

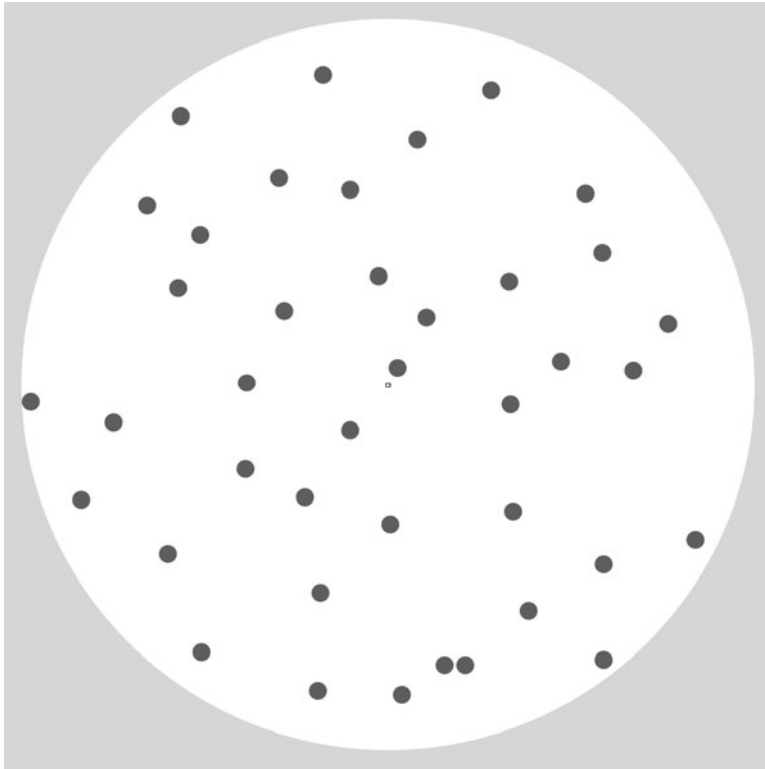
This document gives

- 1. A quick training session on methods to estimate browse canopy covers.**
- 2. Answers to the practice picture provided in Appendix 3 for canopy cover.**
- 3. Answers and tips to the 5 practice examples of estimating weighted average canopy depths, Appendix 3.**

This pdf. document is designed to be read on computer screen.

1: *Train your Brian* to estimate "total browsable canopy cover".

What % of the circular white area (= a vegetation plot) is covered by browsable plant canopies?

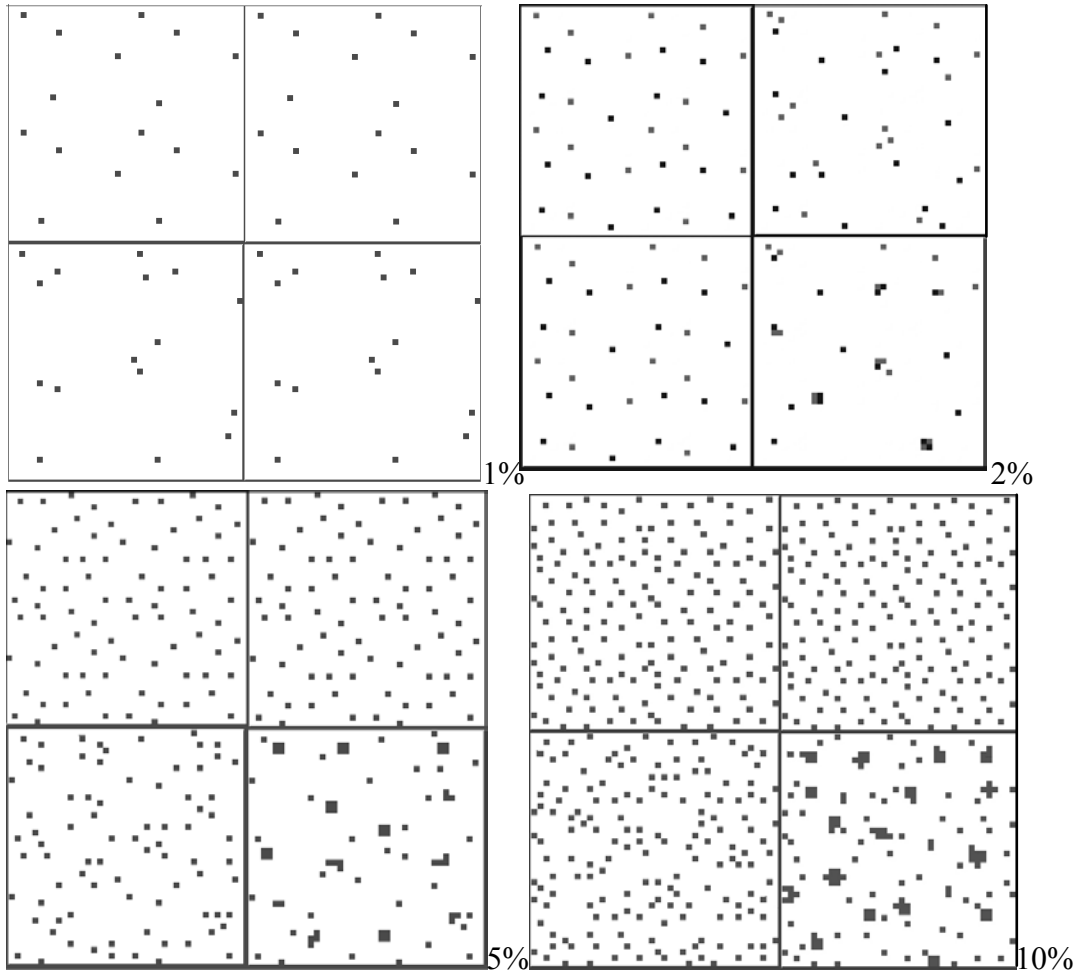


In the field, you need to walk around inside your entire plot, gaining an impression of the sizes and distributions of browsable plant canopies within the area.

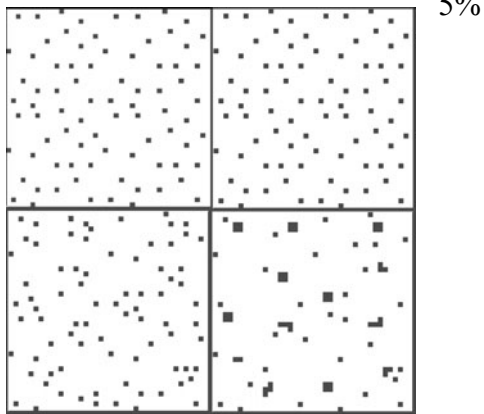
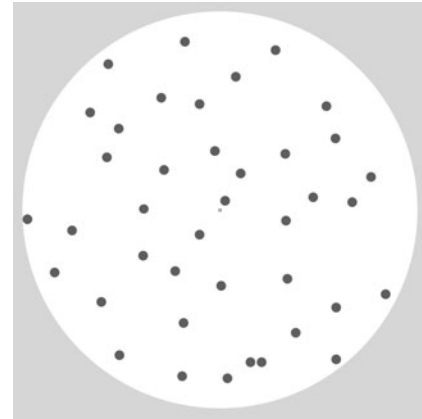
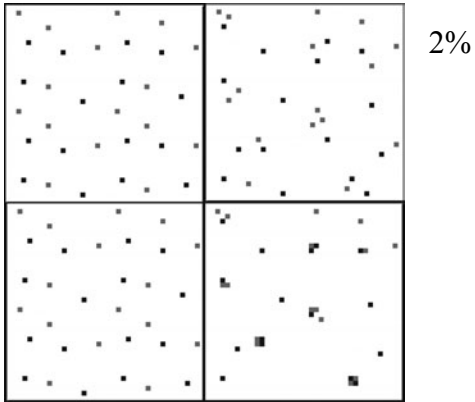
For the herb layer or seedling layer in grassy areas, you need to search carefully to find plants obscured by grass.

When you're ready to make your final judgement, return to the centre of the plot which gives you an all-round perspective of the situation. Use 1 or all 3 of the methods described below to make an estimate.

Method 1: Compare your vegetation area (e.g. the one above) to the Canopy Cover patterns in Appendix 1: CANOPY COVER PATTERN MATCHING:



Compare the density of dots (= canopies), and the relative average amount of space between the dots relative to the average size (diameter) of the dots. Find one pattern that seems similar. Ask – is my canopy cover more or less than this? If yours seems less, look at the next lowest % canopy cover pattern. If yours seems more, look at the next highest % canopy cover pattern.

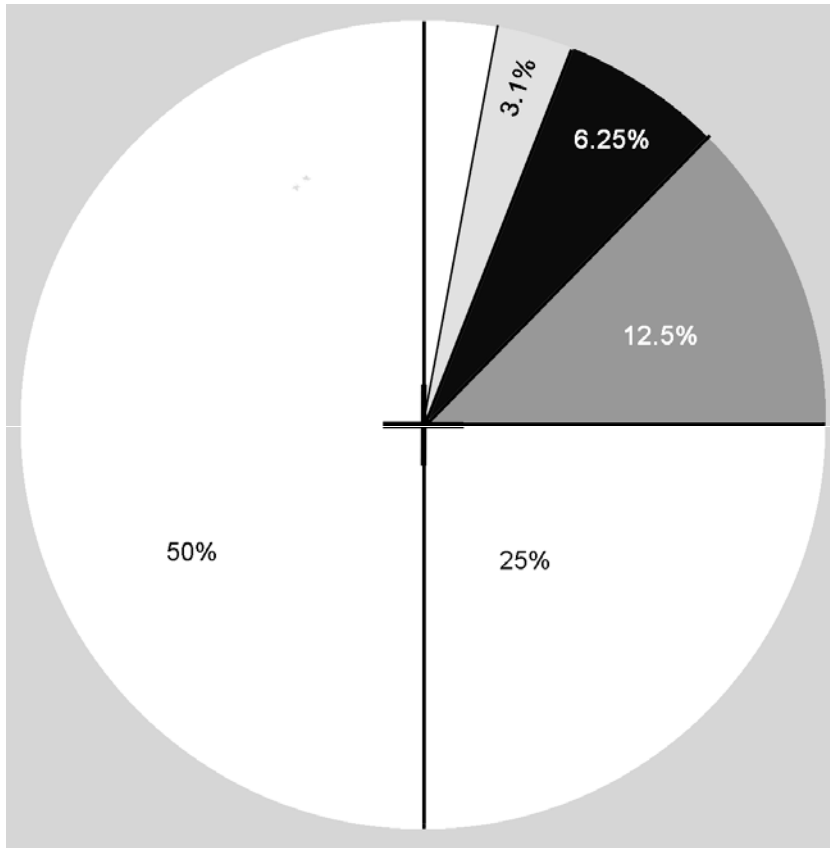


Your circular area seems to have a pattern similar to the 2% picture – do you agree? Could it be as much as 5%? Or less than 2%? ... or a bit more than 2% but not near 5%....?

Decide on your best canopy cover estimate. CHECK your decision to make sure it makes sense.

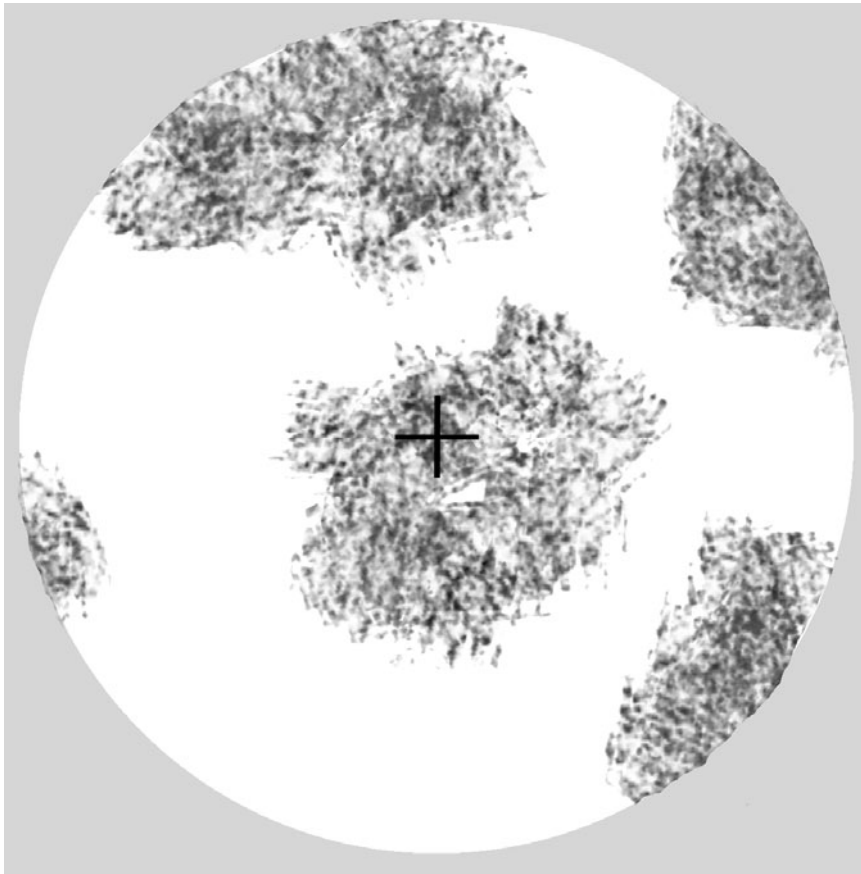
(page down)

For big bushes, the "canopy re-organising" method can be used (Method 2). First, in your imagination, divide your plot area into segments representing different percentages of the total plot. ***In the field:*** get to know how to estimate a 25%, 12.5%, 6.25% etc wedge by standing in the centre of the plot and using your arms to mark out the angle representing such spaces. For example, a 25% is found by holding your arms a right angle to each other. 12.5% is found by taking 1/2 of the 25% segment, etc...



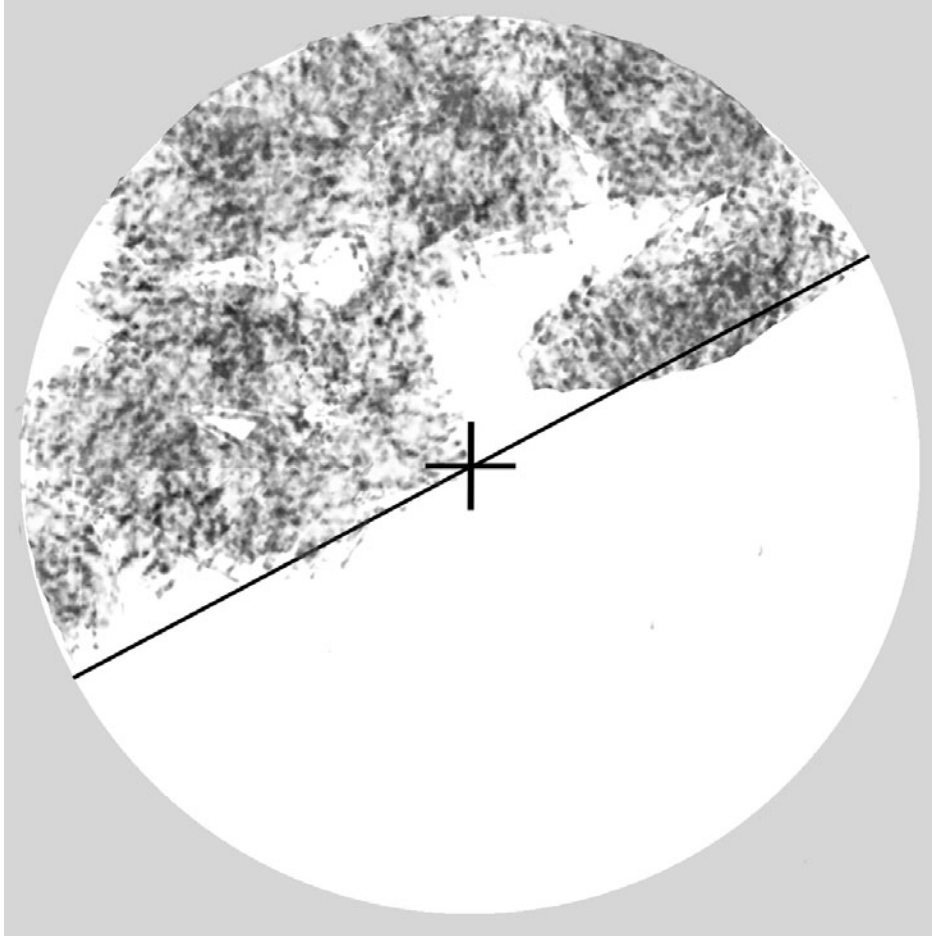
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Look at the available plant canopies in your area.....



