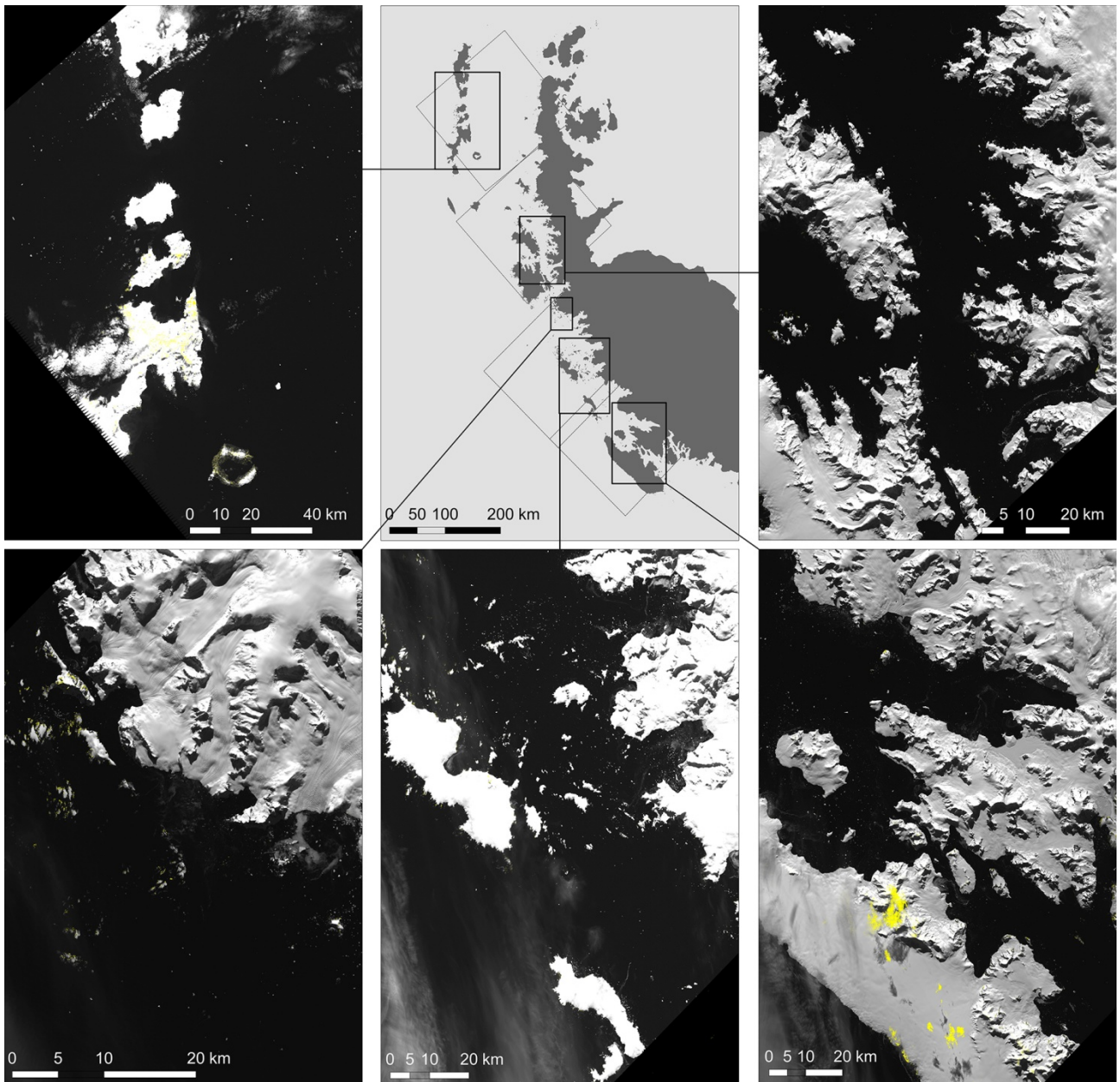


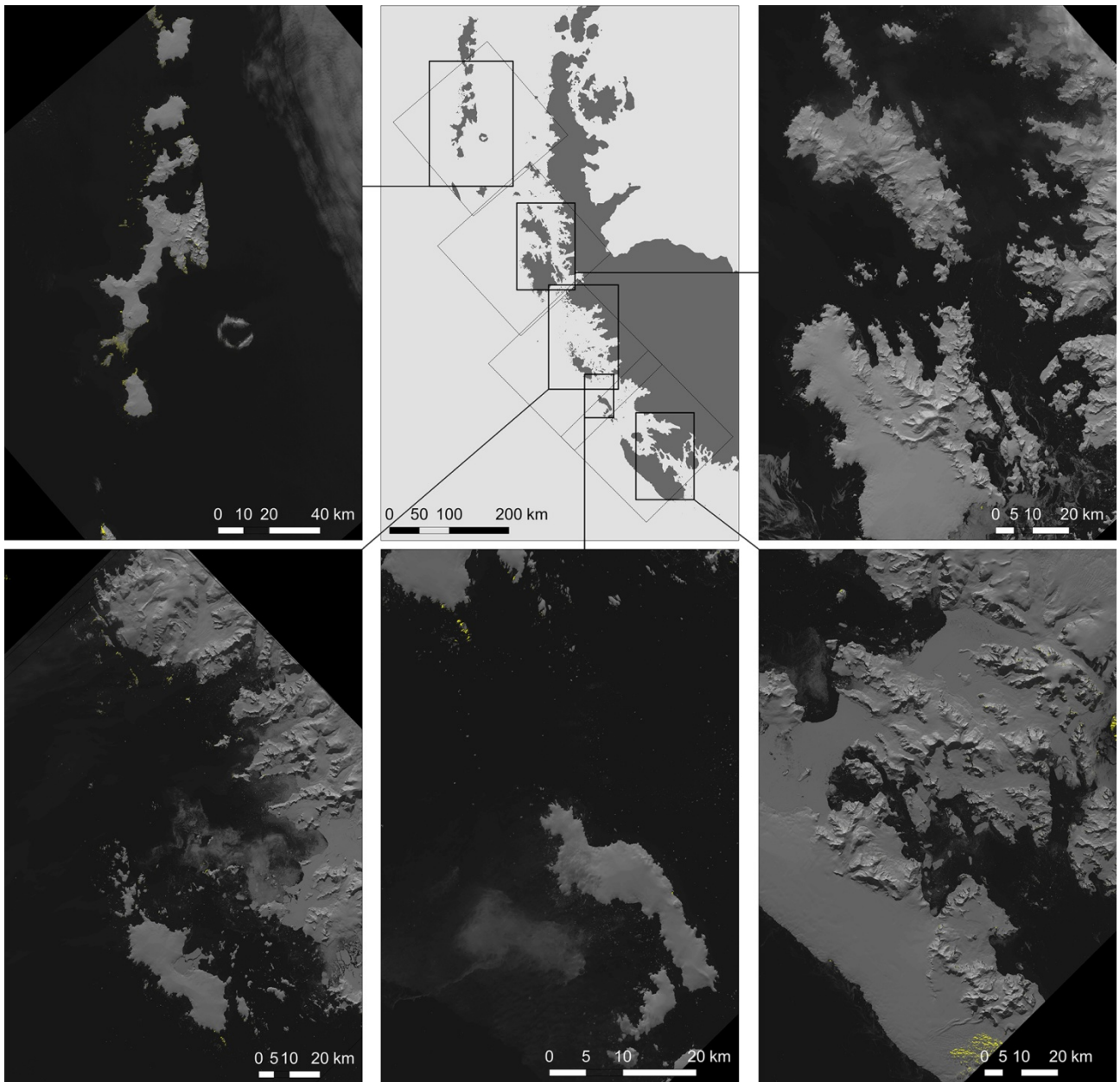
Supplementary file for: Casanovas P., Black M., Fretwell P. & Convey P. 2015. Mapping lichen distribution on the Antarctic Peninsula using remote sensing, lichen spectra and photographic documentation by citizen scientists. *Polar Research* 34. Correspondence: Peter Convey, British Antarctic Survey, Natural Environment Research Council, High Cross, Madingley Road, Cambridge CB3 0ET, UK. E-mail: pcon@bas.ac.uk



