Monitoring of prescribed burnings

Why monitoring?

- Monitoring gives you direct and long term **results** of the burning
- Monitoring helps you to **evaluate** the burning -> **improve** future burnings

"Direct monitoring method"

- Gives a **direct result and evaluation** of the burning
- Measuring **before**, **during** and **after** burning
- Outcome: Short report
- Equipment (+camera + gps+ ruler)

Mesuring before burning

- At **8 reference points** (+-) which are marked with metal stick (and paint), GPS to save point
  - Photo from point (N, E, S, W)
  - Basal area for tree species (tree density)
  - Medium tree height and lower crown height
  - Soil moisture (on a scale 1-5)
  - Volume of dead wood (if any)
- Thickness of humus layer in 100 points at two transects (lines)
- Documentation of specific values (photo and coordinates)
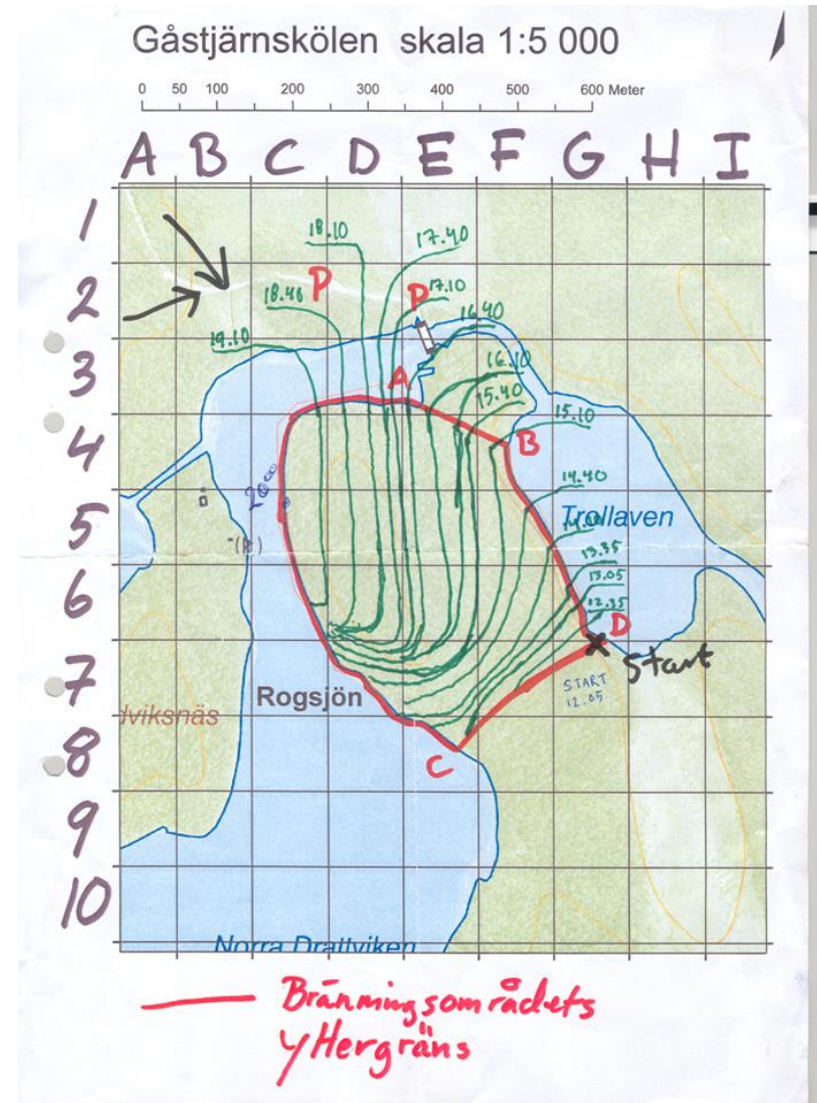- (Optional: aerial photos)

Transects and points…
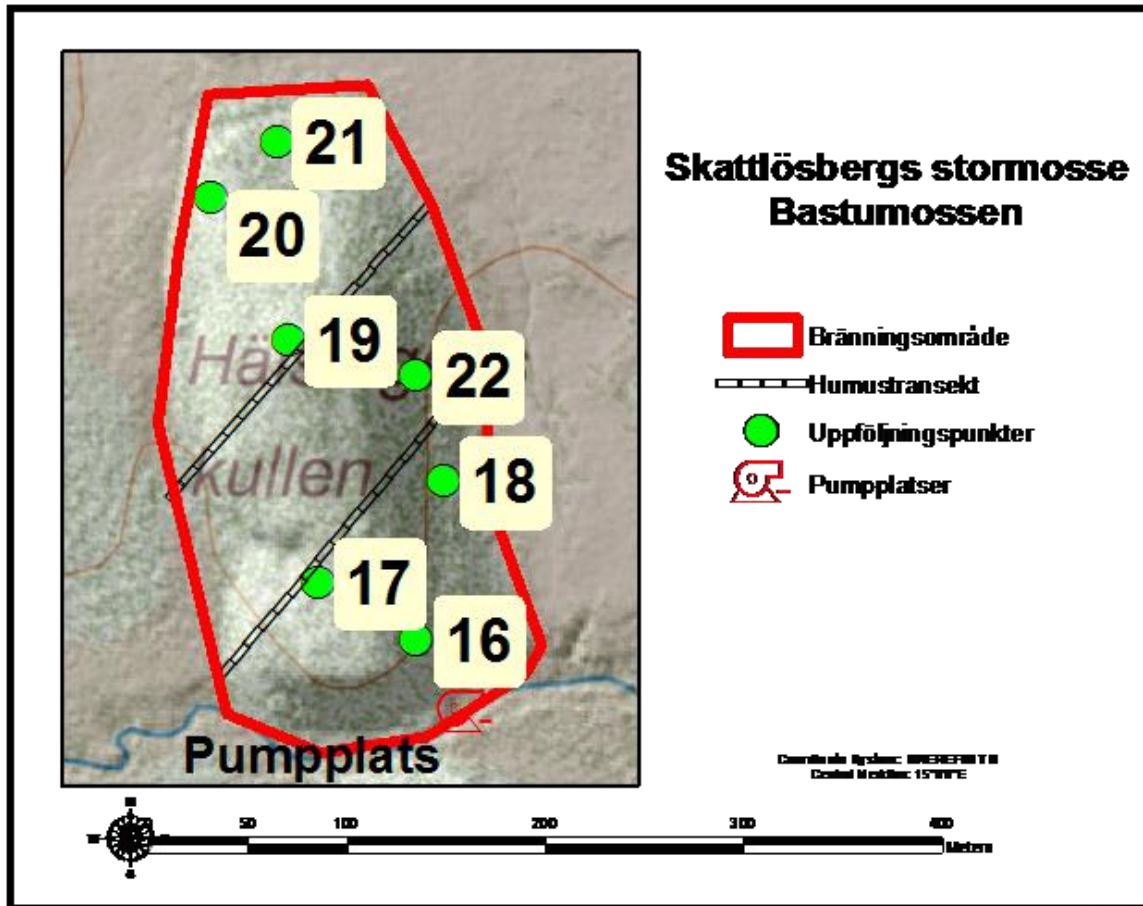
Measuring during burning

