

## Supplementary Materials

**Table S1** Summary of datasets, the platform they were derived from, the dates used, their respective spatial resolution and reference details.

Dataset	Platform	Dates	Spatial Resolution (m)	Reference
Multispectral bands and indices	Worldview-2	23/07/2017, 24/04/2018, 02/08/2018, 27/04/2019, 18/09/2019, 20/03/2020, 26/09/2020, 23/04/2021 & 25/09/2021	0.5 to 2	[104]
Digital Elevation Model	LiDAR	Autumn 2018	1	[105]
Canopy Height Model	LiDAR	Autumn 2018	1	[105]
Aerial Imagery	Nearmap	25/07/2017, 11/05/2018, 09/09/2018, 24/03/2019, 27/10/2019, 17/04/2020, 29/10/2020, 08/05/2021 & 10/09/2021	7 cm	[48]
Orthomosaic	DJI Phantom 4	Autumn 2018	< 2 cm	[50]

**Table S2** Summary of the specifications of the Worldview-2 sensor.

Worldview-2 Specifications	Variable	Variable Specifications
Panchromatic Band	Panchromatic	450-800
Multi-Spectral Bands	Coastal Blue	396-458
	Blue	442-525
	Green	506-586
	Yellow	584-632
	Red	624-694
	Red-Edge	99-749
	NIR1	765-901
	NIR2	856-1043
Sensor Characteristics	Orbit Altitude	770 km
	Inclination Orbit	97.2°
	Swath (nadir)	16.4 km
	Revisitation Period	14 days

**Table S3** Confusion matrices that demonstrate the agreement and precision of validation points compared to classified outputs for each land cover map.

2017 Spring	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	116	0	0	1	3	0	1	0	0	0	121	0.96
Mixed Shrubs and Grasses	0	19	0	3	0	0	0	1	0	0	23	0.83
Vegetation Dieback	3	0	28	1	0	1	1	0	0	0	34	0.82
Common Reed	3	0	1	54	0	2	0	0	0	0	60	0.90
Mangroves	1	0	0	1	50	1	3	0	0	0	56	0.89
Saltmarsh	0	2	1	2	0	32	0	0	0	0	37	0.86
Mangrove Fern	0	0	0	3	0	0	31	0	0	0	34	0.91
Exposed Soil	0	1	0	0	0	0	0	25	0	0	26	0.96
Water	0	0	1	0	0	0	0	0	26	0	27	0.96
Shadows	1	0	0	0	0	0	0	0	0	30	31	0.97
<b>Total</b>	124	22	31	65	53	36	36	26	26	30	411	
<b>Producers' accuracy</b>	0.94	0.86	0.90	0.83	0.94	0.89	0.86	0.96	1.00	1.00		
2018 Autumn	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	151	0	0	1	0	0	0	0	0	2	154	0.98

Mixed Shrubs and Grasses	0	14	0	2	0	0	0	3	0	0	19	0.74
Vegetation Dieback	1	1	32	4	0	2	0	0	0	0	40	0.80
Common Reed	3	0	2	98	0	2	0	0	0	0	105	0.93
Mangroves	1	0	0	2	51	2	1	0	0	0	57	0.89
Saltmarsh	0	0	2	2	0	34	0	0	0	0	38	0.89
Mangrove Fern	0	0	1	2	0	0	27	0	0	0	30	0.90
Exposed Soil	0	0	0	3	0	1	0	14	0	0	18	0.78
Water	0	0	0	0	0	0	0	0	32	0	32	1.00
Shadows	1	0	0	0	0	0	0	0	0	14	15	0.93
<b>Total</b>	157	15	37	114	51	41	28	17	32	16	467	
<b>Producers' accuracy</b>	0.96	0.93	0.86	0.86	1.00	0.83	0.96	0.82	1.00	0.88		
<b>2018 Spring</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	267	0	0	0	0	3	0	0	0	1	271	0.99
Mixed Shrubs and Grasses	0	35	0	3	0	1	0	1	0	0	40	0.88
Vegetation Dieback	2	0	42	0	1	0	0	0	0	0	45	0.93
Common Reed	0	2	0	96	0	1	0	0	0	0	99	0.97
Mangroves	1	0	0	0	59	1	0	0	0	0	61	0.97
Saltmarsh	2	2	3	1	0	74	0	5	0	0	87	0.85