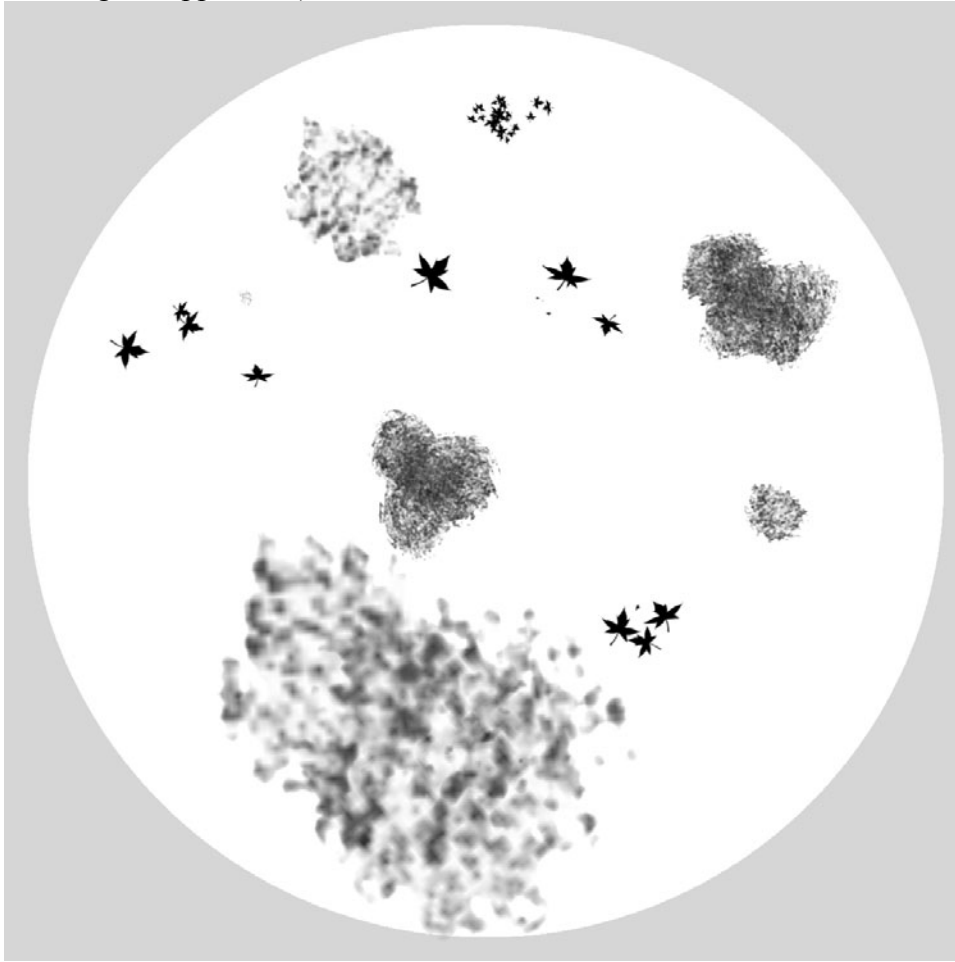
Pg down

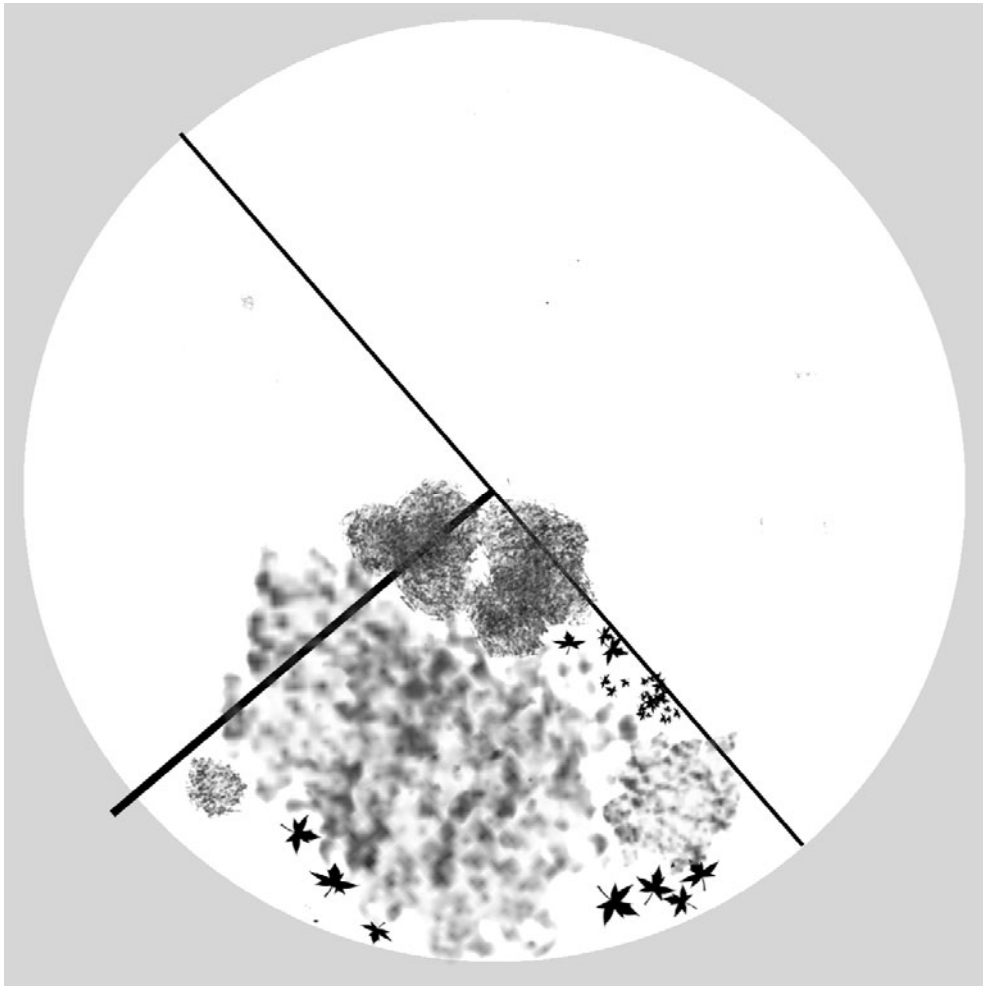
Then in you mind, move and lay out the canopies (tight together but in an approximately non overlapping manner) to fill up a segment of the area (eg in a 12, 25% or 50% segment).



In this example, you can "see" that one half (i.e. 50%) of the area is not quite filled with canopies. It looks like the canopy cover is somewhere between 40 and 45% !

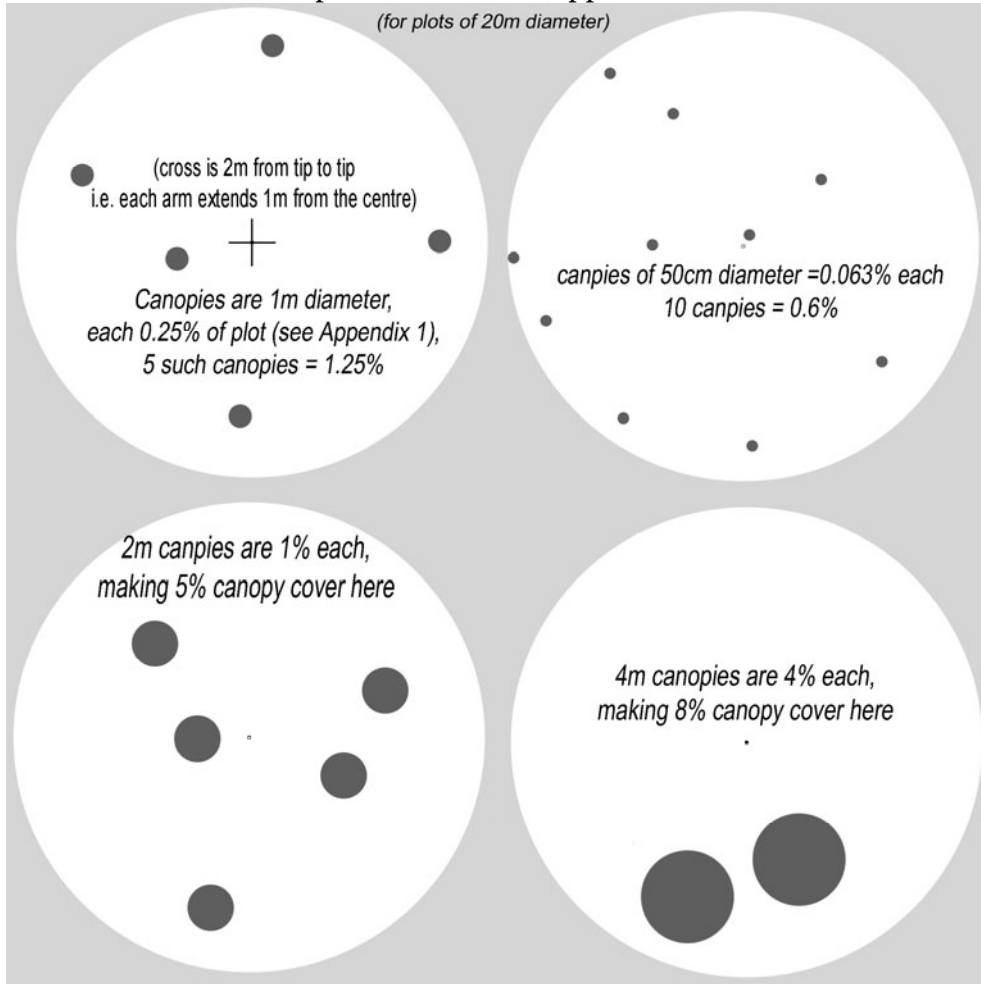
Try this example.... in your mind's eye move the canopies around and lay them together:
What % of the area do they fill, approximately? (see next page for picture example
showing the approx. %)





25-28%

Method 3 involves using the knowledge that certain canopy dimensions represent a certain % of an entire plot's area – See appendix 1 for tables of such %'s.



Now you are ready to practice using the test patterns found in appendix 3b.

Estimate the canopy cover of the 32 "plots" given in the appendix 3b. Get a blank piece of paper, write down numbers 1 to 32, and enter your answers opposite these.

Desired Accuracy: This is not rocket science – a reasonable level of accuracy will still allow reasonable estimates of overall browse availability for a site:

You want to be within 0.3% for very low canopy cover areas,
within 1 or 2% for plots of 2-9% cover,
2-5% for 10-30% covers,
and within 5-10% for covers over 30%.

Correct answers are found in on the next page here, below.

Repeat the practice session by trying to estimate the canopy cover using the 3 methods, until you can get all plots to within an acceptable level of accuracy.

(this level of accuracy may not be obtainable in the field, but practice helps)

2: Canopy Cover Practice Picture Answers

DON'T LOOK AT THESE UNTIL YOU HAVE COMPLETED THE PRACTICE SESSION OF APPENDIX 3b

Answers to the Canopy Cover Practice Test Patterns of Appendix 3b

1	0.31%		11	8%		21	25%		31	28%	
2	1%		12	26.5%		22	0.63%		32	7%	
3	42.5%		13	0.5%		23	70%				
4	1%		14	0.62%		24	28%				
5	7%		15	5%		25	1.7%				
6	2.4%		16	2.5%		26	10%				
7	43%		17	60%		27	78%				
8	30%		18	15%		28	7.5%				
9	17%		19	2.5%		29	38%				
10	50%		20	10%		30	1.5%				

3. Answers to the examples of estimating weighted average canopy depth (App 3b)

Your final estimate of average depth for each example should be within less than 10 cm of the answers given below.

Repeat the example if you are more than 10 cm out on any final answer.

Remember:

- *If you estimate canopy depth to within 5 cm, (eg. 25cm), round down the canopy depth to the nearest 10 cm for use in the table. (one tends to over-estimate average depth).*
- *Don't take the canopy depth as the distance between the absolute extreme highest and lowest bits of a skew canopy, but rather as the "average upper and lower point across the canopy.*
- *For curved canopies, take the thickness of the canopy layer, not the absolute lowest and highest canopy levels on the bush.*

Example 1

2												0
1.9												0
1.8												0
1.7												0
1.6												0
1.5												0
1.4												0
1.3												0
1.2												0
1.1												0
1												0
0.9												0
0.8									1	1		2
0.7					1	1	1	1	1	1		6
0.6					1	1	1	1	1	1		6
0.5					1	1	1	1	1	1		6
0.4					1	1	1	1	1	1		6
0.3					1	1	1	1	1	1		6
0.2	1	1	1	1	1	1	1	1	1	1		10
0.1	1	1	1	1	1	1	1	1	1	1		10
	10	20	30	40	50	60	70	80	90	100	52	cm <answer
											200	

Actual = 51cm

Example 2

2												0
1.9												0
1.8												0
1.7												0
1.6												0
1.5												0
1.4	1	1	1									3
1.3	1	1	1									3
1.2	1	1	1									3
1.1	1	1	1									3
1	1	1	1									3
0.9	1	1	1									3
0.8	1	1	1									3
0.7	1	1	1									3
0.6	1	1	1									3
0.5	1	1	1									3
0.4	1	1	1									3
0.3	1	1	1									3
0.2	1	1	1	1	1	1	1	1	1	1	1	10
0.1	1	1	1	1	1	1	1	1	1	1	1	10
	10	20	30	40	50	60	70	80	90	100	56	cm <answer
											200	

Actual = 59cm

Example 3

2												0
1.9												0
1.8												0
1.7	1	1	1	1								4
1.6	1	1	1	1								4
1.5	1	1	1	1								4
1.4	1	1	1	1								4
1.3	1	1	1	1								4
1.2	1	1	1	1								4
1.1	1	1	1	1								4
1	1	1	1	1								4
0.9	1	1	1	1								4
0.8	1	1	1	1								4
0.7	1	1	1	1					1	1		6
0.6	1	1	1	1					1	1		6
0.5	1	1	1	1					1	1		6
0.4	1	1	1	1					1	1		6
0.3	1	1	1	1					1	1		6
0.2	1	1	1	1					1	1		6
0.1	1	1	1	1	1	1	1	1	1	1		10
	10	20	30	40	50	60	70	80	90	100	86	cm <answer
											200	

