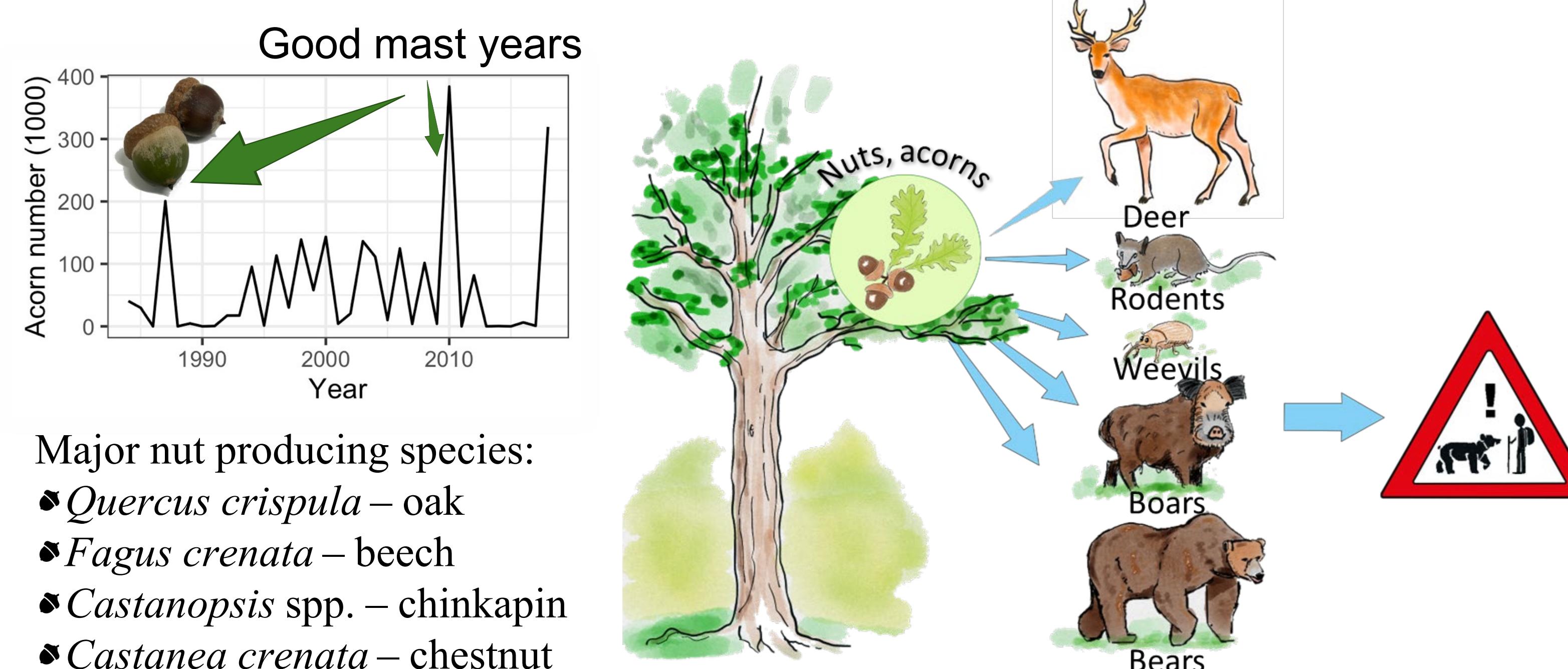


Where the Acorns Fall – Connecting Masting and Foraging Behaviour of Animals

Why are acorns and nuts important?

Acorn and nuts, the seeds of oaks and beech are major food sources for many animals in the forests since these nuts are large and they provide lots of energy in preparation to the winter season. However, these tree species have an irregular reproduction pattern called masting (Kelly, 1994); they synchronize their flower and seed production over large geographical extents. Due to this synchronization, in some years they produce many acorns, called mast years, followed by a 1-5 years period of low acorn production.



These irregularity of acorn availability causes animals to change their behaviour in poor mast years and look for food closer to human settlements, increasing the chances of human-wildlife conflicts.

How to avoid these conflicts?

Previously, we integrated masting into a dynamic vegetation model, SEIB-DGVM (Végh and Kato, 2024). If we could connect this model with animal behaviour, we could predict areas and species prone to risk.

- First step:
Observing animal visitation frequency and duration in relation to average acorn yield in the past. **Do the animals remember?**
- Directed or random foraging movement?**
- Setting up 4-4 camera traps at three sites
 - Browning Strike Force Pro X 1080 camera
 - 2 cameras at high, 2 at low yield trees
 - Spring and fall observation