Mangrove Fern	3	0	0	0	2	0	30	0	0	0	35	0.86
Exposed Soil	0	2	2	2	0	6	0	41	0	0	53	0.77
Water	0	2	0	0	0	0	0	2	48	0	52	0.92
Shadows	0	2	0	1	1	0	0	0	2	30	36	0.83
<b>Total</b>	275	45	47	103	63	86	30	49	50	31	722	
<b>Producers' accuracy</b>	0.97	0.78	0.89	0.93	0.94	0.86	1.00	0.84	0.96	0.97		
<b>2019 Autumn</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	148	0	0	0	3	0	0	0	0	1	152	0.97
Mixed Shrubs and Grasses	0	28	0	9	0	0	0	0	1	0	38	0.74
Vegetation Dieback	1	0	18	2	0	1	0	0	0	0	22	0.82
Common Reed	1	2	1	81	0	1	0	0	0	0	86	0.94
Mangroves	2	0	0	0	49	0	0	0	0	0	51	0.96
Saltmarsh	3	0	0	2	0	46	0	0	2	0	53	0.87
Mangrove Fern	0	0	0	0	0	0	27	0	0	0	27	1.00
Exposed Soil	0	1	0	1	0	1	0	6	0	0	9	0.67
Water	0	1	0	0	0	0	0	0	27	0	28	0.96
Shadows	2	1	0	1	0	0	0	0	0	26	30	0.87
<b>Total</b>	157	33	19	96	52	49	27	6	30	27	456	
<b>Producers' accuracy</b>	0.94	0.85	0.95	0.84	0.94	0.94	1.00	1.00	0.90	0.96		

<b>2019 Spring</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	270	0	0	3	1	1	0	0	0	2	277	0.97
Mixed Shrubs and Grasses	0	32	0	2	0	0	0	0	1	0	35	0.91
Vegetation Dieback	1	0	16	2	0	1	0	1	0	0	21	0.76
Common Reed	1	1	0	76	0	0	0	0	0	0	78	0.97
Mangroves	4	0	0	0	68	0	0	0	0	0	72	0.94
Saltmarsh	0	0	0	0	0	63	0	0	0	0	63	1.00
Mangrove Fern	2	0	0	1	0	0	18	0	0	0	21	0.86
Exposed Soil	0	1	1	1	0	6	0	6	0	0	15	0.40
Water	1	1	0	0	0	2	0	0	70	0	74	0.95
Shadows	1	0	0	0	0	0	0	0	0	22	23	0.96
<b>Total</b>	280	35	17	85	69	73	18	7	71	24	641	
<b>Producers' accuracy</b>	0.96	0.91	0.94	0.89	0.99	0.86	1.00	0.86	0.99	0.92		
<b>2020 Autumn</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	134	1	0	4	2	0	0	0	0	1	142	0.94
Mixed Shrubs and Grasses	2	45	0	0	0	0	0	0	3	0	50	0.90

Vegetation Dieback	3	0	21	1	1	2	0	0	0	0	28	0.75
Common Reed	4	1	1	63	0	1	1	0	0	0	71	0.89
Mangroves	1	0	0	0	49	0	0	0	0	1	51	0.96
Saltmarsh	0	1	0	1	0	26	3	0	0	0	31	0.84
Mangrove Fern	0	0	0	3	0	0	21	0	0	0	24	0.88
Exposed Soil	0	0	0	0	0	0	0	11	0	0	11	1.00
Water	1	0	0	0	0	2	0	0	45	0	48	0.94
Shadows	1	0	0	0	0	1	0	0	0	10	12	0.83
<b>Total</b>	146	48	22	72	52	32	25	11	48	12	425	
<b>Producers' accuracy</b>	0.92	0.94	0.95	0.88	0.94	0.81	0.84	1.00	0.94	0.83		
<b>2020 Spring</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	156	0	1	3	1	0	0	0	0	1	162	0.96
Mixed Shrubs and Grasses	1	44	0	0	0	0	0	1	0	0	46	0.96
Vegetation Dieback	1	0	31	1	1	0	0	0	0	0	34	0.91
Common Reed	5	1	0	82	0	1	0	0	0	0	89	0.92
Mangroves	4	0	1	1	59	1	0	0	0	0	66	0.89
Saltmarsh	0	0	1	2	0	45	0	0	1	0	49	0.92
Mangrove Fern	0	0	0	3	1	0	27	0	0	0	31	0.87
Exposed Soil	0	2	2	1	0	2	0	29	0	0	36	0.81

