

Article

A First Assessment of Canopy Cover Loss in Germany's Forests after the 2018-2020 Drought Years

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Supplementary Material

This supplementary material contains tables with the forest canopy cover loss areas per German federal state. The first table contains area in hectares, the second percentages, whereas canopy cover loss of a certain forest type is expressed as percentage of this particular forest type, e.g., canopy cover loss in coniferous forests is related to the coniferous forest area rather than to the total forest area. Administrative data is taken from the database of global administrative areas (GADM, <https://gadm.org/>). Forest cover is based on the DLM250 forest layer [1] and the 2015 forest-type layer of the Copernicus Land Monitoring Service [2] as described in section 2.1.

Table S1. Canopy cover loss per German federal state in hectares.

Table S2. Canopy cover loss per German federal state in percentages.

References

1. GeoBasis-DE / BKG Digitales Landschaftsmodell 1:250000 (DLM250) 2020.
2. European Environment Agency (EEA) Forest Type 2015 2017.



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Table S1. Canopy cover loss per German federal state in hectares.

federal state	district area (ha)	forestarea	forestarea deciduous	forestarea coniferous	forestarea not labeled	allforest intact	allforest_01	allforest_02	allforest_03	allforest_04	allforest_05	allforest_06
Baden-Wuerttemberg	3,607,426	1,379,633	694,368	618,716	66,550	1,347,131	43	716	1,495	1,256	249	257
Bavaria	7,054,491	2,509,419	1,029,951	1,352,143	127,326	2,438,535	588	3,890	4,520	3,354	916	990
Berlin	89,186	16,599	8,525	6,963	1,112	16,093	1	26	2	12	1	1
Brandenburg	2,965,421	1,083,449	272,823	732,669	77,958	1,047,725	408	2,858	898	2,886	585	329
Bremen	39,981	978	673	158	148	975	0	1	1	1	1	1
Hamburg	73,638	3,983	2,508	1,205	271	3,952	0	1	1	2	1	1
Hesse	2,111,517	877,748	570,889	273,771	33,088	819,472	239	852	559	1,628	927	1,175
Lower Saxony	4,767,230	990,005	421,457	528,129	40,420	939,938	716	1,348	697	3,342	1,187	929
Mecklenburg-Western Pomerania	2,337,659	499,702	245,255	226,432	28,016	487,883	60	694	116	977	395	159
North Rhine-Westphalia	3,411,567	820,773	437,542	330,586	52,646	731,511	284	1,443	498	2,078	907	1,073
Rhineland-Palatinate	1,985,639	814,740	474,443	307,530	32,768	776,901	50	512	209	766	241	292
Saarland	257,101	92,643	63,413	25,579	3,652	90,040	4	44	16	59	17	16
Saxony	1,844,886	498,783	161,552	302,298	34,933	463,375	221	2,442	1,748	1,779	622	440
Saxony-Anhalt	2,055,238	469,053	197,728	243,723	27,603	424,429	323	2,041	1,383	2,100	852	711
Schleswig-Holstein	1,562,866	157,182	100,777	42,358	14,049	155,093	4	71	29	171	41	35
Thuringia	1,620,101	547,120	241,070	287,540	18,511	517,404	46	455	611	1,000	436	302

federal state	allforest_07	allforest_08	allforest_09	allforest_10	allforest_11	allforest_12	allforest_13	allforest_14	allforest_15	allforest_16	allforest_17	allforest_18
Baden-Wuerttemberg	561	209	1,085	344	242	456	467	1,453	816	721	628	593
Bavaria	1,496	1,413	1,932	1,151	628	1,004	1,151	2,660	2,361	2,976	1,069	1,280
Berlin	2	2	1	2	1	1	2	6	10	14	1	4
Brandenburg	1,286	404	496	583	203	369	490	921	1,132	1,686	367	777
Bremen	1	0	0	0	0	1	0	0	0	1	1	0
Hamburg	1	1	1	1	1	1	1	1	1	1	1	1
Hesse	727	375	1,146	584	597	698	843	1,386	1,455	1,888	626	1,963
Lower Saxony	801	361	992	656	496	459	894	1,077	871	2,190	203	1,188
Mecklenburg-Western Pomerania	335	58	91	132	44	65	104	305	182	553	129	311
North Rhine-Westphalia	495	298	996	740	391	461	563	1,544	1,301	2,061	1,157	1,646
Rhineland-Palatinate	315	287	754	252	163	322	231	826	555	1,185	667	779
Saarland	26	23	48	21	10	22	20	65	51	81	36	60
Saxony	1,133	618	669	728	443	330	488	1,110	1,403	1,580	490	600
Saxony-Anhalt	1,292	494	1,131	684	489	378	555	1,354	1,176	1,462	229	864
Schleswig-Holstein	67	9	18	20	10	13	37	57	45	92	17	34
Thuringia	404	157	765	349	247	351	404	808	619	819	174	574