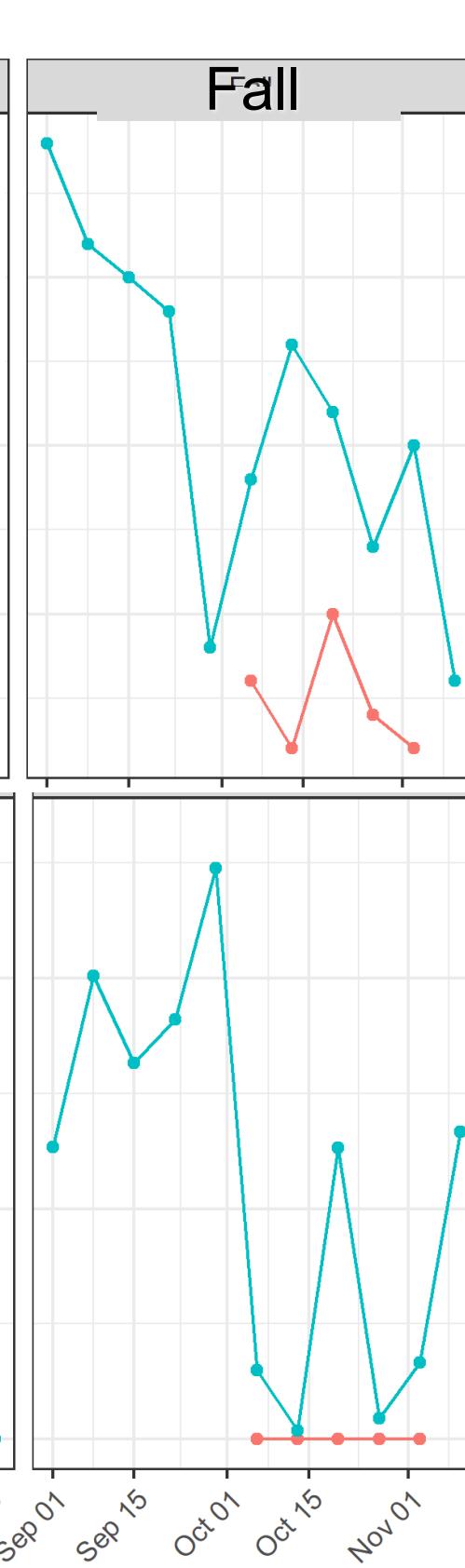
Results

Location	Season	Total trapping effort	Camera	Number of pictures		Total number of events (60 sec)	Encounter rate	
				Total	Animals			
Chichibu	Spring	280 days	1	6,228	469	26	37.1	
			2	162	102	12	17.1	
			3	131	44	11	15.7	
			4	107	25	4	5.7	
	Fall		1	317	77	21	31.8	
			2	202	83	17	25.8	
			3	177	49	13	19.7	
			4	224	120	18	27.3	
Kanumazawa	Spring	280 days	5	1,134	19	4	5.7	
			6	24,711	8	4	5.7	
			7	13,799	18	6	8.6	
			8	11,051	38	8	11.4	
	Fall		5	383	0	0	0.0	
			6	1,441	15	5	7.1	
			F_7	286	0	0	0.0	
			F_8	419	30	6	8.6	
Uryu	Spring	263 days	9	2,470	116	25	35.7	
			10	8,899	75	19	27.1	
			11	24,479	188	10	18.9	
			12	7,846	149	18	25.7	
	Fall		F_9	1,870	1,631	63	90.0	
			F_10	260	72	18	25.7	
			F_11	895	643	47	67.1	
			F_12	743	332	74	105.7	

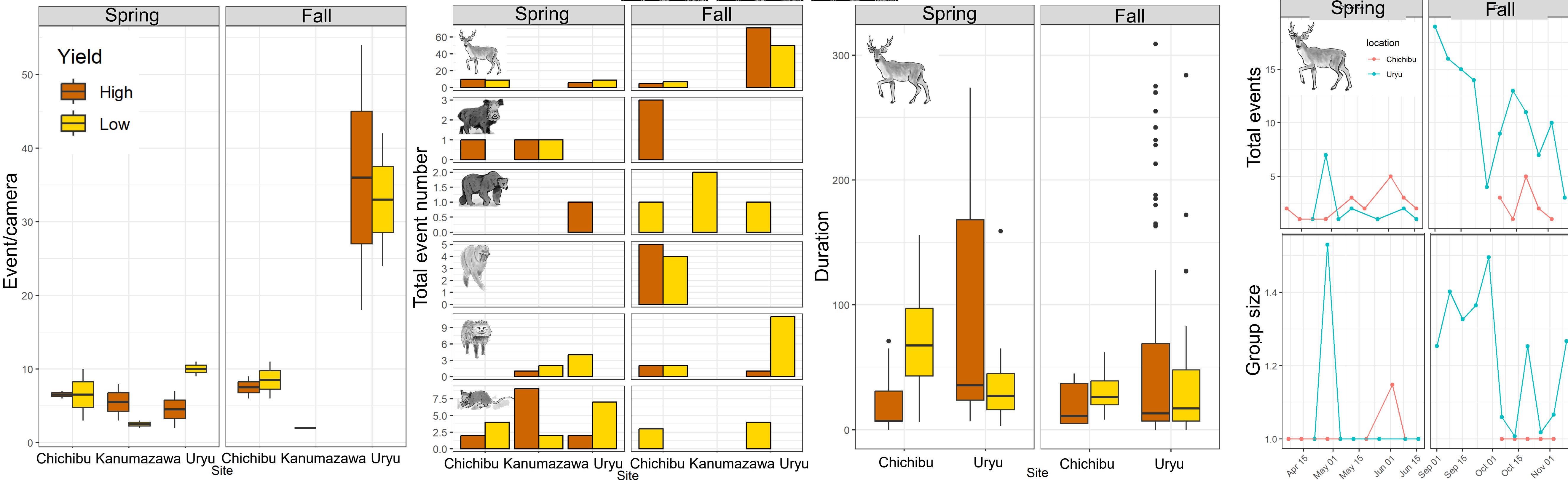


Events: pictures within 60 sec of each other grouped

Focusing on six groups of animals; largely dependent on acorn



F*: Camera location changed at fall season due to vegetation cover:



*Sites significantly different *Acorn yield has no significant impact *Deer most observed, larger groups at Uryu

Conclusions and the way forward

- At Uryu, more deer visited high yield sites, whereas at Chichibu, low yield sites prevailed
- Yield was not significant, due to low number of observations and high influence of camera placement
- We are considering using the Snapshot Japan dataset, to expand the pool of animal observations
- Plans to connect with future masting simulations under different climate scenarios to predict areas and animal groups at high risk of experiencing human-wildlife conflicts.