Supplementary Materials

Table S1: Number of individuals for each species, regarding the near-surface time series analysis.

Site	Species	Field survey for camera time series	AOI for extracting spectral indices	After "noisy" individual removal using LOESS function for feature selection and classification
Sataf, Southern-facing (S'S)	*Pinus halepensis*	37	35	26
	Pistacia palaestina	91	75	75
	Quercus calliprinos	66	56	56
	Pistacia lentiscus	61	55	50
	Rhamnus lycioides	73	50	49
	Cupressus sempervirens	7	4	-
	Olea europaea	291	238	227
	Ceratonia siliqua	17	15	14
	Sarcopoterium spinosum	63	51	51
	Crataegus azarolus	2	2	-
	Calicotome villosa	89	59	57
	Prunus dulcis	211	80	80
	Herbaceous patches	23	23	23
	Total S'S	**1031**	**743**	**708**
Sataf, Northern-facing (S'N)	*Pinus halepensis*	29	24	22
	Pistacia palaestina	22	13	13
	Quercus calliprinos	132	86	86
	Pistacia lentiscus	10	9	-
	Rhamnus lycioides	41	26	26
	Cupressus sempervirens	4	-	-
	Olea europaea	43	37	33
	Euphorbia hierosolymitana	6	4	-
	Ceratonia siliqua	2	2	-
	Cistus creticus	1	1	-
	Sarcopoterium spinosum	45	33	33
	Crataegus azarolus	2	1	-
	Prasium majus	2	1	-
	Arbutus andrachne	23	14	13
	Calicotome villosa	32	24	24
	Prunus dulcis	22	12	12
	Herbaceous patches	17	17	17
	Total S'N	**433**	**304**	**279**
Mata (M)	*Pinus halepensis*	23	21	-
	Pistacia palaestina	43	34	30
	Quercus calliprinos	208	177	137
	Pistacia lentiscus	130	117	78
	Rhamnus lycioides	69	55	44
	Olea europaea	32	29	17
	Ceratonia siliqua	44	41	27
	Styrax officinalis	4	3	-
	Sarcopoterium spinosum	41	35	29
	Crataegus azarolus	1	-	-
	Anagyris foetida	18	13	13
	Calicotome villosa	65	58	57
	Prunus dulcis	124	95	93
	Herbaceous patches	27	26	26
	Total M	**829**	**704**	**551**

Britanya (B)	*Pinus halepensis*	44	41	14
	Pistacia palaestina	44	43	41
	Pistacia atlantica	2	2	-
	Quercus calliprinos	5	5	-
	Quercus ithaburensis	2	2	-
	Pistacia lentiscus	48	41	32
	Rhamnus lycioides	70	64	58
	Cupressus sempervirens	14	11	-
	Phillyrea latifolia	2	2	-
	Olea europaea	108	100	37
	Ceratonia siliqua	38	34	20
	Sarcopoterium spinosum	56	53	53
	Ficus sp.	1	-	-
	Retama raetam	1	1	-
	Prunus dulcis	39	36	34
	Ziziphus spina-christi	4	2	-
	Herbaceous patches	26	26	25
	Total B	**504**	**463**	**314**
All sites	**Total of four sites**	**2797**	**2214**	**1852**

S2: Technical description of the forward stepwise-selection process

Input:

- **dates** (list of date sand their associated spectral indices)
- **classifier** (either SVM or RF)

Output

- **used_dates** (the dates in the order they were selected)

Process

1. Initialize **used_dates** as an empty list
2. While there are unused dates in **dates**

    2.1. Test the contribution of each of the remaining dates in **dates** to the already used dates in **used_dates** with a cross validation procedure and the input **classifier** (where the spectral indices from all the used dates and the tested date are used together)

    2.2. Add the top-preforming date from (2.1) to **used_dates** and remove it from **dates**

Return **used_dates**

Table S3: Number of individuals for each species, regarding the overhead imagery analysis in site Mata (M).

Species	Field survey	Individuals that were attributed to segments for supervised classification and accuracy assessment[1]
Pinus halepensis	37	52
Pistacia palaestina	36	-
Quercus calliprinos	333	260
Pistacia lentiscus	296	244
Rhamnus lycioides	127	58
Phillyrea latifolia	1	-
Olea europaea	47	45
Ceratonia siliqua	47	-
Styrax officinalis	8	-
Cistus creticus\salviifolius	87	41
Sarcopoterium spinosum	101	68
Crataegus azarolus	2	-
Anagyris foetida	32	-
Arbutus andrachne	2	-
Calicotome villosa	31	-
Prunus dulcis	83	57
Herbaceous patches[2]	-	151
Total	**1270**	**976**

1. Species with less than 40 individuals within the UAV image were omitted from classification
2. Herbaceous patches were digitized by examining the UAV imagery and not in the field survey

Table S4: Confusion matrix for the classification results of the Sataf facing-south site (S'S), using the five optimal dates. The classification was carried out by RF classifier, using all spectral indices.