Actual = 87cm

Example 4

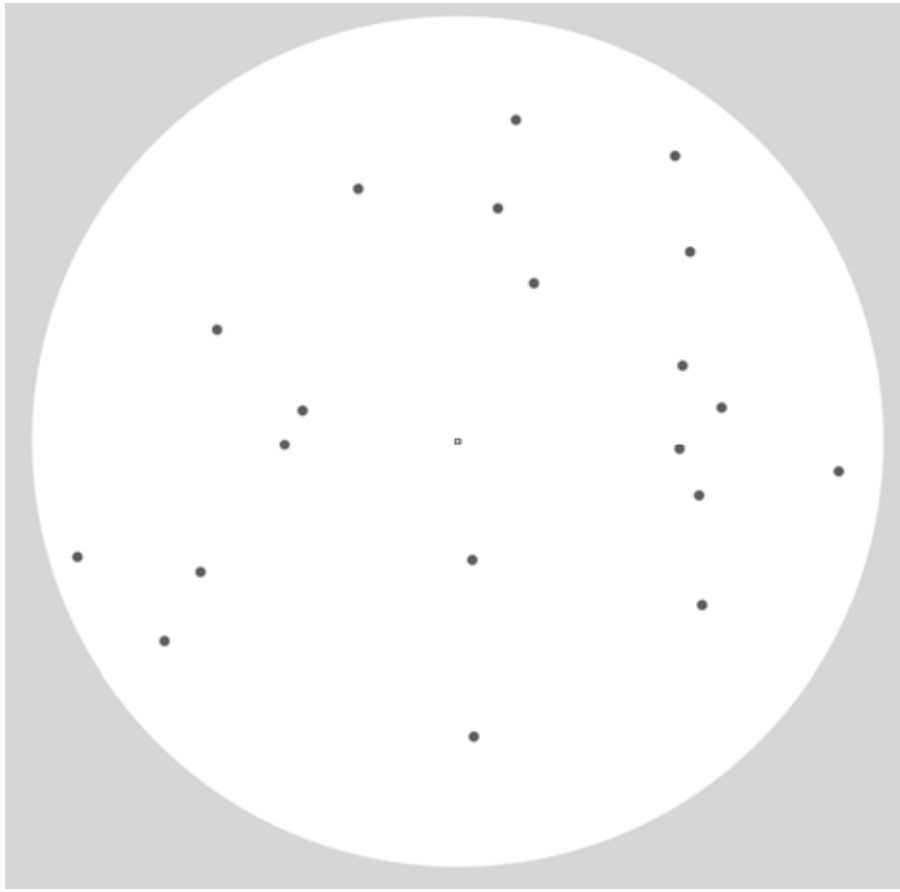
2												0
1.9												0
1.8												0
1.7	1	1										2
1.6	1	1										2
1.5	1	1										2
1.4	1	1										2
1.3	1	1										2
1.2	1	1										2
1.1	1	1										2
1	1	1										2
0.9	1	1										2
0.8	1	1										2
0.7	1	1										2
0.6	1	1	1	1								4
0.5	1	1	1	1	1	1	1	1	1	1	1	10
0.4	1	1	1	1	1	1	1	1	1	1	1	10
0.3	1	1	1	1	1	1	1	1	1	1	1	10
0.2	1	1	1	1	1	1	1	1	1	1	1	10
0.1	1	1	1	1	1	1	1	1	1	1	1	10
	10	20	30	40	50	60	70	80	90	100	76	cm <answer
											200	

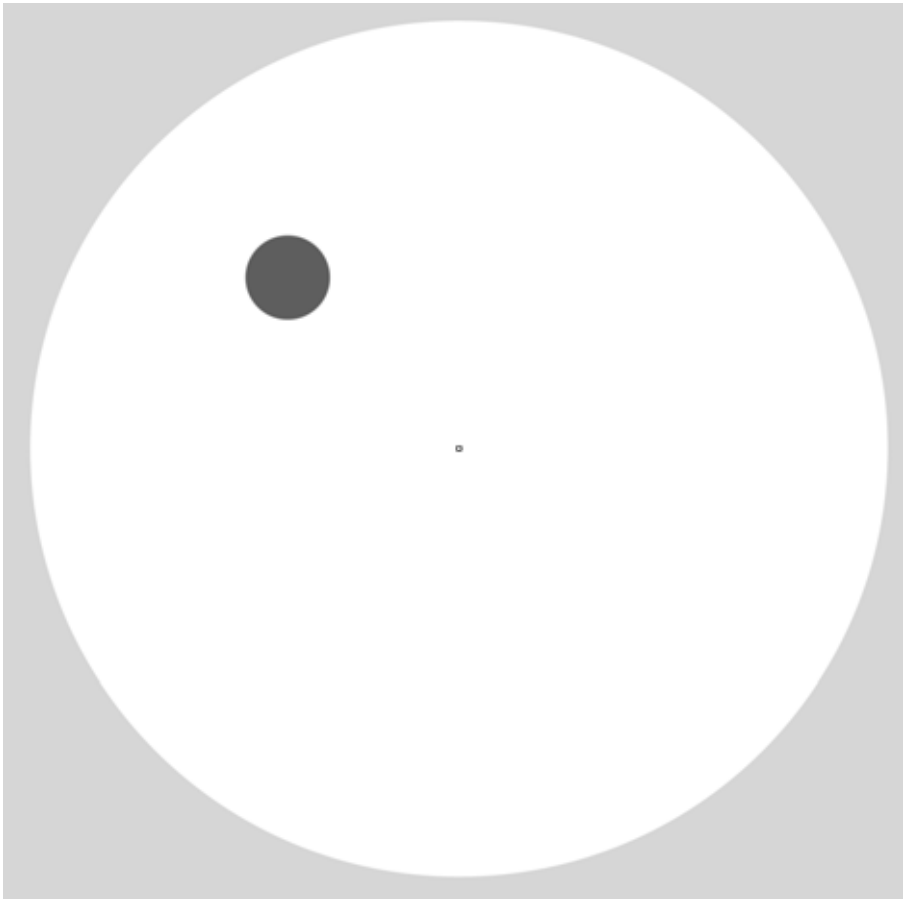
Actual = 76cm

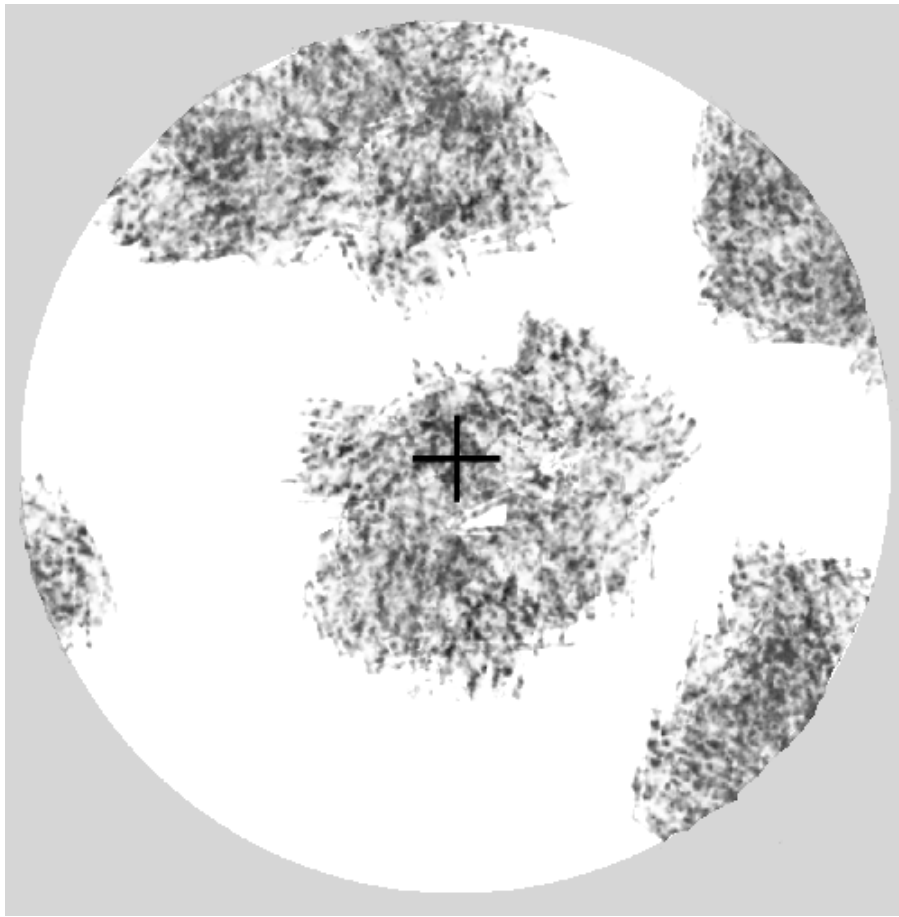
Example 5

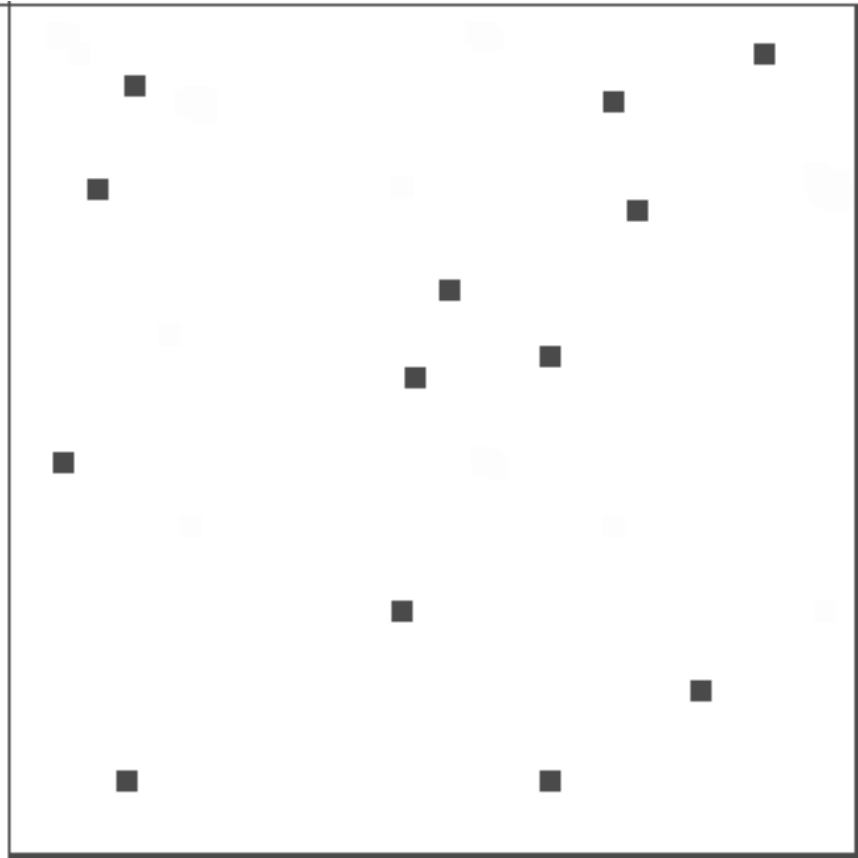
2												0
1.9												0
1.8												0
1.7												0
1.6												0
1.5												0
1.4												0
1.3												0
1.2												0
1.1												0
1												0
0.9												0
0.8									1	1		2
0.7									1	1		2
0.6									1	1		2
0.5									1	1		2
0.4									1	1		2
0.3							1	1	1	1		4
0.2	1	1	1	1	1	1	1	1	1	1		10
0.1	1	1	1	1	1	1	1	1	1	1		10
	10	20	30	40	50	60	70	80	90	100	34	cm <answer
											200	