federal state	allforest_19	allforest_20	allforest_21	allforest_22	allforest_23	allforest_24	allforest_25	allforest_26	allforest_27	allforest_28	allforest_29	allforest_30
Baden-Wuerttemberg	262	770	422	412	465	537	314	195	3,212	624	1,010	425
Bavaria	488	1,594	1,643	869	627	1,087	471	1,331	4,054	2,338	764	731
Berlin	1	3	2	1	2	1	1	2	19	2	1	1
Brandenburg	576	911	461	313	543	444	270	564	2,082	905	328	575
Bremen	0	0	0	0	0	0	0	0	1	1	1	1
Hamburg	1	1	1	1	1	1	1	1	2	1	1	1
Hesse	701	2,258	1,639	1,842	1,282	2,922	413	1,774	5,441	754	1,282	1,078
Lower Saxony	389	1,750	1,017	1,084	752	2,290	156	305	4,502	786	476	1,023
Mecklenburg-Western Pomerania	199	504	132	98	134	160	49	118	656	321	184	381
North Rhine-Westphalia	773	3,126	1,499	2,800	4,501	1,390	731	2,374	6,092	2,548	1,746	1,757
Rhineland-Palatinate	286	1,149	691	797	1,558	764	422	976	3,107	574	919	611
Saarland	18	75	50	32	61	21	11	49	240	25	55	31
Saxony	374	1,332	959	585	633	543	395	485	1,779	956	386	370
Saxony-Anhalt	458	1,657	1,208	796	1,119	1,583	440	337	3,248	818	414	711
Schleswig-Holstein	10	22	12	11	17	23	16	45	80	56	36	130
Thuringia	249	719	726	566	541	1,375	201	573	2,575	773	377	561

federal state	allforest_31	allforest_32	allforest_33	allforest_34	allforest_35	allforest_36	allforest_37	allforest_38	allforest_39	allforest_40	deciduous forest intact	deciduous_01
Baden-Wuerttemberg	573	679	581	580	1,788	1,011	3,070	2,802	1,094	107	692,396	11
Bavaria	1,404	1,136	1,610	708	2,429	1,015	2,868	6,264	2,898	1,197	1,026,240	62
Berlin	3	8	5	4	65	29	88	137	48	14	8,507	1
Brandenburg	729	616	380	796	1,802	997	1,431	3,242	803	299	270,727	71
Bremen	1	1	1	1	1	1	1	1	1	1	673	0
Hamburg	1	2	1	3	5	1	1	5	3	1	2,504	0
Hesse	2,292	2,411	2,601	496	2,416	713	1,757	5,109	1,288	159	566,883	28
Lower Saxony	1,690	1,603	2,298	443	2,480	781	3,840	1,826	1,788	399	419,121	36
Mecklenburg-Western Pomerania	275	331	156	86	1,061	301	701	710	477	96	244,628	18
North Rhine-Westphalia	4,505	4,505	6,885	1,250	7,266	350	3,381	10,887	2,740	241	433,364	28
Rhineland-Palatinate	1,668	1,779	1,914	726	2,869	439	1,714	4,939	1,403	146	472,553	8
Saarland	37	49	73	38	123	19	104	687	201	4	63,310	1
Saxony	1,226	1,037	855	557	1,064	608	774	2,699	810	152	159,662	30
Saxony-Anhalt	1,164	1,583	2,368	285	2,216	182	3,578	1,618	1,166	177	195,346	29
Schleswig-Holstein	79	111	36	50	185	42	58	158	130	31	100,657	1
Thuringia	1,487	941	2,167	256	1,345	717	1,986	2,209	679	193	239,228	6

