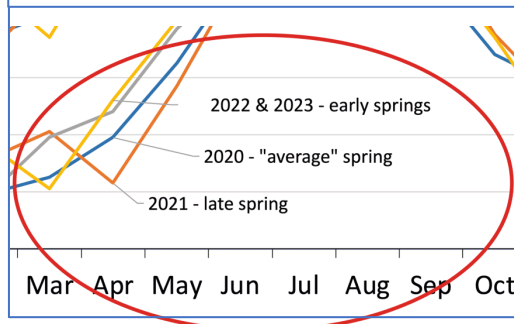
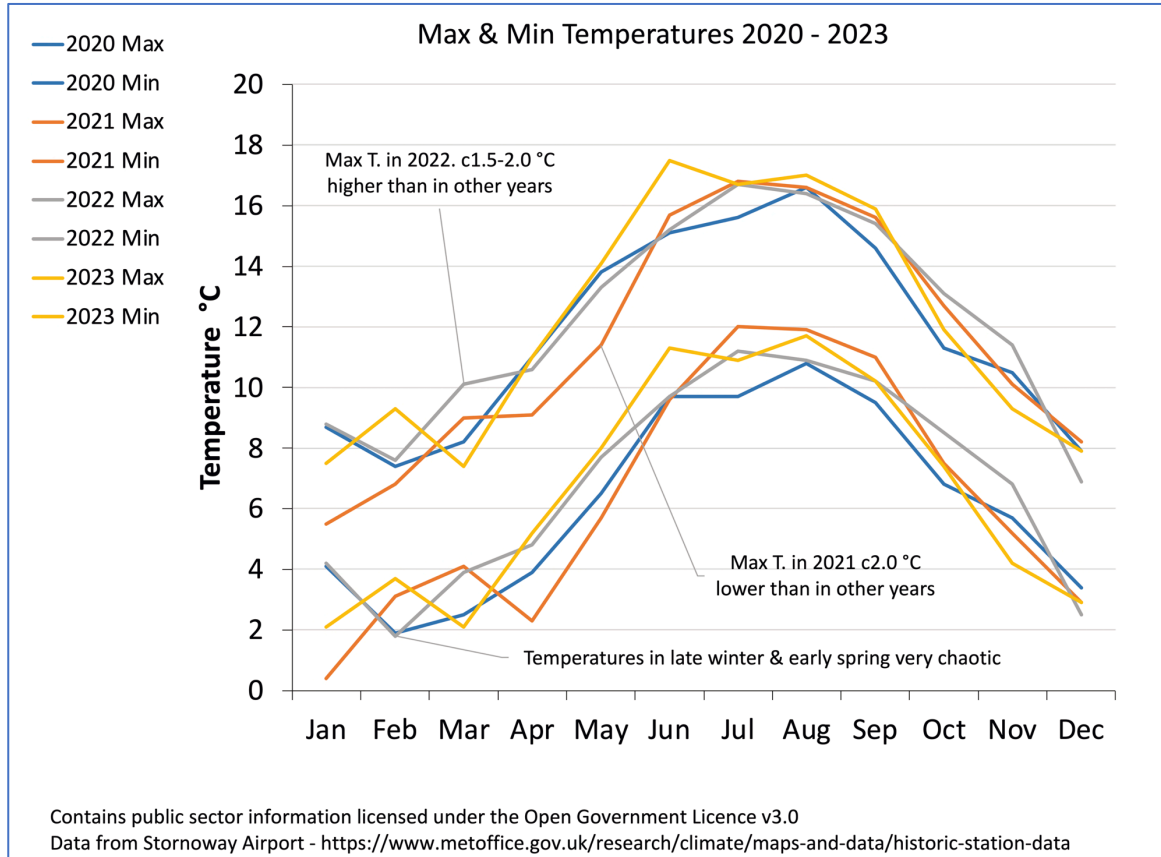


Phenology of spring events

Mean monthly temperatures were calculated from the Met Office Historic Station dataset for Stornoway Airport, the only available open-licence data for the Outer Hebrides. It is noticeable that the winter to spring (Jan – April) data is more chaotic than the data for the rest of the year. The mean temperatures for March, are higher in 2022 than in the other years, this is the year when the average early spring event indicators are about 4-5days ahead of the other years.