Supplementary Fig. S1. General view of Hannah Point (Livingston Island), as an example of the extent of vegetated areas in some of the sites studied. Note the people in the picture (in red) for scale.



Supplementary Fig. S2. Matched filter results (yellow) for all Landsat 7 scenes from the Antarctic Peninsula.



Supplementary Fig. S3. Matched filter results (yellow) for all Landsat 8 scenes from the Antarctic Peninsula.

Supplementary Table S1. List of Landsat 8 and Landsat 7 Enhanced Thematic Mapper scenes used.

Path	Row	Acquisition	Area	Sites	Sun elevation	Sun azimuth
217	104	19 Jan. 2003	South Shetland Islands	Barrientos Island; Half Moon Island; Hannah Point (Livingston Island); Bailey Head, Whalers Bay, Entrance Point (Deception Island)	37.24016450	61.24016450
220	106	19 Feb. 2001	Graham Coast	Port Charcot (Booth Island); Pleneau Island; Petermann Island	25.45243389	57.89240050
220	107	19 Feb. 2001	Marguerite Bay	Lagoon Island	24.30743932	58.64347848
218	105	21 Feb. 2001	Gerlache Strait	Mikkelson Harbour; Spigot Peak; Orne Islands; Georges Point (Ronge Island); Cuverville Island; Danco Island; Beneden Head; Neko Harbour; Almirante Brown Station; Waterboat Point; Useful Island	25.94394932	56.94079002
218	104	16 Jan. 2014	South Shetland Islands	Barrientos Island; Half Moon Island; Hannah Point (Livingston Island); Bailey Head, Whalers Bay, Entrance Point (Deception Island)	38.20892734	57.59317797
219	105	06 Dec. 2013	Gerlache Strait	Mikkelson Harbour; Spigot Peak; Orne Islands; Georges Point (Ronge Island); Cuverville Island; Danco Island; Beneden Head; Neko Harbour; Almirante Brown Station; Waterboat Point; Useful Island; Damoy Point; Port Lockroy	40.32173934	53.43987553
219	108	08 Feb. 2014	Marguerite Bay	Lagoon Island; Avian Island; Red Rock Ridge	27.64688531	58.26700749
220	106	30 Jan. 2014	Graham Coast	Port Charcot (Booth Island); Pleneau Island; Petermann Island	32.56451056	57.64357635

Supplementary Table S2. Sites used for ground truthing.