federal state	deciduous_02	deciduous_03	deciduous_04	deciduous_05	deciduous_06	deciduous_07	deciduous_08	deciduous_09	deciduous_10	deciduous_11	deciduous_12	deciduous_13
Baden-Wuerttemberg	110	104	66	10	18	57	22	107	42	37	95	62
Bavaria	466	171	108	25	35	89	66	150	113	74	124	96
Berlin	2	1	1	1	1	1	1	1	1	1	1	1
Brandenburg	201	34	48	14	9	41	21	29	57	23	35	39
Bremen	1	0	0	0	0	1	0	0	0	0	1	0
Hamburg	1	1	0	0	0	1	0	0	1	1	1	1
Hesse	81	33	102	79	78	66	38	146	88	101	89	95
Lower Saxony	89	25	144	96	44	37	22	85	68	57	48	55
Mecklenburg-Western Pomerania	81	7	24	11	6	26	5	9	18	6	9	12
North Rhine-Westphalia	121	20	110	69	63	45	33	107	98	62	73	55
Rhineland-Palatinate	121	13	35	10	14	35	32	76	35	24	51	27
Saarland	4	1	2	1	1	3	2	4	3	2	4	3
Saxony	257	89	55	19	12	55	33	54	58	52	28	40
Saxony-Anhalt	131	48	68	49	25	59	33	119	74	60	47	54
Schleswig-Holstein	14	2	7	2	2	6	1	2	3	2	2	3
Thuringia	70	25	58	33	16	44	20	105	55	46	58	52

federal state	deciduous_14	deciduous_15	deciduous_16	deciduous_17	deciduous_18	deciduous_19	deciduous_20	deciduous_21	deciduous_22	deciduous_23	deciduous_24	deciduous_25
Baden-Wuerttemberg	159	52	38	22	22	13	47	31	39	51	71	47
Bavaria	214	102	92	39	65	28	89	111	85	60	120	45
Berlin	1	1	1	1	1	1	1	1	1	1	1	1
Brandenburg	54	36	43	11	32	27	46	33	26	67	43	33
Bremen	0	0	1	0	0	0	0	0	0	0	0	0
Hamburg	1	0	1	0	0	0	1	1	1	0	1	1
Hesse	146	108	125	51	154	50	160	166	157	131	338	42
Lower Saxony	74	35	95	14	73	24	90	49	73	65	193	17
Mecklenburg-Western Pomerania	21	7	22	4	19	15	20	13	15	17	17	5
North Rhine-Westphalia	138	93	109	59	92	49	192	101	236	388	132	54
Rhineland-Palatinate	85	34	41	30	34	16	63	55	62	136	69	39
Saarland	5	2	3	1	3	1	4	4	4	10	3	1
Saxony	80	65	47	16	24	19	65	66	39	55	47	28
Saxony-Anhalt	123	75	115	28	63	27	82	70	64	95	113	37
Schleswig-Holstein	4	2	3	1	1	1	2	1	1	3	3	2
Thuringia	74	45	65	18	54	19	64	66	55	61	163	22

federal state	deciduous_26	deciduous_27	deciduous_28	deciduous_29	deciduous_30	deciduous_31	deciduous_32	deciduous_33	deciduous_34	deciduous_35	deciduous_36	deciduous_37
Baden-Wuerttemberg	23	153	13	20	15	35	55	77	204	19	12	17
Bavaria	94	166	48	24	33	122	135	182	208	31	13	23
Berlin	1	1	1	1	1	2	6	4	2	1	0	1
Brandenburg	28	56	16	8	16	105	179	121	485	7	3	7
Bremen	0	1	0	0	0	0	0	0	1	0	0	0
Hamburg	1	1	0	0	1	1	1	1	2	1	1	0
Hesse	120	357	40	85	67	129	146	214	60	85	11	21
Lower Saxony	21	153	20	28	52	79	94	116	112	28	14	15
Mecklenburg-Western Pomerania	11	28	11	5	14	17	66	37	32	6	1	3
North Rhine-Westphalia	125	262	90	70	85	201	180	343	110	123	6	22
Rhineland-Palatinate	69	129	20	39	30	80	87	122	92	57	5	11
Saarland	4	10	1	3	2	3	5	9	6	3	1	1
Saxony	28	58	23	10	22	86	87	59	168	10	4	5
Saxony-Anhalt	24	142	30	26	39	98	104	148	53	28	2	14
Schleswig-Holstein	3	3	1	1	3	4	14	11	23	3	1	1
Thuringia	24	145	27	25	32	63	65	105	33	26	6	9