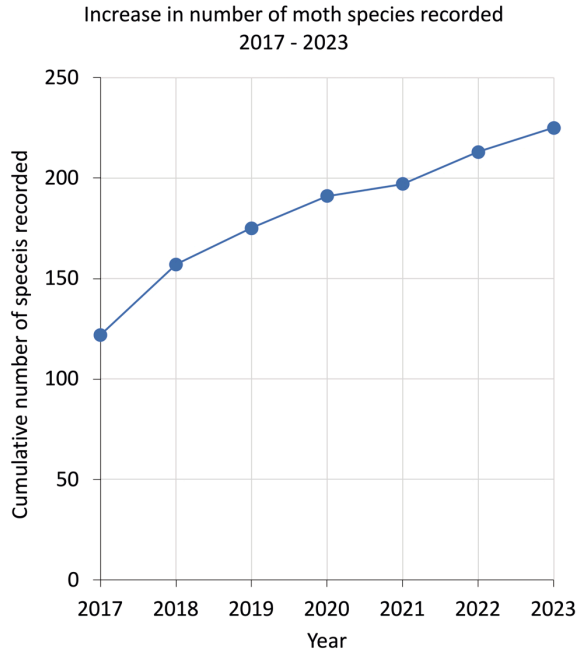
The order of the yearly temperature lines in the April-June period on the graph above (and highlighted left) seems to match closely the order of the average mid and late spring event indicators (shown in the **Spring events 2020 – 2023 summary** graph at the start of this section). In April and May 2021 mean temperatures were about 2-3°C cooler than in 2022 and 2023 and this was the year when spring was much later than the other years. A two-degree difference in mid to late spring temperatures was

associated with a roughly two-week delay in the phenological progression of spring in 2021 compared to 2022 and 2023. The 2020 yearly temperature line lies between the 2021 late spring and 2022/23 early spring lines and that gave us what might be considered a more normal “average” spring.

The spring survey data appears to be showing an effective way of describing the progression of spring and hopefully more people will join the survey in future years so that any effect of climate warming on the timing of spring phenological events in the Outer Hebrides can be described.

One small garden

One small garden - I'm an OHBR recorder with a long interest in moths who has run a moth trap at locations around the country at the various places I've worked. I retired and moved to South Uist in 2017 and set up a trap in the back garden to see what was there. In 2017 I recorded 122 species of moth. Each year there will nearly always be new moths, many moths are widespread but not particularly abundant. In any year approximately 25% of species will be recorded just once. So, if you carry on trapping at the same location the total number of species found there will increase year by year. Eventually the increase should plateau. By 2023 I'd found 225 species of moth in total in the garden and there is little sign of the increase slowing. At the same time, I also started to look at some of the commoner, easy to identify, insects using the garden - caddisflies, butterflies, bees, dragonflies and hoverflies started to be examined in more detail.



Kingdom	Phylum	Class	Order	Records	Species									
					2017	2018	2019	2020	2021	2022	2023	All years		
Animalia	Annelida	Clitellata	Rhynchobdellida	1				1					1	
		Oligochaeta	Crassiclitellata	1							1		1	
	Arthropoda	Arachnida	Araneae	Araneae	66			1	12	10	8	8	15	
			Opiliones	Opiliones	10			1	3	1	2	1	4	
		Chilopoda	Lithobiomorpha	6				1	1	1	2	2		
		Collembola	Entomobryomorpha	3					1	1		1		
		Diplopoda	Julida	10			1	3	1		1	5		
		Insecta	Polydesmida	Polydesmida	Polydesmida	6				1		1		1
				Coleoptera	Coleoptera	300			9	42	17	35	25	71
			Dermaptera	Dermaptera	24				1	1	1	1	1	
			Diptera	Diptera	714		12	25	53	64	83	96	155	
			Ephemeroptera	Ephemeroptera	22			2	2	1	1	1	2	
			Hemiptera	Hemiptera	43			3	12	7	7	4	17	
			Hymenoptera	Hymenoptera	169		3	7	13	15	24	28	45	
			Lepidoptera	Lepidoptera	6685	122	158	154	155	149	160	170	236	
				Moths	6473		151	147	149	140	153	161	225	
				Butterflies	248		7	7	6	9	7	9	11	
		Neuroptera	Neuroptera	6				1	1	2		2		
		Odonata	Odonata	66		1	4	5	4	4	5	6		
		Plecoptera	Plecoptera	21			1	1	1	1	1	1		
		Psocoptera	Psocoptera	11			1		3	2	2	3		
	Siphonaptera	Siphonaptera	2					2			2			
	Trichoptera	Trichoptera	884		14	22	24	23	23	21	28			
	Malacostraca	Amphipoda	Amphipoda	1					1		1			
		Isopoda	Isopoda	14			1	2	1	2	2	2		
	Chordata	Actinopterygii	Gasterosteiformes	5				1		1	1	1		
		Amphibia	Anura	10		1	1		1	1	1	1		
		Mammalia	Artiodactyla	1						1		1		
	Mollusca	Bivalvia	Insectivora	5		1	1	2		1	1	2		
			Rodentia	6				2	2	1	1	2		
		Gastropoda	Veneroida	1				1				1		
			Hygrophila	3				1		1		2		
Littorinimorpha			1				1				1			
Pulmonata		Pulmonata	24			5	5	1	3	3	10			
Platyhelminthes		Rhabditophora	2				1	1			2			
Fungi	Ascomycota	Geoglossales	1		1						1			
		Rhytismatales	1						1	1	1			
	Basidiomycota	Agaricales	4							4	4			
		Pucciniales	2						1	1	1			
	Total			9131	122	191	241	346	310	367	383	632		