- Weather data (every 30 minutes)
  - Temperature, humidity (Rh%) and wind speed and direction
  - Weather station or manually
- Position of flame front (map) every 30 minutes
- Ignition pattern, flame height
- Notes of interest: escapes, torching etc.

Flame height?

Measuring after burning

- Fire weather Index (FWI) –data
- Reference points:
  - Photos (N, E, S, W)
  - Scorching height
  - Tree mortality
  - Proportion of trees with visible resin (future fire scars)
  - Volume of dead wood
- Thickness of humus layer at transects
- Notes of interest: marks of wood peckers, exposed mineral soil etc.
- Aerial photos…

datum	Temp	RH	Vind	Vindriktn	Nederb	FFMC	DMC	DC	ISI	BUI	FWI	FWI-index
2016-06-03	25.8	32	2.1	N	0.0	91.4	18.7	68.1	7.7	22.2	12.1	3
2016-06-04	15.3	36	2.3	NNO	0.0	91.0	21.5	74.3	7.4	25.0	12.5	3
2016-06-05	14.8	34	3.2	NNO	0.0	91.0	24.3	80.3	8.8	27.7	14.9	3
2016-06-06	19.9	40	3.7	VSV	0.0	90.7	27.6	87.3	9.2	30.8	16.4	3
2016-06-07	22.9	44	2.8	SV	0.1	90.5	31.1	94.8	7.7	34.2	15.0	3
2016-06-08	13.8	33	5.7	NNV	5.3	70.9	22.1	93.0	1.8	27.7	3.6	2
2016-06-09	13.7	33	3.1	NV	0.0	84.0	24.7	98.9	3.2	30.4	6.8	2
2016-06-10	8.0	62	4.9	N	1.1	78.5	25.6	103.8	2.4	31.7	5.3	2
2016-06-11	11.0	53	2.6	NO	0.9	79.7	27.1	109.1	1.8	33.5	4.0	2
2016-06-12	15.7	43	0.6	ONO	0.2	84.8	29.7	115.4	2.3	36.1	5.5	2
2016-06-13	18.6	35	0.2	S	0.0	88.1	33.0	122.1	3.4	39.4	8.4	3
2016-06-14	20.3	31	1.9	SO	0.0	90.4	36.9	129.2	6.5	43.1	14.9	3
2016-06-15	19.5	38	3.0	OSO	0.0	90.5	40.3	136.1	7.8	46.3	17.9	4
2016-06-16	20.7	36	4.0	NO	0.0	90.5	43.9	143.2	9.6	49.7	21.5	4
2016-06-17	13.2	94	1.1	NNO	9.1	28.4	23.3	131.6	0.0	32.3	0.0	1
2016-06-18	11.9	92	3.6	VNV	6.9	19.8	13.3	125.2	0.0	21.0	0.0	1
2016-06-19	15.1	53	2.8	SV	0.0	56.0	15.3	131.3	0.5	23.8	0.5	1
2016-06-20	21.4	40	2.9	SSV	0.0	81.5	18.9	138.5	2.3	28.2	4.6	2
2016-06-21	17.2	98	3.7	SSO	1.8	58.3	17.3	145.0	0.7	26.6	0.8	1
2016-06-22	19.8	56	1.5	SV	0.0	76.4	19.7	152.0	1.1	29.8	1.9	2

Aerial photos

- For estimation of overall tree mortality

How the monitoring results are used

- Written report:
  - Description of burnt area before and after the burning
  - Description of weather conditions at burning and FWI-data at burning day
  - Description of monitoring data
  - Description of the targets/goals of the burning and to what extent theese were achieved
  - The result of the burn relative to ignition pattern, FWI-data and weather
  - Improvments for future burnings: conditions for "Go!", gnition pattern, organisation, equipment, personel composition
- Discussion within your organisation and/or with entrepreneur ->Change of tacticts, choice of burning areas etc.

Thank you!