Water	0	0	0	0	0	0	0	1	21	1	23	0.91
Shadows	0	0	0	0	0	1	0	0	1	10	12	0.83
<b>Total</b>	167	47	36	93	62	50	27	31	23	12	504	
<b>Producers' accuracy</b>	0.93	0.94	0.86	0.88	0.95	0.90	1.00	0.94	0.91	0.83		
<b>2021 Autumn</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy
Mixed She-Oak and Paperbark	149	0	0	0	4	1	1	0	0	1	156	0.96
Mixed Shrubs and Grasses	1	26	0	0	0	0	0	0	1	0	28	0.93
Vegetation Dieback	2	0	17	0	0	0	0	0	0	0	19	0.89
Common Reed	1	1	1	131	1	2	0	0	0	0	137	0.96
Mangroves	3	0	0	0	56	0	0	0	0	0	59	0.95
Saltmarsh	2	0	0	3	1	57	0	0	0	1	64	0.89
Mangrove Fern	6	0	0	0	1	1	28	0	0	1	37	0.76
Exposed Soil	0	0	0	0	0	0	0	13	0	0	13	1.00
Water	0	0	0	0	0	0	0	0	61	1	62	0.98
Shadows	2	0	0	1	0	0	0	0	1	39	43	0.91
<b>Total</b>	166	27	18	135	63	61	29	13	63	43	577	
<b>Producers' accuracy</b>	0.90	0.96	0.94	0.97	0.89	0.93	0.97	1.00	0.97	0.91		
<b>2021 Spring</b>	Mixed She-Oak and Paperbark	Mixed Shrubs and Grasses	Vegetation Dieback	Common Reed	Mangroves	Saltmarsh	Mangrove Fern	Exposed Soil	Water	Shadows	Total	Users' Accuracy



Mixed She-Oak and Paperbark	161	0	0	4	2	0	0	0	0	0	167	0.96
Mixed Shrubs and Grasses	0	13	0	0	0	0	0	0	2	0	15	0.87
Vegetation Dieback	1	0	24	0	2	0	0	0	0	0	27	0.89
Common Reed	0	0	0	82	0	1	0	1	0	0	84	0.98
Mangroves	3	0	0	0	72	4	1	0	0	0	80	0.90
Saltmarsh	1	0	0	3	1	49	0	0	0	0	54	0.91
Mangrove Fern	0	0	0	1	1	2	36	0	0	0	40	0.90
Exposed Soil	0	0	0	0	0	0	0	56	8	0	64	0.88
Water	0	0	0	0	0	1	0	6	63	1	71	0.89
Shadows	0	0	0	0	0	0	0	0	1	48	49	0.98
<b>Total</b>	166	13	24	90	78	57	37	63	74	49	604	
<b>Producers' accuracy</b>	0.97	1.00	1.00	0.91	0.92	0.86	0.97	0.89	0.85	0.98		

**Table S4** Generalised Linear Models (GLMs) summarising changes in the area of wetland vegetation classes over a period of 48 months, between Spring 2017 and 2021 over-time. Arrows illustrate the direction of change, as an increase in area (↑), a decrease in area (↓) or no consistent pattern of change (-).

Land cover Class	Res.DF	Res.Dev	Trend	P Value
Mangroves	7	0.60	↑	0.037
Mangrove fern	7	1.06	↑	0.007
Mixed she-oak and paperbark	7	70.61	↑	0.014
Mixed shrubs and grasses	7	9.64	↓	<0.001
Common Reed	7	62.78	↓	<0.001
Saltmarsh	7	60.261	-	0.672
Vegetation dieback	7	175.83	-	0.429
Exposed soil	7	447.16	-	0.703
Tidal water	7	442.40	-	0.072