteleia pinifoliella</i>	N/A			448 - 802	<u>450, 500, 550, 600, 650, 700, 750, 800</u>
Pine needle scale	<i>Chionaspis pinifoliae</i>	1st generation, egg hatch	250 - 400	<u>250, 300, 350, 400</u>	298 - 448	<u>300, 350, 400, 450</u>
		1st generation, hyaline stage (control target)	400 - 500	<u>400, 450, 500</u>	1388 - 1917	<u>1350, 1400, 1450, 1500, 1550, 1600, 1650, 1700, 1750, 1800, 1850, 1900, 1950</u>
		2nd generation, egg hatch	1250 - 1350	<u>1250, 1300, 1350</u>		
		2nd generation, hyaline stage (control target)	1500	<u>1500</u>		

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Pine root collar weevil	<i>Hylobius radialis</i>	1st adults active	300 - 350	<u>300, 350</u>	618 - 912	<u>600, 650, 700, 750, 800, 850, 900, 950</u>
		2nd adults active	1200 - 1400	<u>1200, 1250, 1300, 1350, 1400</u>		
Pine shoot beetle	<i>Tomicus piniperda</i>	optimal control window	450 - 500	<u>450, 500</u>	N/A	
		new adults emerge, begin shoot-feeding	500 - 550	<u>500, 550</u>		
Pine spittlebugs	<i>Aphrophora cribrata</i> and <i>Aphrophora saratogensis</i>	N/A			148 - 298	<u>150, 200, 250, 300</u>
Pine tortoise scale	<i>Toumeyella parvicornis</i>	egg hatch begins, 1st crawlers	400 - 500	<u>400, 450, 500</u>	58 - 148	<u>50, 100, 150</u>
		egg hatch ends, last of the crawlers	1000 - 1200	<u>1000, 1050, 1100, 1150, 1200</u>	618 - 1050	<u>600, 650, 700, 750, 800, 850, 900, 950, 1000, 1050</u>
Pine tube moth	<i>Argyrotaenia pinatubana</i>	adults, egg laying, caterpillars	90 - 250	<u>100, 150, 200, 250</u>	91 - 246	<u>100, 150, 200, 250</u>
					1151 - 1514	<u>1150, 1200, 1250, 1300, 1350, 1400, 1450, 1500, 1550</u>
Pine webworm	<i>Tetralopha robustella</i>	N/A			802 - 2000	<u>800, 850, 900, 950, 1000, 1050, 1100, 1150, 1200, 1250, 1300, 1350, 1400, 1450, 1500, 1550, 1600, 1650, 1700, 1750, 1800, 1850, 1900, 1950, 2000</u>

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Pitch twig moth	<i>Petrova comstockiana</i>		N/A		298 - 707	<u>300, 350, 400, 450,</u> <u>500, 550, 600, 650,</u> <u>700</u>
Redheaded pine sawfly	<i>Neodiprion lecontei</i>	1st larvae	400 - 600	<u>400, 450,</u> <u>500, 550,</u> <u>600</u>		N/A
Spruce budscale	<i>Physokermes piceae</i>	egg hatch, 1st crawlers	700 - 1150	<u>700, 750, 800, 850,</u> <u>900, 950, 1000,</u> <u>1050, 1100, 1150</u>	22 - 121 912 - 1388	<u>50, 100, 150</u> <u>900, 950, 1000,</u> <u>1050, 1100,</u> <u>1150, 1200,</u> <u>1250, 1300,</u> <u>1350, 1400</u>
Spruce budworm	<i>Choristoneura fumiferana</i>	1st larvae	200 - 300	<u>200, 250,</u> <u>300</u>		N/A
Spruce needle miner	<i>Endothenia albolineane</i>	1st larvae	150 - 200	<u>150, 200</u>	448 - 802	<u>450, 500, 550, 600,</u> <u>650, 700, 750, 800</u>
Spruce spider mite	<i>Oligonychus ununguis</i>	1st egg hatch	150 - 175	<u>150, 200</u>	7 - 121 192 - 363 2375 - 2806	<u>50, 100, 150</u> <u>200, 250, 300, 350,</u> <u>400</u> <u>2350, 2400, 2450,</u> <u>2500</u>
Taxus bud mite	<i>Cedidophyopsis psilaspis</i>		N/A		148 - 448 707 - 912	<u>150, 200, 250, 300,</u> <u>350, 400, 450</u> <u>700, 750, 800, 850,</u> <u>900, 950</u>

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Taxus mealybug	<i>Dysmicoccus wistariae</i>		N/A		7 - 91	<u>50, 100</u>
					246 - 618	<u>250, 300, 350, 400, 450, 500, 550, 600, 650</u>
Turpentine beetle	<i>Dendroctonus spp.</i>	parent beetles colonizing brood material	300 - 350	<u>300, 350</u>	N/A	
Twobanded Japanese weevil	<i>Callirhopalus bifasciatus</i>		N/A		1644 - 2271	<u>1650, 1700, 1750, 1800, 1850, 1900, 1950, 2000, 2050, 2100, 2150, 2200, 2250, 2300</u>
White-marked tussock moth	<i>Orgyia leucostigma</i>		N/A		192 - 298	<u>200, 250, 300</u>
					2145 - 2516	<u>2150, 2200, 2250, 2300, 2350, 2400, 2450, 2500</u>
White pine aphid	<i>Cinara strobi</i>		N/A		7 - 121	<u>50, 100, 150</u>
					121 - 246	<u>100, 150, 200, 250</u>
					1917 - 2271	<u>1900, 1950, 2000, 2050, 2100, 2150, 2200, 2250, 2300</u>
White pine weevil	<i>Pissodes strobi</i>	1st adults active	25 - 220	<u>50, 100, 150, 200, 250</u>	7 - 58	<u>50</u>
		2nd adults active	1200 - 1400	<u>1200, 1250, 1300, 1350, 1400</u>		

Common Name	Scientific Name	Insect Development & Behavior ^{1,2}			Typical Treatment Window ^{2,3}	
		Biological Event	Range	GDD Maps	Range	GDD Maps
Zimmerman pine moth	<i>Dioryctria zimmermani</i>	1st larvae	25 - 100	<u>50, 100</u>	121 - 246	<u>100, 150, 200, 250</u>
		adult flight	1700	<u>1700</u>	912 - 1917	<u>900, 950, 1000, 1050, 1100, 1150, 1200, 1250, 1300, 1350, 1400, 1450, 1500, 1550, 1600, 1650, 1700, 1750, 1800, 1850, 1900, 1950</u>
					1917 - 2154	<u>1900, 1950, 2000, 2050, 2100, 2150</u>

¹“Growing Degree Day Information” *Nathan W. Siegert, Deborah G. McCullough and Jeffrey A. Andresen*. Michigan State University, 2 October 2015. Web. 25 February 2016. http://www.ipm.msu.edu/agriculture/christmas_trees/growing_degree_day_information.

²“Using Growing Degree-Days for Insect Pest Management” *Thomas Kowalsick and Scott Clark*. Cornell Cooperative Extension in Suffolk County, March 2012. Web. 25 February 2016. <https://s3.amazonaws.com/assets.cce.cornell.edu/attachments/1870/Using-Growing-Degree-Days-for-Insect-Pest-Management.pdf?1408019830>.

³“Using Growing Degree Days for Insect Management” *Nancy E. Adams*. University of New Hampshire Cooperative Extension. Web, 25 February 2016. <http://extension.unh.edu/Agric/GDDays/Docs/growch.pdf>.