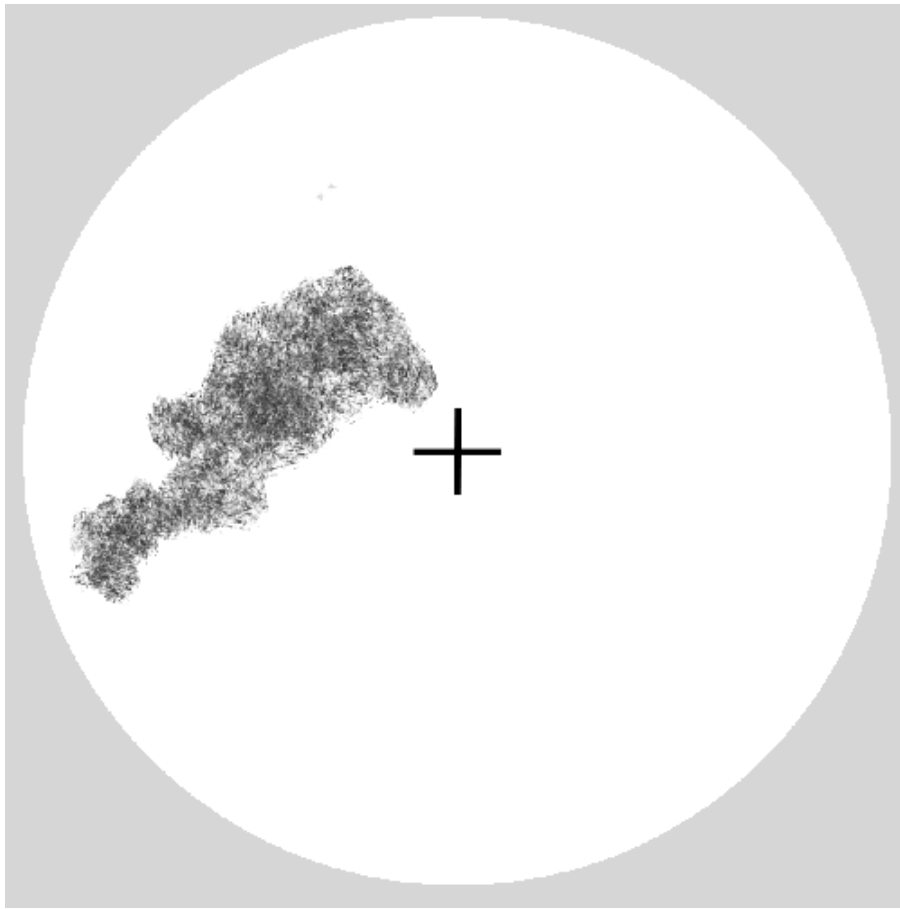
Actual = 35cm

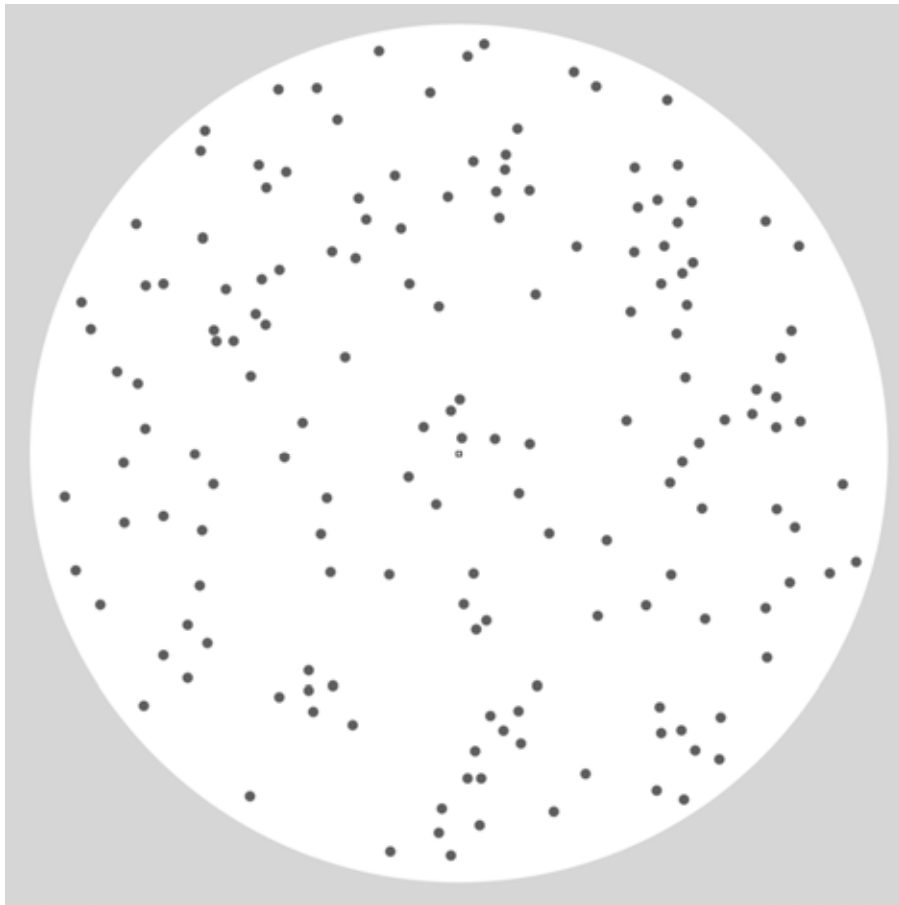


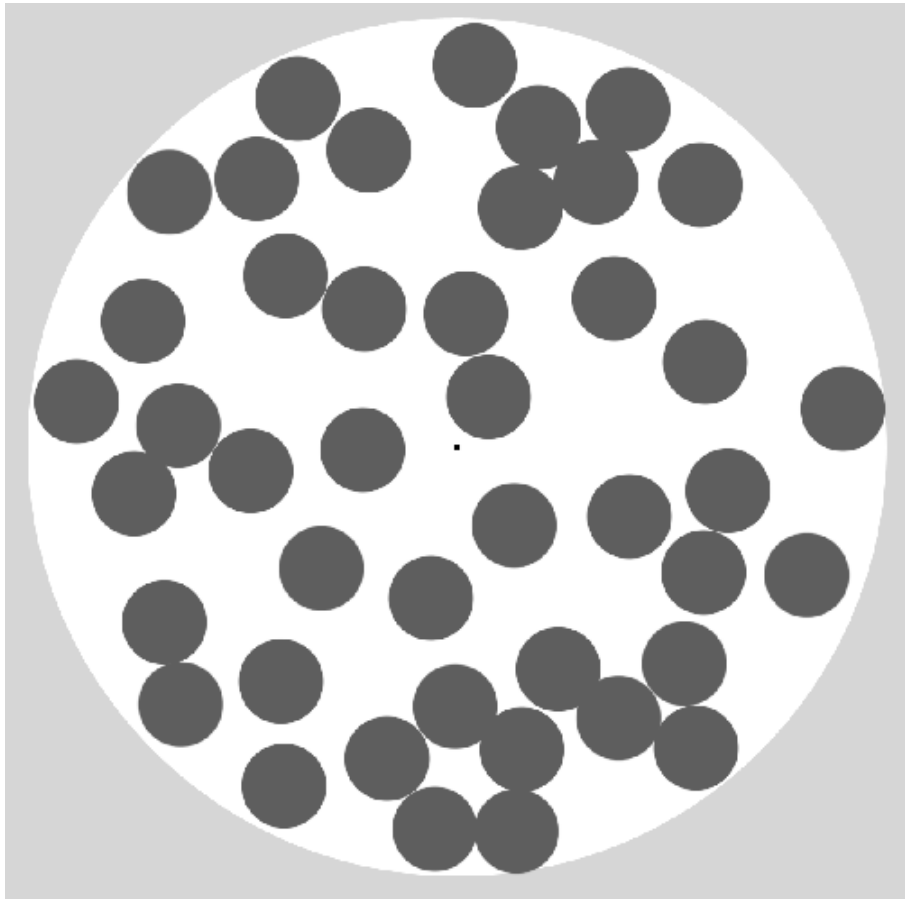


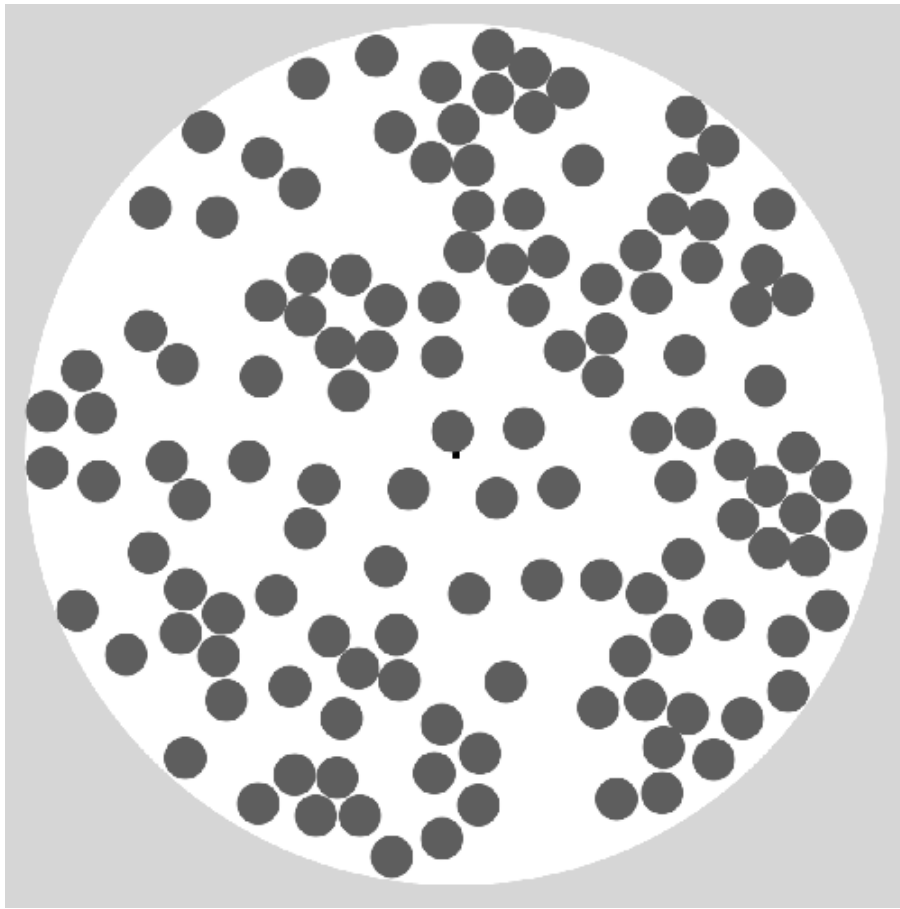


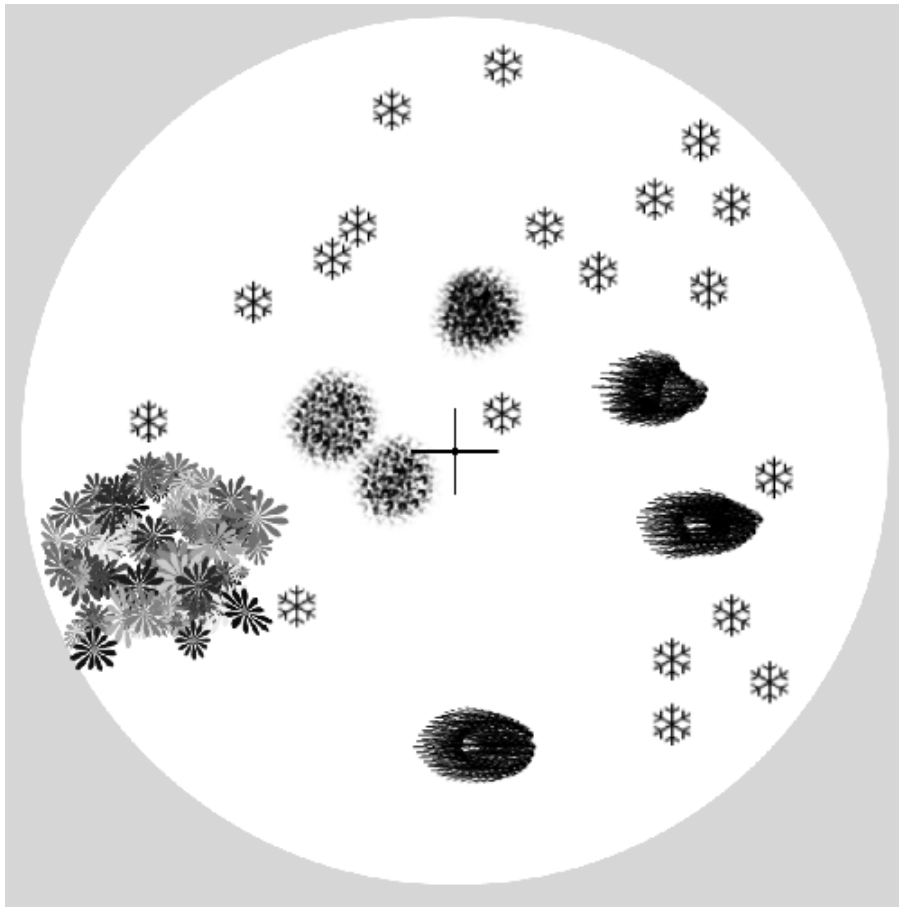


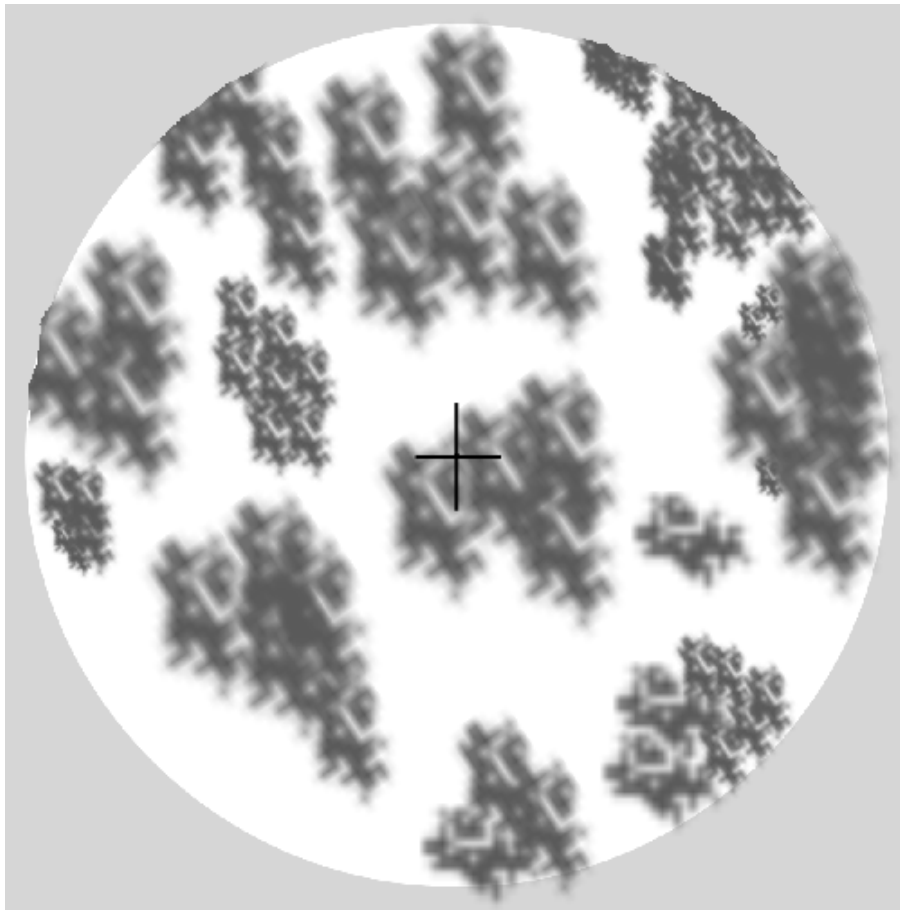


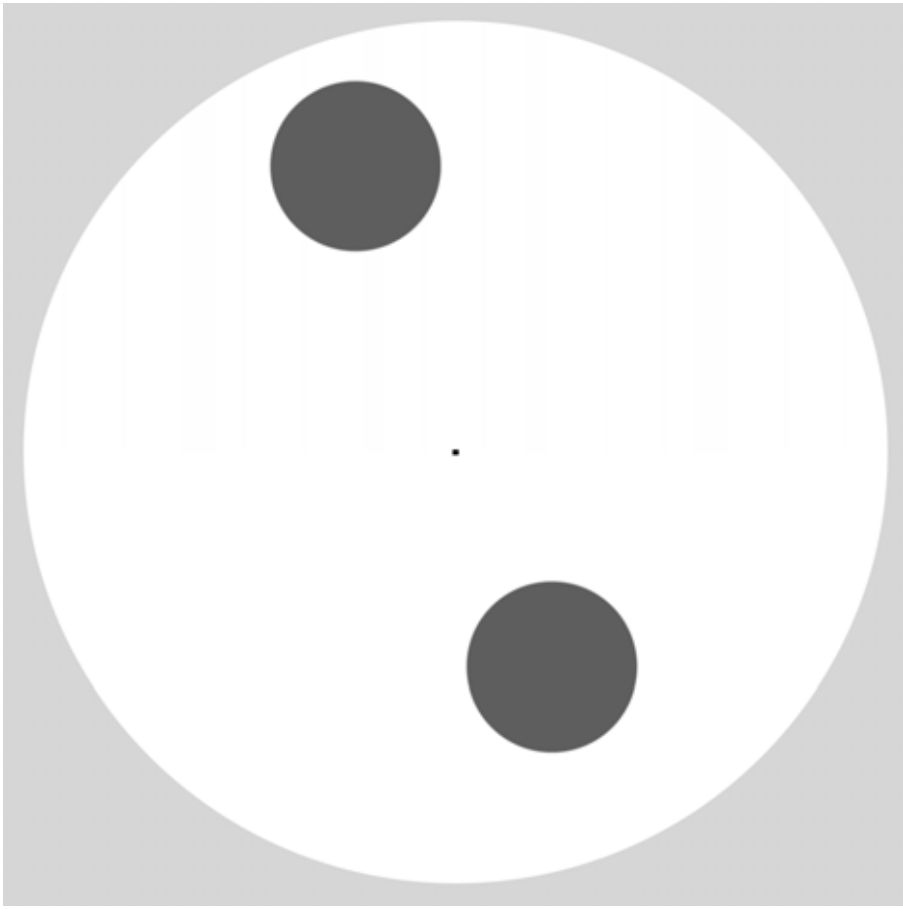


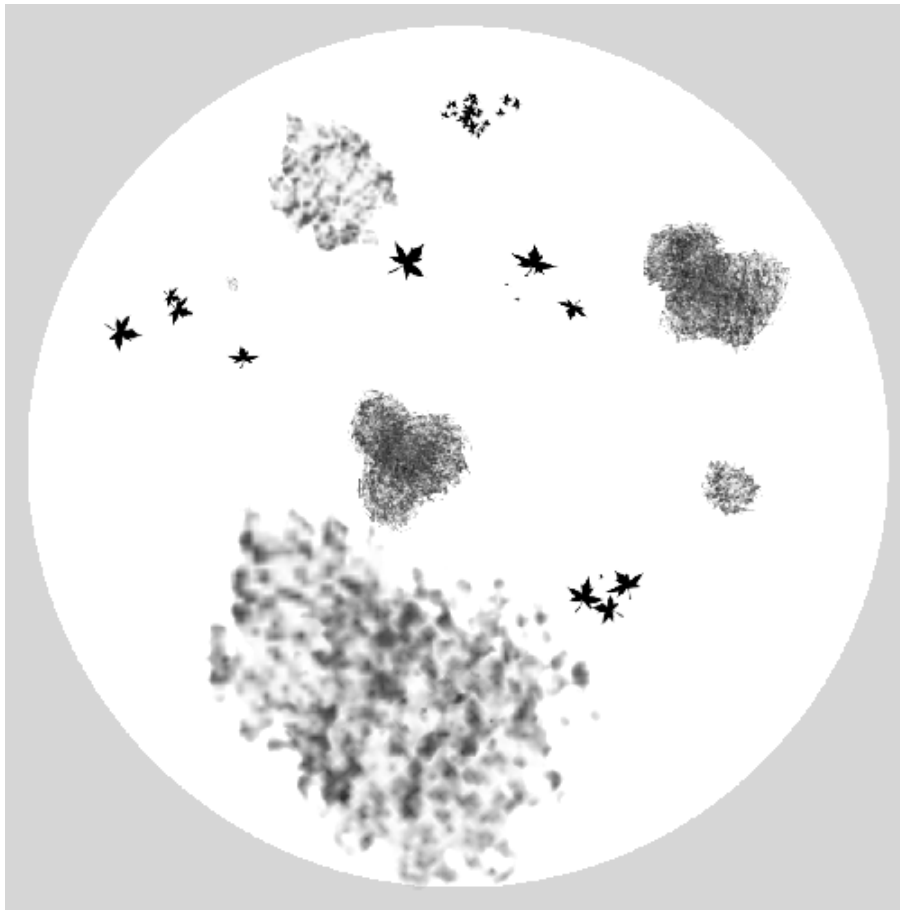


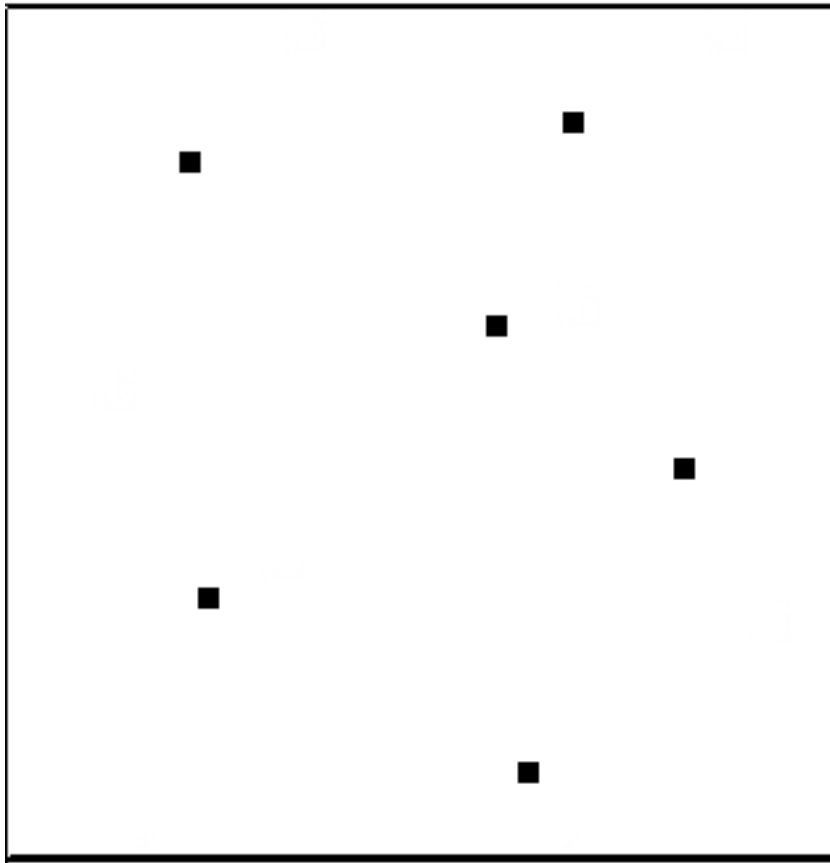


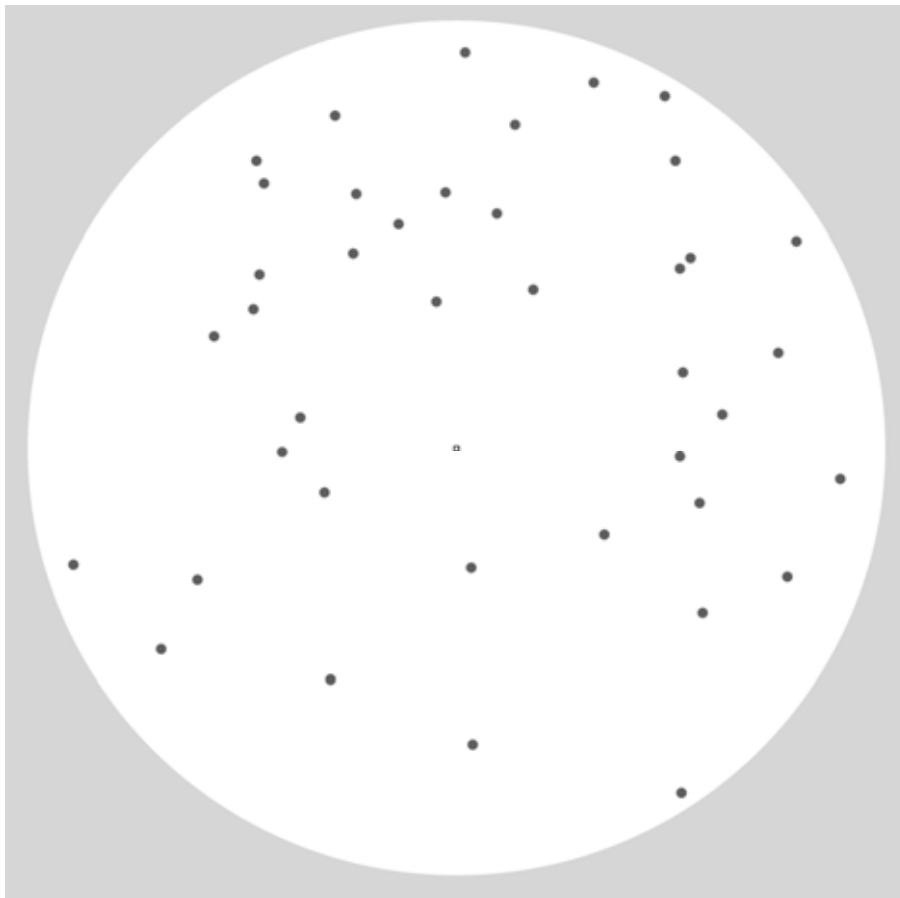


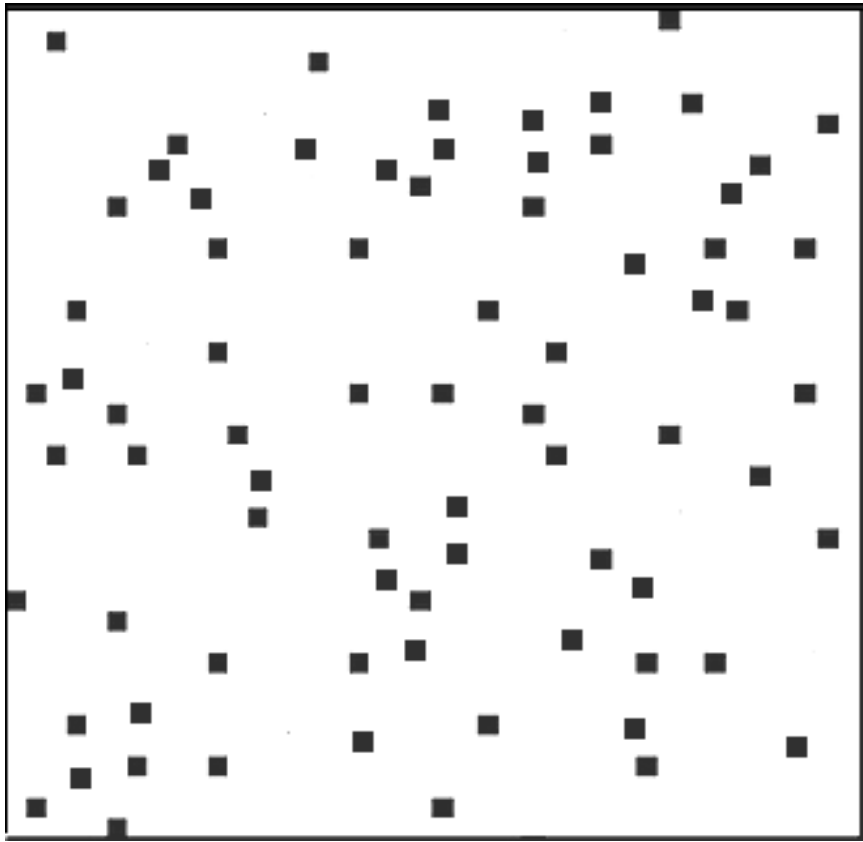


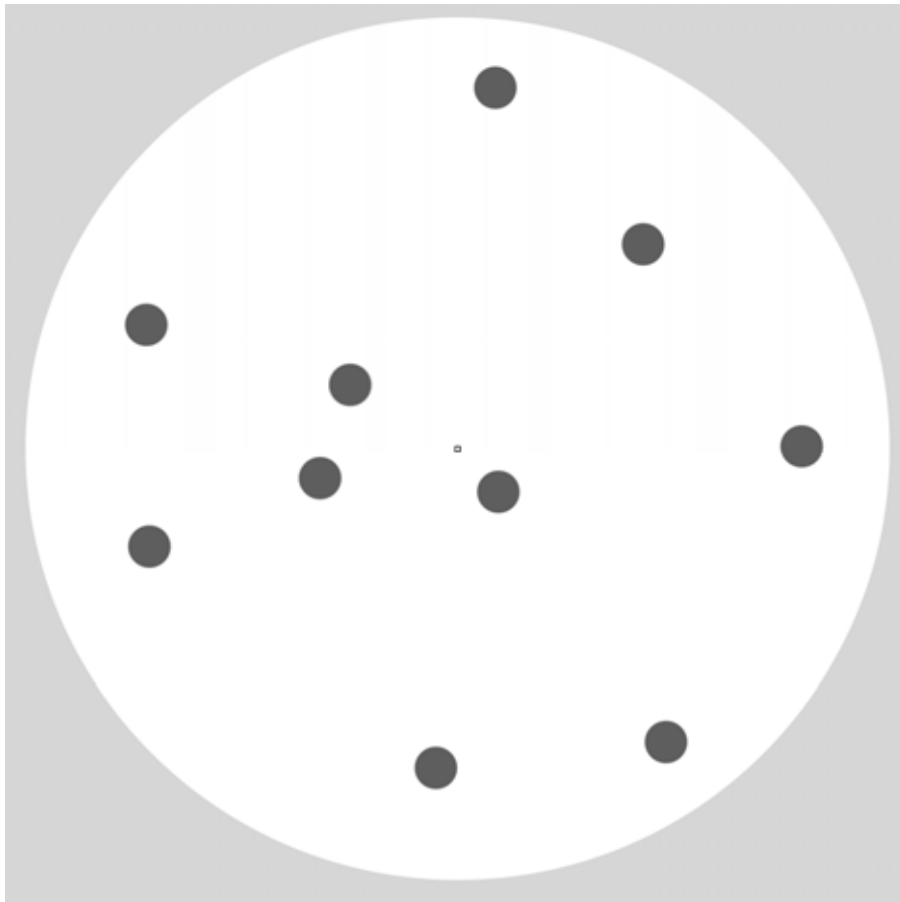


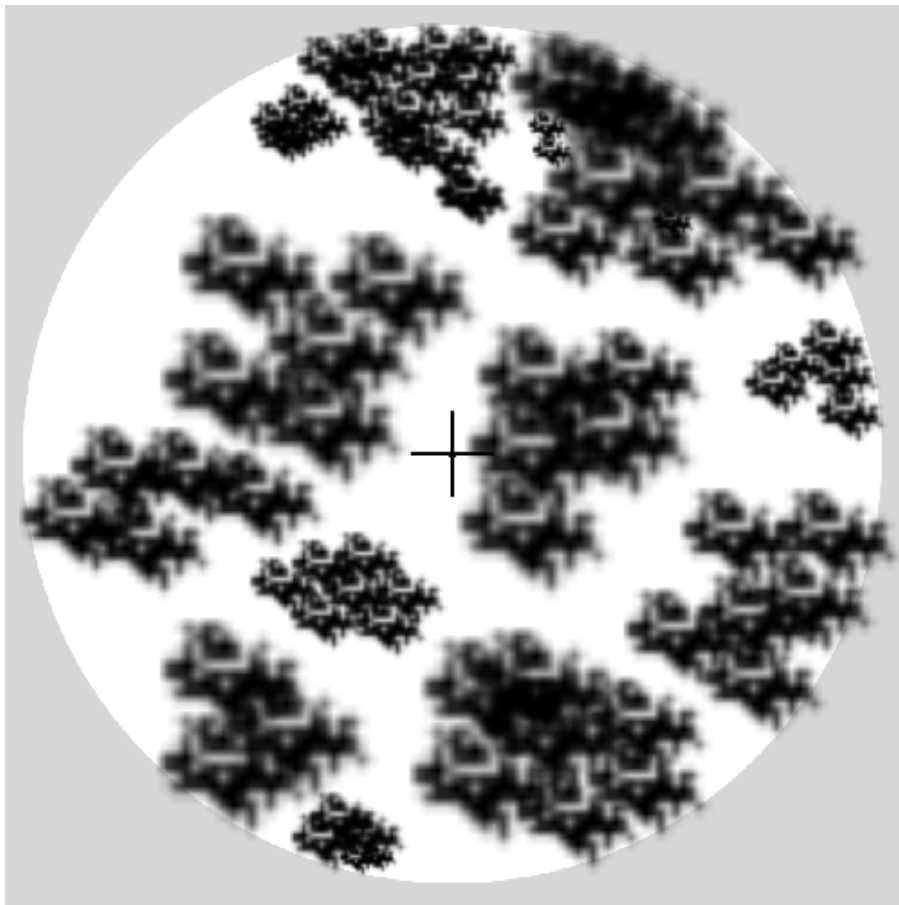


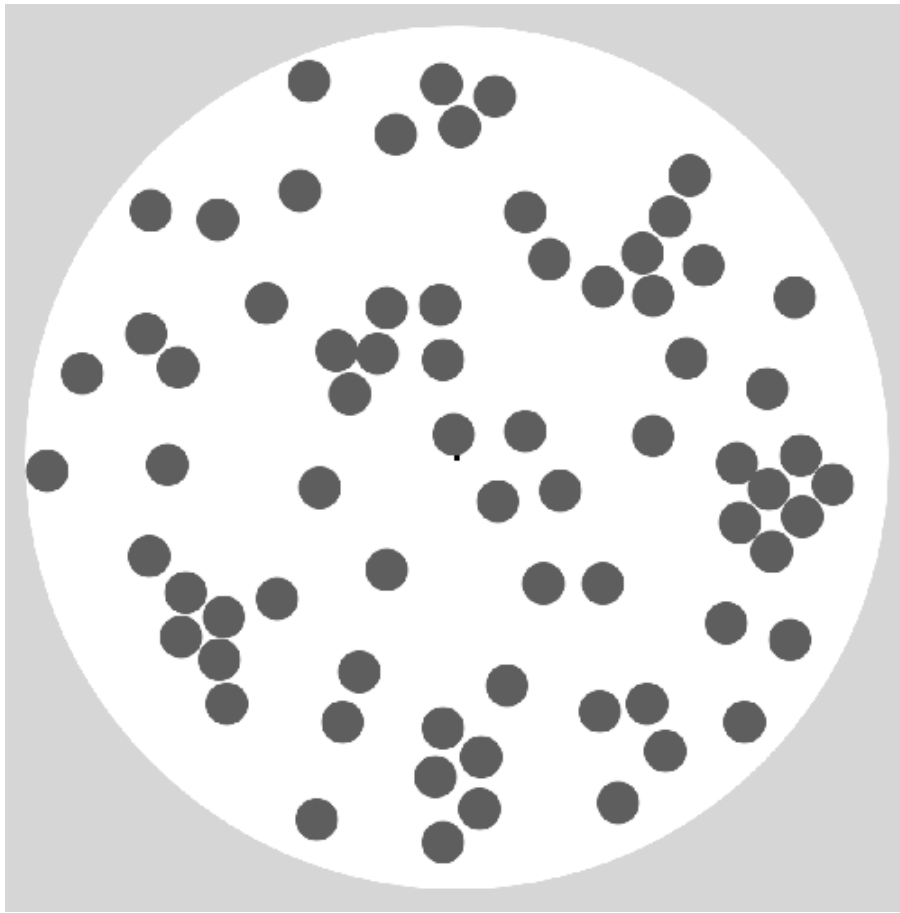


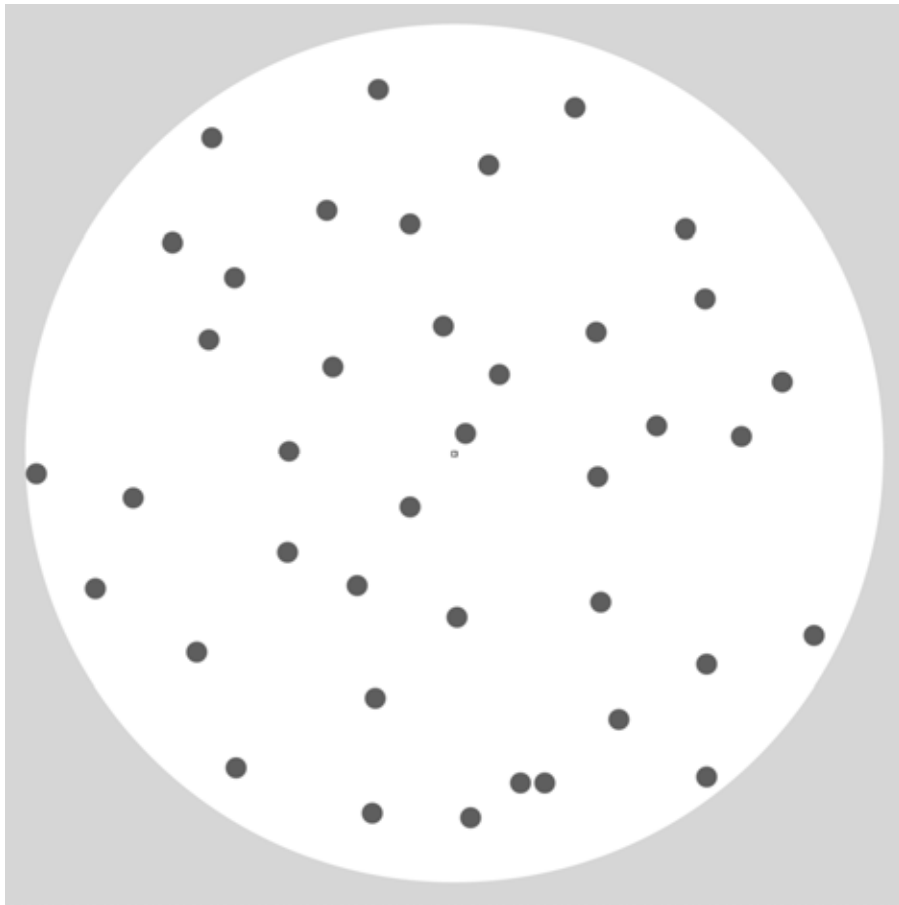


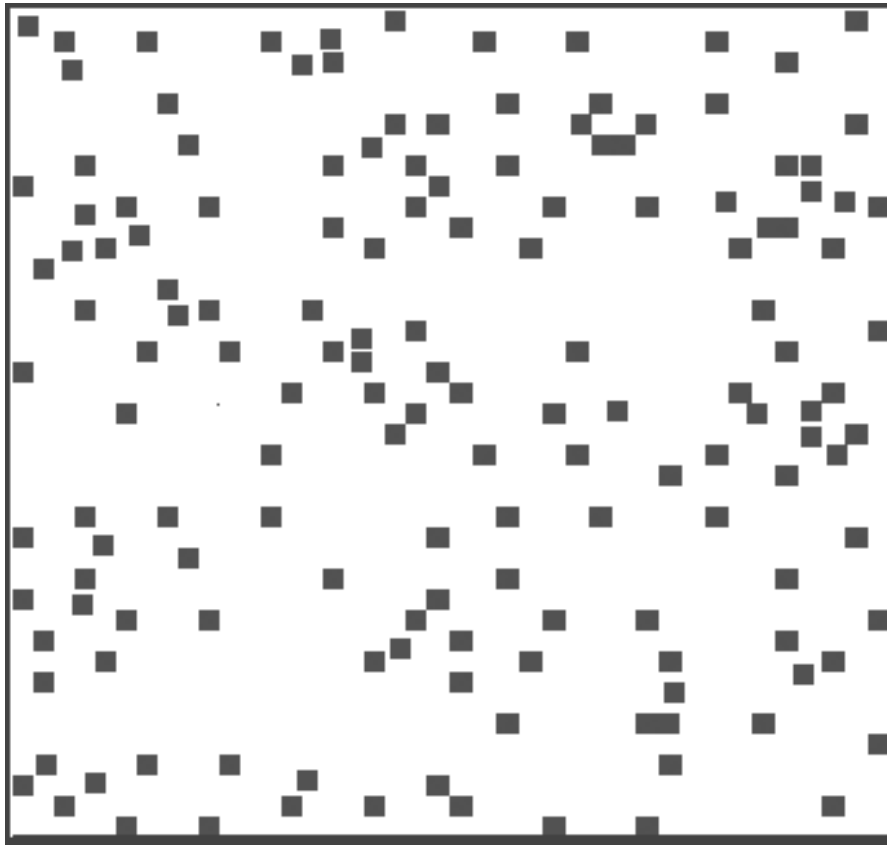


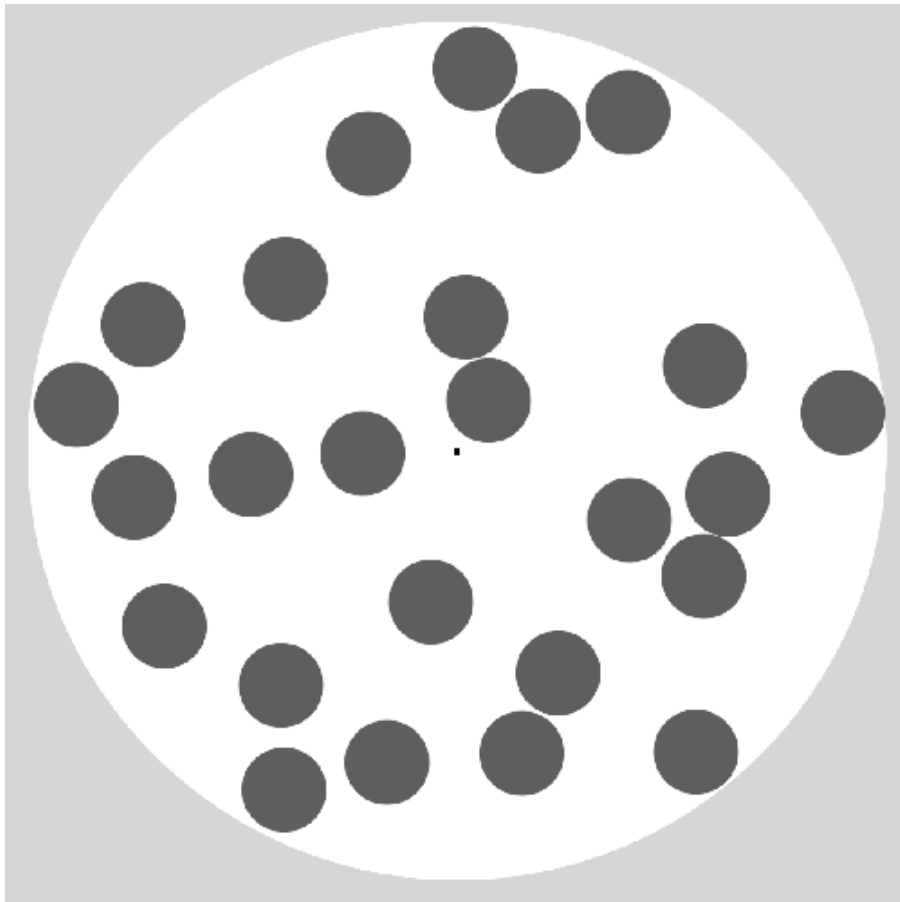


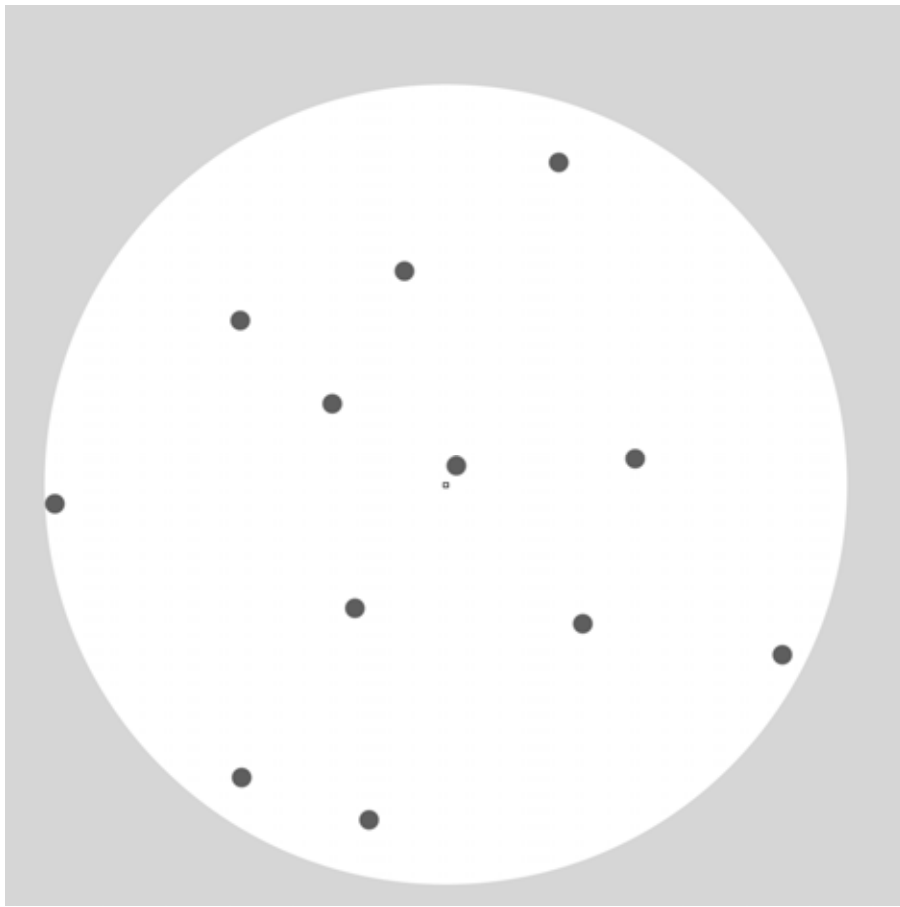


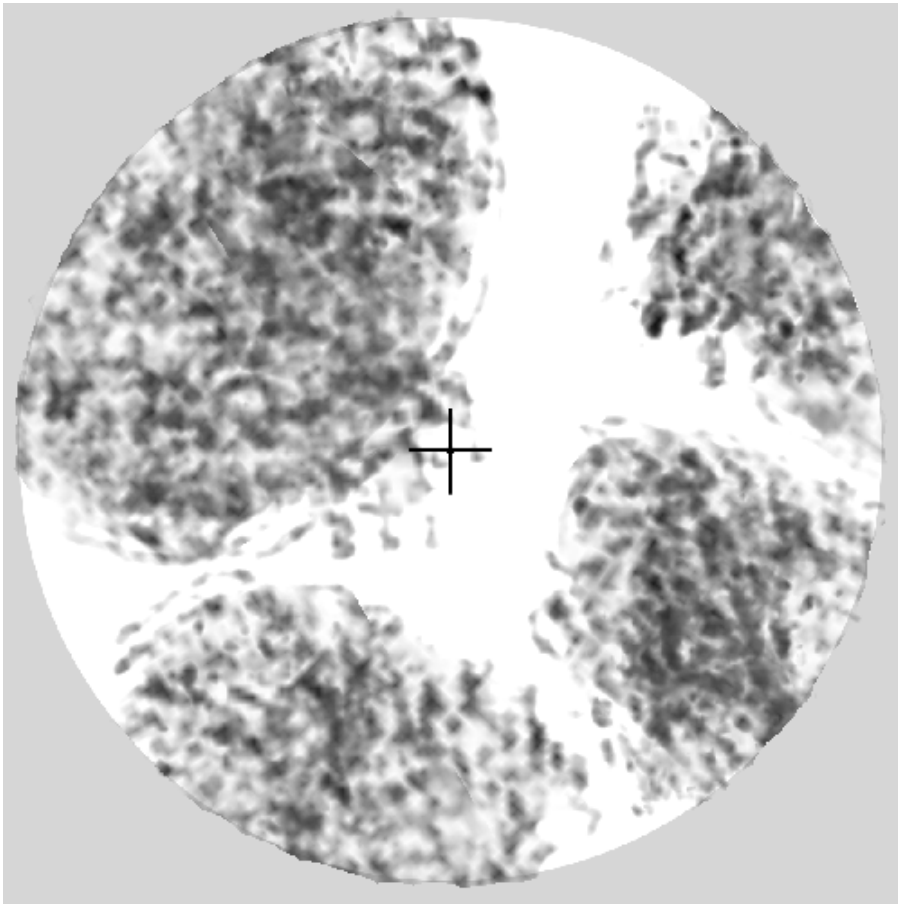


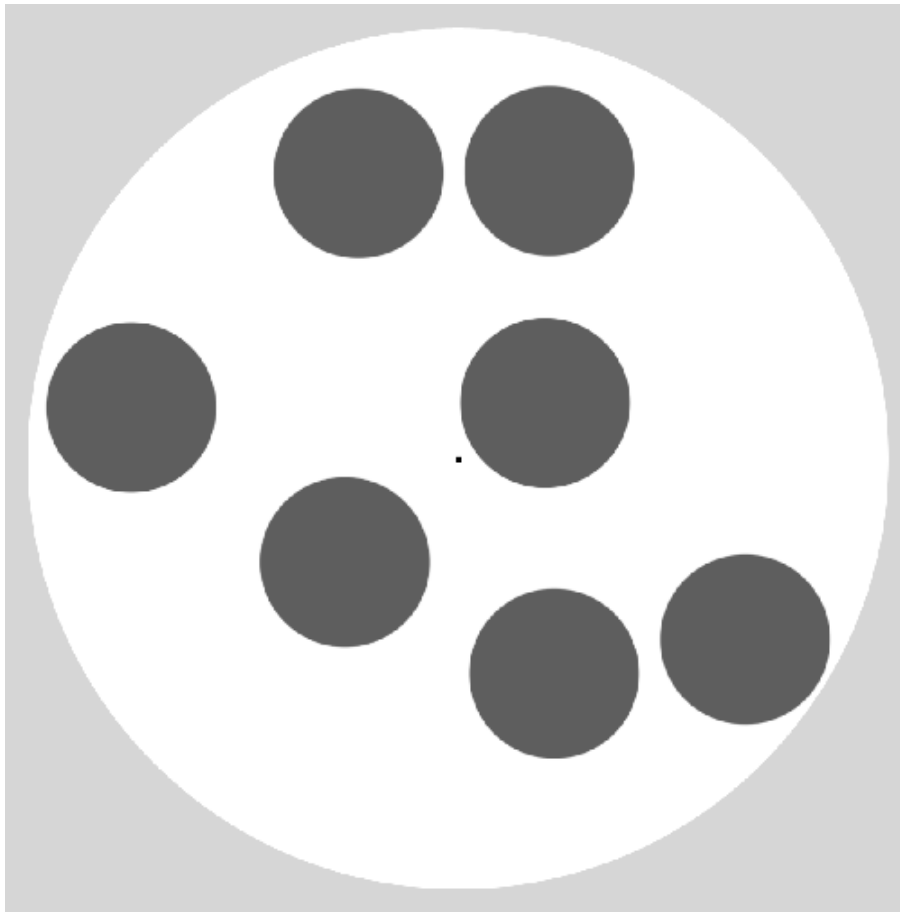


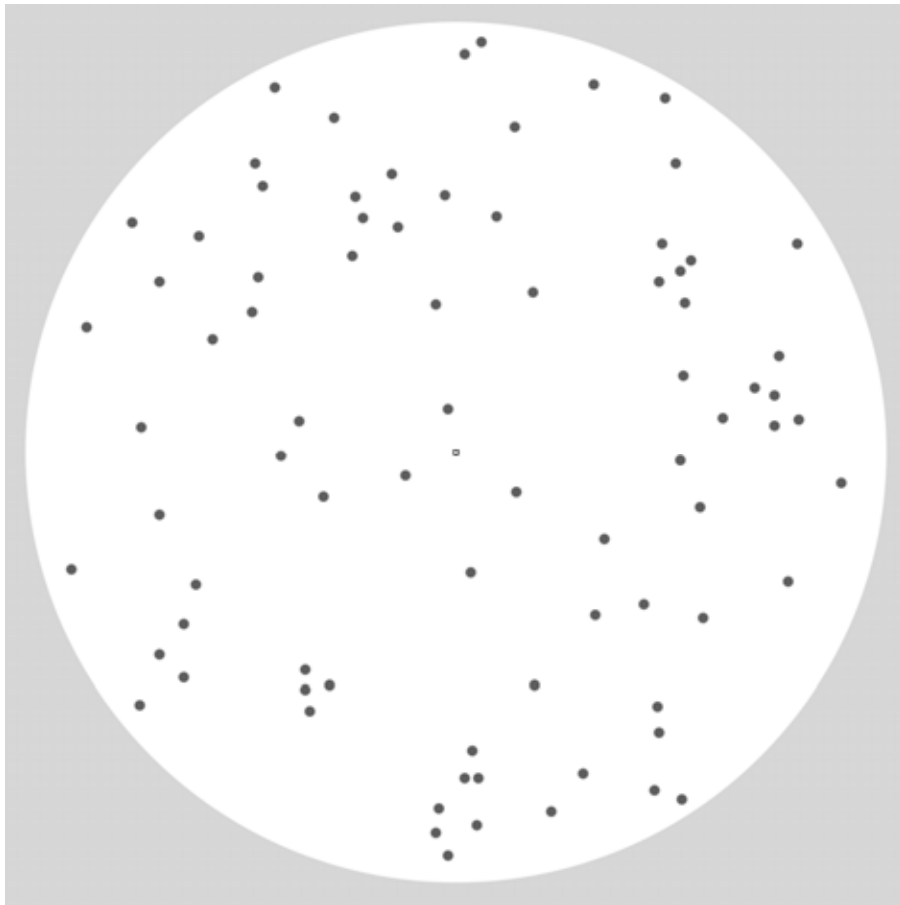


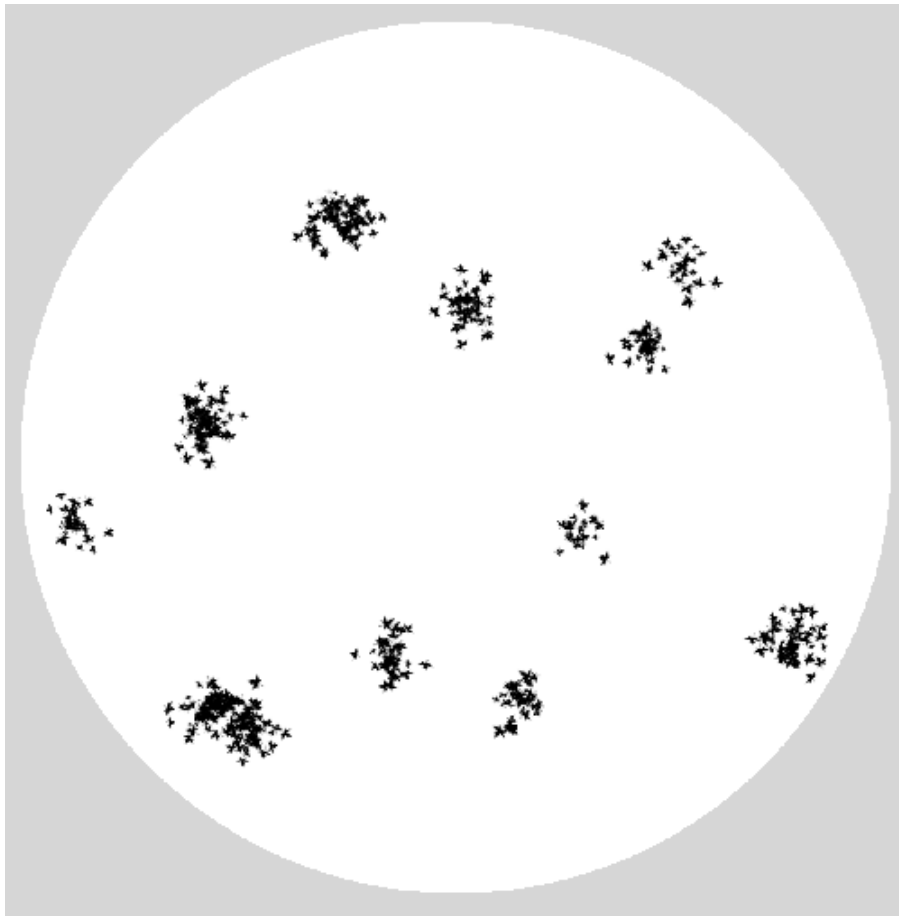


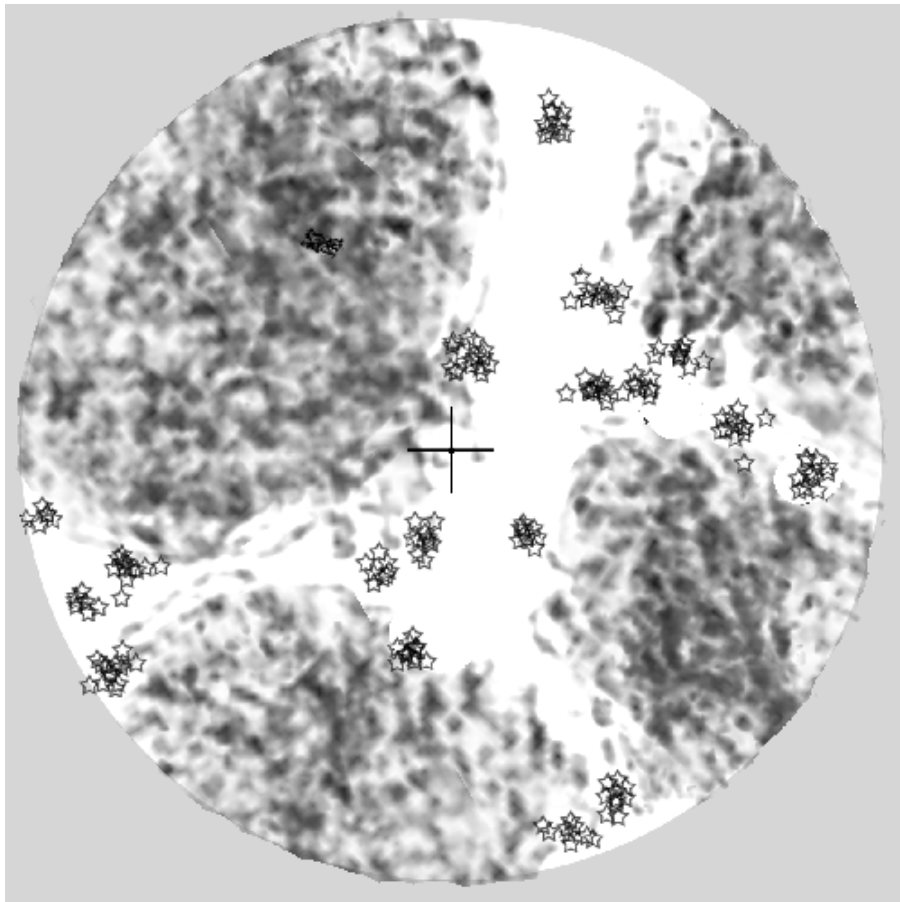


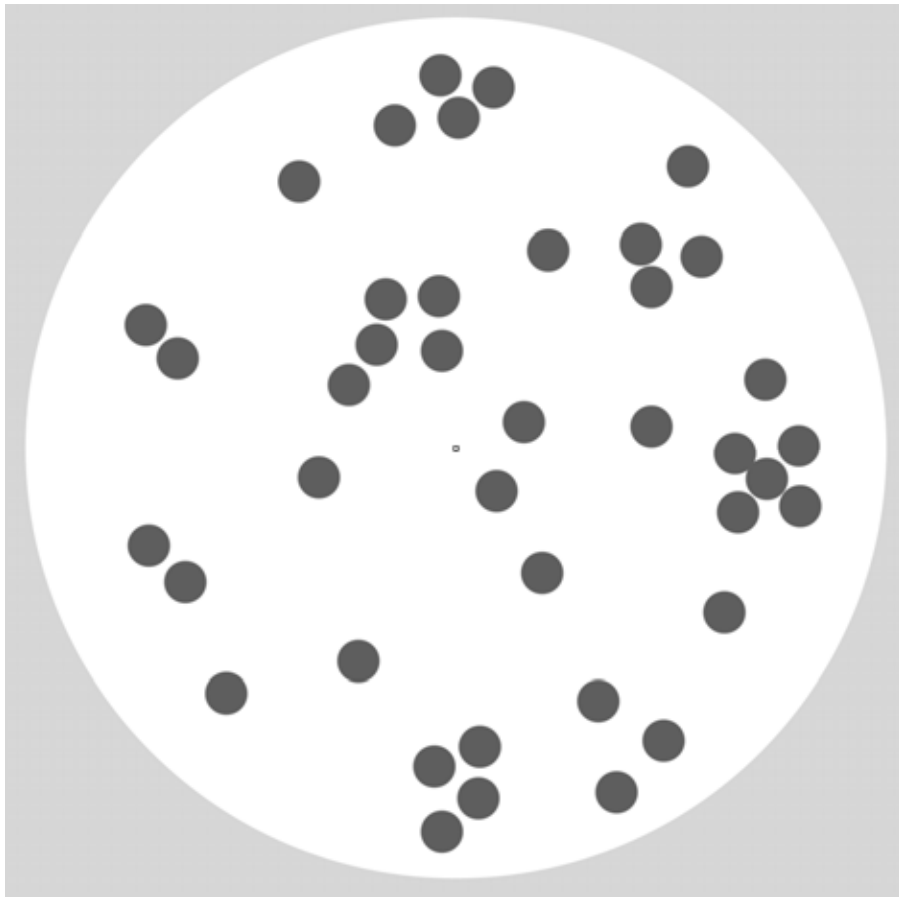


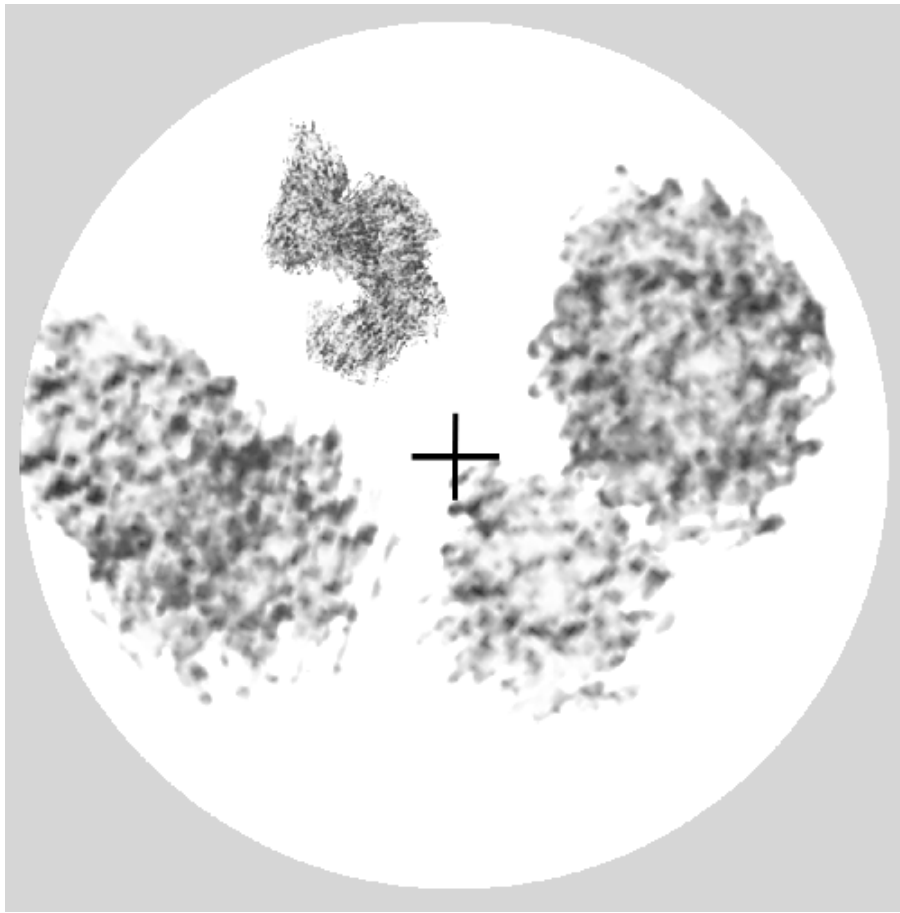


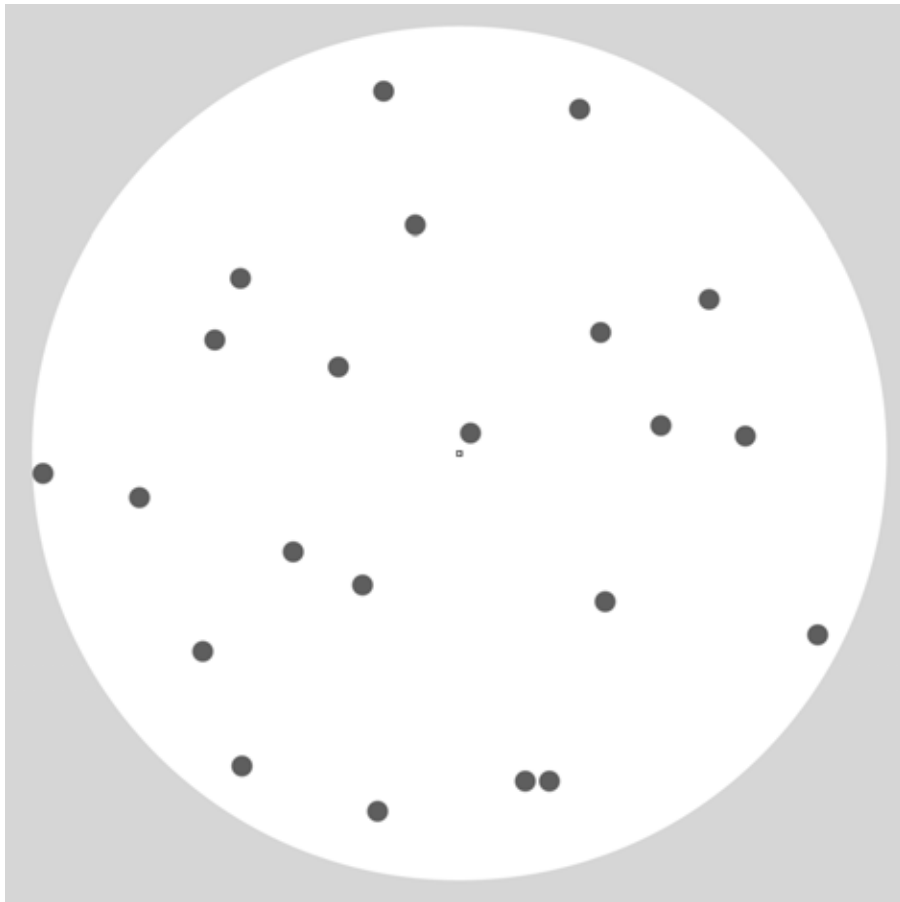


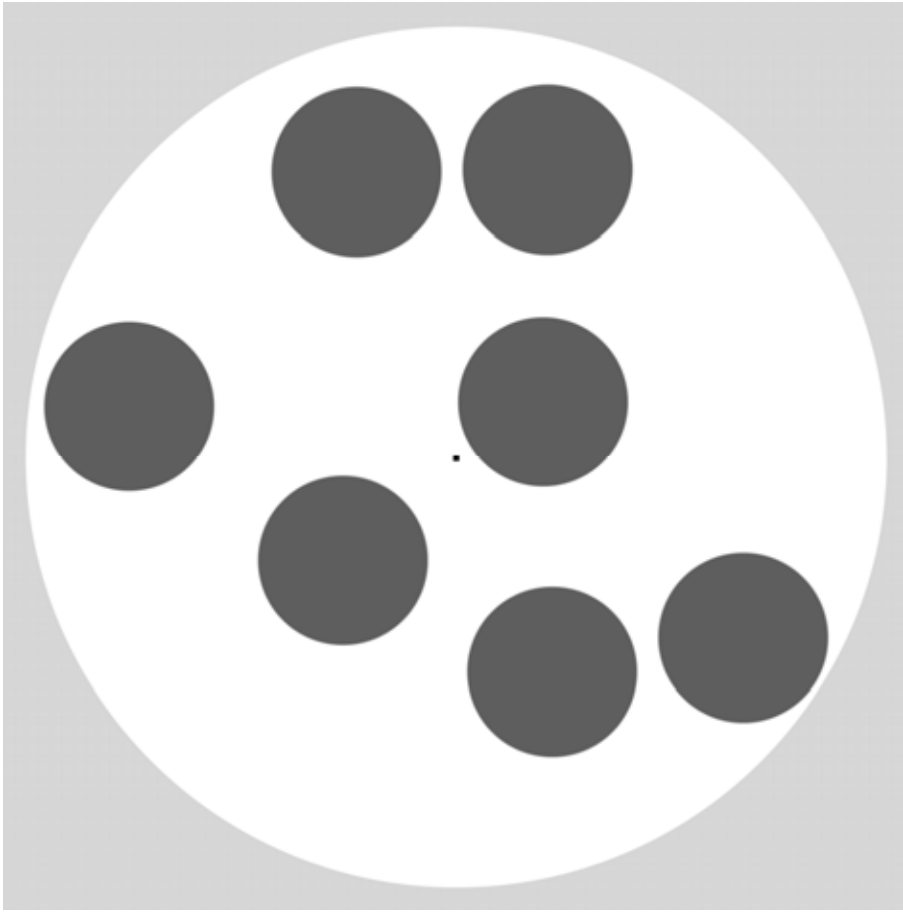


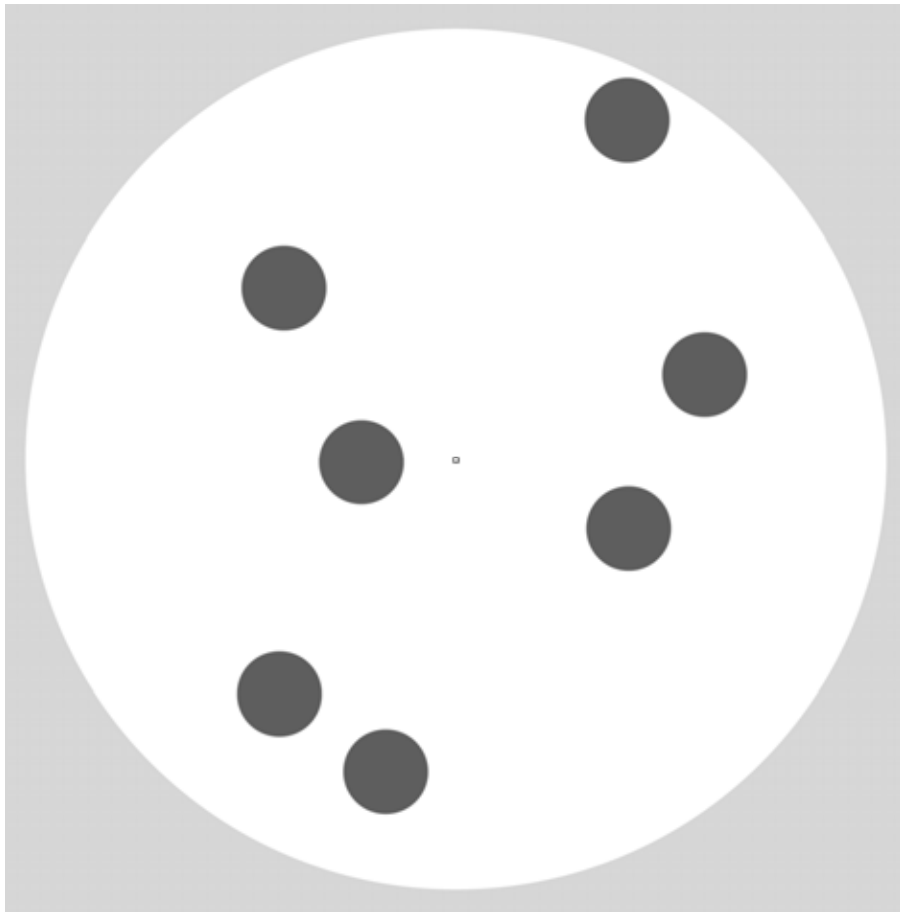












