Developmental models for estimating ecological responses to environmental variability: structural, parametric, and experimental issues

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Online Resource 2: Comparison of linear and non-linear models

This supplementary file contains details relevant to the analysis comparing development

calculated using linear and non-linear models. Table A2.1 describes the weather stations used to

collect temperature data, with predicted days to emergence, while Figure A2.1 shows a

representative plot of the output.

Table A2.1: Latitude and longitude of weather stations used to compare predicted development times between models, and predicted days to emergence for each of the five models analyzed.

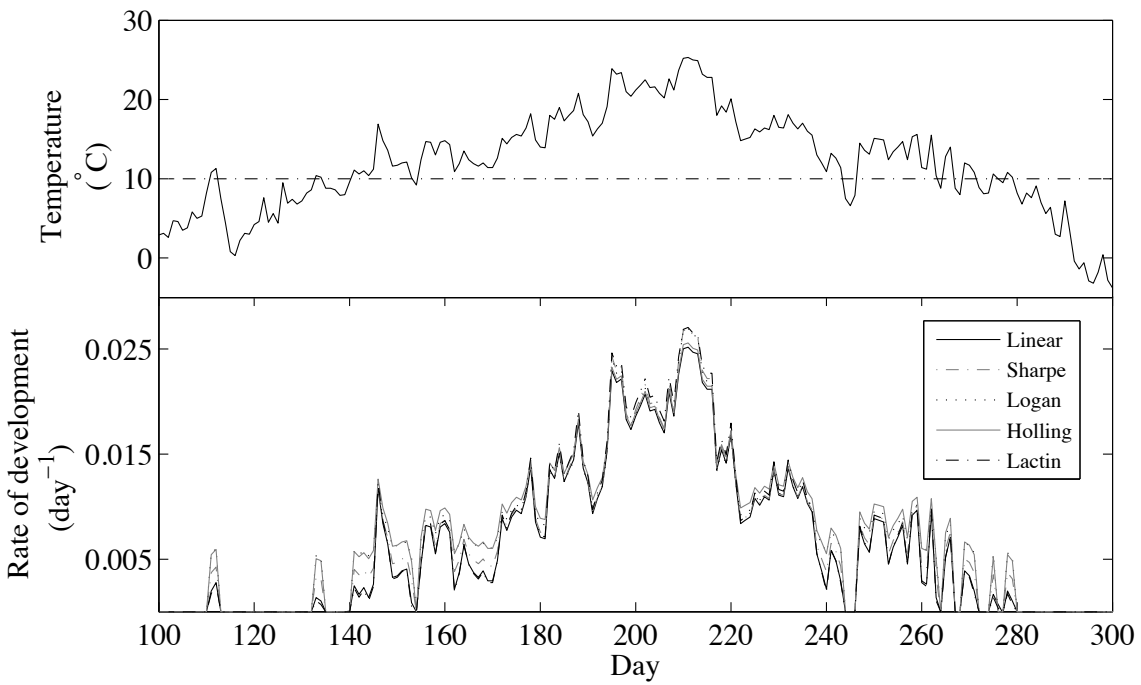| Station	Latitude °N	Longitude °E	Days to Emergence (Day 1 = 1 January 2003)				
			Linear	Logan	Sharpe	Holling	Lactin
Denmark1	55.30	14.78	223	217	220	215	220
Denmark2	55.68	12.53	213	207	209	205	210
Finland1	60.17	24.95	228	219	222	219	224
Finland2	60.17	24.95	227	218	220	217	222
France1	47.98	1.75	164	159	161	158	162
France2	44.58	4.74	184	177	180	176	181
Germany1	52.10	11.58	196	191	193	188	192
Germany2	48.83	9.20	176	173	174	171	174
Greece1	40.78	21.40	172	166	168	166	168
Greece2	38.32	23.53	159	154	156	154	157
Italy1	45.47	9.19	158	153	155	152	156
Italy2	41.78	12.58	146	143	144	142	144
Netherlands1	52.75	6.57	209	202	205	200	206
Netherlands2	52.70	5.89	207	201	203	198	204
Sweden1	59.35	13.47	220	215	217	213	217
Sweden2	57.75	14.07	255	234	248	229	250

Fig. A2.1: Daily temperature (top) and developmental rates (bottom) for the linear, Sharpe, Logan, Holling, and Lactin models using data from the Finland1 weather station from approximately April to October, 2003 (with Day 1 equivalent to January 1). Days outside this time range fell below the lower temperature threshold (dotted line in top panel) and thus had a developmental rate equal to zero.