Site	Latitude	Longitude	Years of visits	Presence of <i>Buellia</i> sp.	Presence of <i>Caloplaca</i> sp.	Presence of <i>Usnea</i> sp.
Barrientos Island	-59.75	-62.4	2010, 2012	Yes	Yes	Yes
Half Moon Island	-59.9	-62.59	2010, 2011	Yes	Yes	No records
Bailey Head (Deception Island)	-60.5	-62.96	2011	Yes	Yes	No records
Neptune's Window (Deception Island)	-60.53	-62.98	2010	Yes	No records	Yes
Entrance Point (Deception Island)	-60.55	-62.99	2010, 2011	Yes	Yes	Yes
Whalers Bay (Deception Island)	-60.55	-62.97	2010	Yes	Yes	Yes
Hannah Point (Livingston Island)	-60.6	-62.64	2010, 2012	Yes	Yes	Yes
Mikkelson Harbour	-60.79	-63.9	2011	Yes	Yes	Yes
Damoy Point	-64.81	-63.52	2010, 2012	Yes	Yes	No records
Spigot Peak	-62.55	-64.62	2010	Yes	Yes	No records
Danco Island	-62.59	-64.79	2010, 2012	Yes	No records	Yes
Cuverville Island	-62.62	-64.68	2010, 2011, 2012	Yes	Yes	Yes
Georges Point (Ronge Island)	-62.66	-64.67	2010, 2011	Yes	Yes	No records
Orne Islands	-62.66	-64.66	2010	No records	Yes ^a	No records
Beneden Head	-62.69	-64.76	2011, 2012	Yes	Yes	Yes
Waterboat Point	-62.85	-64.82	2011	Yes	Yes	Yes
Almirante Brown Station	-62.86	-64.89	2010, 2012	Yes	Yes	Yes
Useful Island	-62.86	-64.71	2010	Yes	Yes	No records
Port Charcot (Booth Island)	-64.03	-65.06	2010	Yes	Yes	Yes
Pleneau Island	-64.07	-65.11	2010	Yes	Yes	No records
Petermann Island	-64.14	-65.16	2010	Yes ^b	Yes	No records
Lagoon Island	-68.23	-67.59	2014	Yes	Yes	Yes

^a Recorded on a field trip in January 2013, not included by Casanovas et al. (2014). ^b From Lamb's collections (1968).

Supplementary Table S3. Comparison between the pixels detected as lichen-covered by the matched filtering analysis and Normalized Difference Vegetation Index (NDVI), for all the sites studied.

Site name	Number of pixels detected as lichen-covered by the matched filtering analysis				Number of pixels detected as vegetation-covered by NDVI threshold		
	<i>Buellia</i>	<i>Caloplaca</i>	<i>Usnea</i>	Lichen mean	NDVI (0.05)	NDVI (0.1)	NDVI (0.2)
Landsat 8							
Barrientos Island	128	96	109	111	131	118	65
Half Moon Island	11	7	6	8	9	1	0
Baily Head	123	61	75	86.3	144	91	11
Neptun's Window	45	31	29	35	25	2	0
Entrance Point	41	24	13	26	45	20	0
Whaler's Bay	5	5	5	5	6	5	4
Hannah Point	50	36	36	40.6	46	28	14
Spigot Peak	7	0	7	4.6	2	1	0
Danco Island	2	2	2	2	0	0	0
Cuverville Island	24	20	24	22.6	19	7	1
Waterboat Point	0	0	0	0	3	2	0
Port Charcot	0	7	0	2.3	0	0	0
Pleneau Island	0	58	0	19.3	33	24	8
Petermann Island	0	175	0	58.3	138	107	47
Lagoon Island	0	0	3	1	18	12	18
Landsat 7							
Barrientos Island	0	104	143	82.3	229	214	146
Half Moon Island	0	4	8	4	60	30	0
Baily Head	43	47	142	77.3	382	279	63
Neptun's Window	34	35	97	55.3	70	20	0
Whaler's Bay	16	9	65	30	2	0	0
Entrance Point	24	22	73	39.6	102	52	6
Hannah Point	15	40	97	50.6	97	53	29
Mikkelson Harbor	5	0	0	1.6	2	0	0
Spigot Peak	3	2	9	4.6	24	18	4
Danco Island	5	45	111	53.6	140	39	0
Cuverville Island	0	0	6	2	244	139	61
Georges Point (Ronge Island)	5	0	9	4.6	68	19	0
Orne Islands	8	0	2	3.3	13	1	0
Beneden Head	0	0	1	0.3	2	0	0
Waterboat Point	0	0	0	0	14	3	0
Almirante Brown Station	0	1	1	0.6	0	0	0
Damoy Point	0	0	0	0	0	0	0
Useful Island	3	15	73	30.3	50	8	0
Port Charcot	25	16	26	22.3	85	12	2
Pleneau Island	0	0	0	0	61	45	20
Petermann Island	9	5	7	7	217	173	81
Lagoon Island	2	0	2	1.3	53	20	0