END OF CANOPY COVER PRACTICE PICTURES

**PRACTICE PICTURES FOR ESTIMATING AVERAGE
BROWSE CANOPY DEPTH ARE GIVEN BELOW.....**

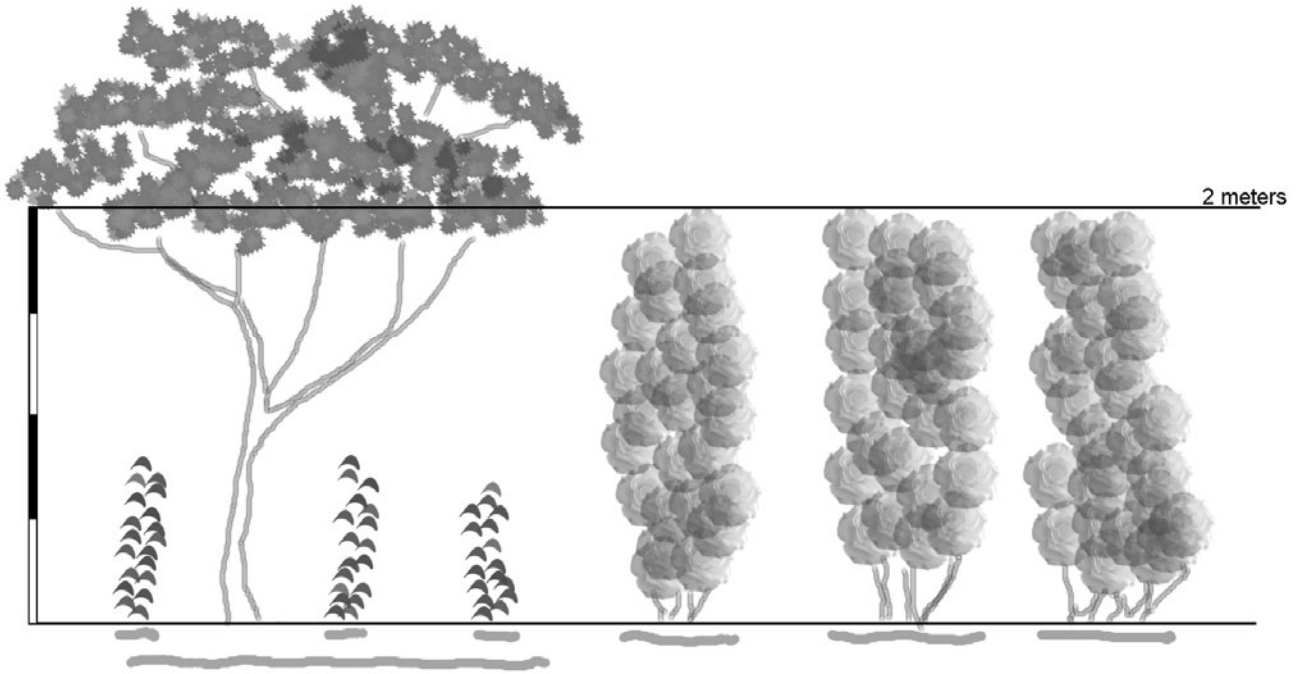
Print out the 5
pages below,
and practice
estimating
weighted
average canopy
depth for plots

Estimate the weighted average available canopy depth:
 weighted by contribution to total canopy cover
 (assess all plant types together)



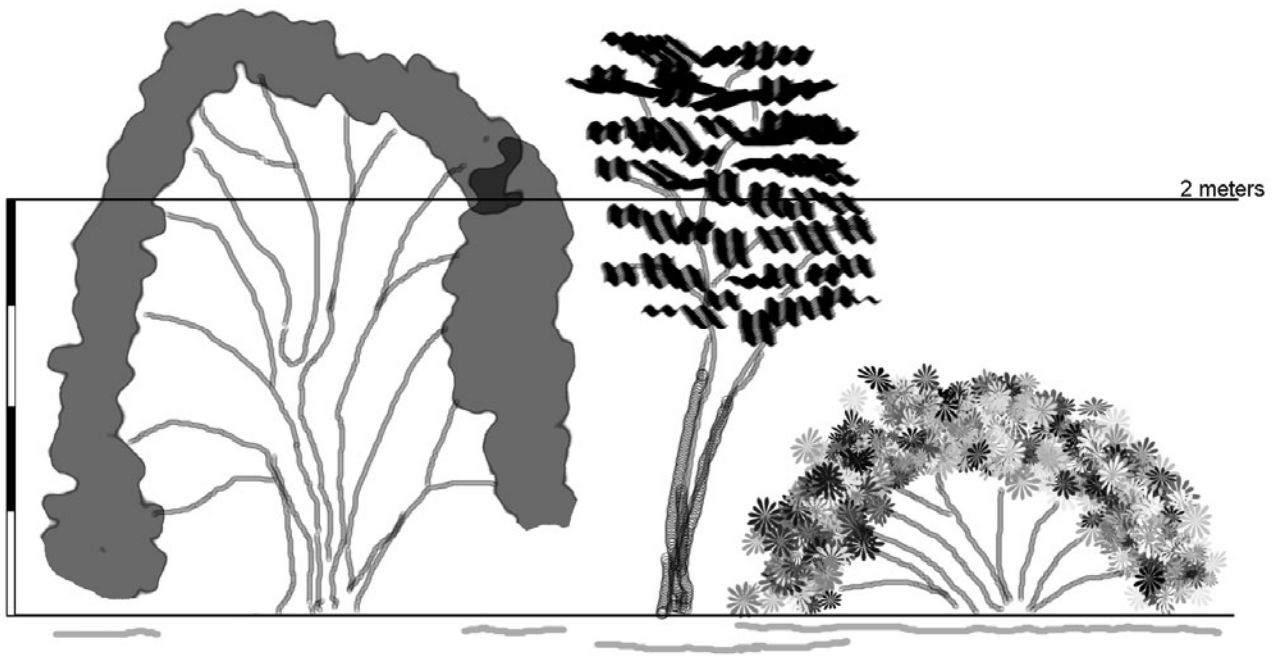
Example 1. Use the relative contribution to total canopy cover to roughly estimate the % to shade in for classes of plant canopy depth (see Visual Browse Assessment Manual, pg 11). Not every single canopy type can be filled in the table below on its own, thus similar types need to be average first, then entered into the table. Shade lines are shown at the bottom of each picture indicating the ground projected canopy cover of each plant. All the shade-lines placed end to end would signify total cover.

Canopy Depth (meters)	2											Row totals (each shaded cell = 1)
	1.9											
	1.8											
	1.7											
	1.6											
	1.5											
	1.4											
	1.3											
	1.2											
	1.1											
	1											
	0.9											
	0.8											
	0.7											
	0.6											