	P. dulcis	*Q.*	*R.*	*C. siliqua*	*P.*	Herbaceous patches	*C. villosa*	*P.*	*O.*	*P.*	*S.*
P. dulcis	69	0	0	0	1	0	4	0	5	0	1
Q. calliprinos	0	53	0	0	0	0	0	1	2	0	0
R. lycioides	3	1	31	2	4	0	0	1	6	0	1
C. siliqua	0	4	0	1	0	0	0	6	1	2	0
P. palaestina	2	1	8	0	58	0	0	3	3	0	0
Herbaceous patches	0	0	0	0	0	21	0	0	0	0	2
C. villosa	7	0	0	0	2	3	44	0	0	0	1
P. lentiscus	3	0	4	0	2	0	0	33	6	2	0
O. europaea	3	0	4	0	2	0	3	4	211	0	0
P. halepensis	0	0	0	1	0	0	0	0	3	22	0
S. spinosum	1	0	1	0	0	0	0	0	0	0	49

Table S5: Confusion matrix for the classification results of the Sataf facing-north site (S'N), using the five optimal dates. The classification was carried out by RF classifier, using all spectral indices.

	P. dulcis	*Q. calliprinos*	*R. lycioides*	*P. palaestina*	Herbaceous patches	*C. villosa*	*A. andrachne*	*O. europaea*	*P. halepensis*	*S. spinosum*
P. dulcis	9	0	1	1	0	0	0	1	0	0
Q. calliprinos	0	83	1	0	0	0	1	1	0	0
R. lycioides	2	0	20	0	0	3	0	0	1	0
P. palaestina	1	2	0	8	0	1	0	1	0	0
Herbaceous patches	0	0	0	0	16	0	0	0	0	1
C. villosa	0	0	1	0	0	19	0	0	0	4
A. andrachne	0	3	0	0	0	0	10	0	0	0
O. europaea	0	2	1	0	0	0	0	30	0	0
P. halepensis	0	0	0	0	0	0	0	1	21	0
S. spinosum	0	0	0	0	0	3	0	0	0	30

Table S6: Confusion matrix for the classification results of Mata site (M), using the five optimal dates. The classification was carried out by RF classifier, using all spectral indices.

	P. dulcis	*Q. calliprinos*	*R.*	*C. siliqua*	*P.*	Herbaceous patches	*C. villosa*	*P.*	*O.*	*S.*	*A. foetida*
P. dulcis	90	0	3	0	0	0	0	0	0	0	0
Q. calliprinos	0	125	0	4	1	0	0	7	0	0	0
R. lycioides	9	5	24	0	1	0	0	1	0	3	1
C. siliqua	0	10	1	13	0	0	0	3	0	0	0
P. palaestina	1	0	2	0	27	0	0	0	0	0	0
Herbaceous patches	1	0	0	0	0	25	0	0	0	0	0
C. villosa	2	0	1	0	0	0	54	0	0	0	0
P. lentiscus	0	10	4	2	0	0	1	59	0	2	0
O. europaea	1	0	3	0	0	0	0	1	12	0	0
S. spinosum	0	1	0	0	1	1	0	1	0	25	0
A. foetida	1	2	0	0	0	0	0	2	0	0	8

Table S7: Confusion matrix for the classification results of Britanya site (B), using the five optimal dates. The classification was carried out by RF classifier, using all spectral indices.

	P. dulcis	*R. lycioides*	*C. siliqua*	*P. palaestina*	Herbaceous patches	*P. lentiscus*	*O. europaea*	*P. halepensis*	*S. spinosum*
P. dulcis	24	8	0	1	0	0	1	0	0
R. lycioides	2	48	0	2	0	2	3	0	1
C. siliqua	1	0	13	0	0	1	1	4	0
P. palaestina	0	2	0	38	0	0	1	0	0
Herbaceous patches	0	0	0	0	25	0	0	0	0
P. lentiscus	0	0	1	0	0	31	0	0	0
O. europaea	1	3	0	0	0	0	33	0	0
P. halepensis	0	0	6	0	0	0	0	8	0
S. spinosum	0	0	0	0	0	0	0	0	53