	0.5											
	0.4											
	0.3											
	0.2											
	0.1											
0	10	20	30	40	50	60	70	80	90	100	Sum:	
% of total canopy cover											Sum=avg depth in cm, Sum / 200=proportion vertical fill	
											200	



Example 3.

Canopy Depth (meters)	2																		
	1.9																		
	1.8																		
	1.7																		
	1.6																		
	1.5																		
	1.4																		
	1.3																		
	1.2																		
	1.1																		
	1																		
	0.9																		
	0.8																		
	0.7																		
	0.6																		
	0.5																		
	0.4																		
	0.3																		
	0.2																		
0.1																			
0	10	20	30	40	50	60	70	80	90	100	200								
% of total canopy cover																			



Example 4.

Canopy Depth (meters)	2																				
	1.9																				
	1.8																				
	1.7																				
	1.6																				
	1.5																				
	1.4																				
	1.3																				
	1.2																				
	1.1																				
	1																				
	0.9																				
	0.8																				
	0.7																				
	0.6																				
	0.5																				
	0.4																				
	0.3																				
	0.2																				
	0.1																				
0	0	10	20	30	40	50	60	70	80	90	100	200									
% of total canopy cover																					

**Appendix 2 A. Datasheet for Survey of Black Rhino Browse Availability
(Use App. 2C for species contribution to this browse)**

PLOT No. :	Date:	Veg.Type:
GPS:	Photo numbers:	

Calculations for "woody"browse availability:

Subtype A: % of Area	Avg.Ht (m)		Divide by 2m	X	Calc. BA Proportion → (%BA)	Overall %BA
	% canopy cover		As Proportion			
Subtype B: % of Area	Avg.Ht (m)		Divide by 2m	X	Calc. BA Proportion → (%BA)	
	% canopy cover		As Proportion			
HERBS	Avg.Ht (m)		Divide by 2m	X	Calc. BA Proportion → (%BA)	
	% canopy cover		As Proportion			

Notes:

PROPORTION VERTICAL FILL CALCULATOR

CANOPY DEPTH	2.0											
	1.9											
	1.8											
	1.7											
	1.6											
	1.5											
	1.4											
	1.3											
	1.2											
	1.1											
	1.0											
	0.9											
	0.8											
	0.7											
	0.6											
	0.5											
	0.4											
	0.3											
	0.2											
	0.1											
	0.0	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	200

% OF TOTAL CANOPY COVER

WEIGHTED % VERTICAL FILL (filled segments/2):

(filled segments)
(Total segments)
Proportion->
(%/100)

Appendix 2 B. Datasheet for Rapid Survey of Black Rhino Browse Availability
 Use one pair of columns for each site / plot.

Prop? = Proportion Within Vegetation type, or Certainty About Score (give a proportion value between 0 and 1 - make sure assigned proportions sum to 1)
 Wt'd Avg = Weighted Average BA Score = Mid-class proportion x ? proportion

Site / Plot No.:	Prop?		Wt'd Avg.		Prop?		Wt'd Avg.		Prop?		Wt'd Avg.		Prop?		Wt'd Avg.		Prop?		Wt'd Avg.		
Vegetation Type:	Mid-class proportion	?	Wt'd Avg.	?	Mid-class proportion	?	Wt'd Avg.	?	Mid-class proportion	?	Wt'd Avg.	?	Mid-class proportion	?	Wt'd Avg.	?	Mid-class proportion	?	Wt'd Avg.	?	
0-0.5%	x 0.0025																				
0.5-1%	x 0.0075																				
1-2%	x 0.015																				
2-5%	x 0.035																				
5-10%	x 0.075																				
10-15%	x 0.125																				
15-20%	x 0.175																				
20-30%	x 0.25																				
30-40%	x 0.35																				
40-50%	x 0.45																				
50-60%	x 0.55																				
60-70%	x 0.65																				
70-100%	x 0.85																				
Sum->																					