federal state	deciduous_38	deciduous_39	deciduous_40	coniferous forest intact	coniferous_01	coniferous_02	coniferous_03	coniferous_04	coniferous_05	coniferous_06	coniferous_07	coniferous_08
Baden-Wuerttemberg	10	5	0	588,186	33	606	1,392	1,190	240	240	505	188
Bavaria	19	4	0	1,284,970	527	3,424	4,350	3,246	892	956	1,408	1,347
Berlin	1	1	0	6,474	1	24	2	12	1	1	2	2
Brandenburg	8	1	0	699,041	338	2,657	864	2,839	572	320	1,246	383
Bremen	0	0	0	155	0	1	1	1	1	1	0	0
Hamburg	1	1	0	1,178	0	1	1	2	1	1	1	1
Hesse	31	7	0	219,502	211	771	526	1,527	849	1,097	661	337
Lower Saxony	8	5	0	480,398	680	1,260	673	3,199	1,092	885	764	339
Mecklenburg-Western Pomerania	3	1	1	215,240	42	614	109	954	385	153	309	53
North Rhine-Westphalia	41	10	0	245,502	256	1,322	479	1,968	839	1,010	451	265
Rhineland-Palatinate	21	3	0	271,581	42	391	196	731	231	278	281	256
Saarland	2	1	0	23,079	4	40	15	57	17	16	24	21
Saxony	12	3	0	268,781	191	2,186	1,659	1,724	604	428	1,079	585
Saxony-Anhalt	3	3	0	201,482	294	1,911	1,336	2,033	804	686	1,234	462
Schleswig-Holstein	1	1	0	40,388	4	58	27	165	39	34	61	9
Thuringia	5	3	0	259,666	41	386	586	943	404	286	360	137

federal state	coniferous_09	coniferous_10	coniferous_11	coniferous_12	coniferous_13	coniferous_14	coniferous_15	coniferous_16	coniferous_17	coniferous_18	coniferous_19	coniferous_20
Baden-Wuerttemberg	979	302	205	362	405	1,295	764	683	607	571	250	723
Bavaria	1,782	1,038	555	881	1,055	2,446	2,259	2,884	1,031	1,216	461	1,505
Berlin	1	2	1	1	2	6	10	14	1	4	1	3
Brandenburg	467	526	181	334	452	867	1,096	1,643	356	746	550	866
Bremen	0	0	0	0	0	0	0	1	1	0	0	0
Hamburg	1	1	1	1	1	1	1	1	1	1	1	1
Hesse	1,001	496	496	610	749	1,240	1,348	1,763	576	1,810	652	2,099
Lower Saxony	908	589	440	411	839	1,003	837	2,096	190	1,115	365	1,661
Mecklenburg-Western Pomerania	83	115	38	56	93	284	176	531	126	293	184	485
North Rhine-Westphalia	890	643	329	388	508	1,406	1,208	1,953	1,099	1,555	724	2,934
Rhineland-Palatinate	679	218	139	272	204	742	521	1,145	638	745	271	1,086
Saarland	45	19	9	19	18	60	49	79	35	58	17	72
Saxony	616	671	392	302	449	1,030	1,339	1,534	475	577	356	1,268
Saxony-Anhalt	1,012	611	430	332	502	1,232	1,101	1,347	201	802	431	1,575
Schleswig-Holstein	17	18	9	12	35	54	43	90	17	33	10	20
Thuringia	661	294	201	293	352	735	574	754	156	520	230	655

federal state	coniferous_21	coniferous_22	coniferous_23	coniferous_24	coniferous_25	coniferous_26	coniferous_27	coniferous_28	coniferous_29	coniferous_30	coniferous_31	coniferous_32
Baden-Wuerttemberg	391	373	414	467	267	172	3,059	611	991	411	539	624
Bavaria	1,532	784	567	967	427	1,238	3,889	2,291	740	698	1,283	1,002
Berlin	2	1	1	1	1	2	19	2	1	1	2	3
Brandenburg	429	287	476	402	237	536	2,026	890	320	559	624	437
Bremen	0	0	0	0	0	0	1	1	1	1	1	1
Hamburg	1	1	1	1	1	1	1	1	1	1	1	1
Hesse	1,473	1,685	1,151	2,585	372	1,655	5,084	715	1,197	1,011	2,164	2,265
Lower Saxony	969	1,011	687	2,098	139	285	4,350	766	448	971	1,612	1,509
Mecklenburg-Western Pomerania	119	84	117	143	44	107	628	311	179	367	258	265
North Rhine-Westphalia	1,398	2,564	4,113	1,258	678	2,250	5,830	2,458	1,676	1,672	4,305	4,326
Rhineland-Palatinate	637	736	1,422	696	384	908	2,979	554	880	581	1,589	1,693
Saarland	47	28	52	18	10	46	231	24	53	30	35	45
Saxony	893	546	579	496	367	458	1,721	934	376	349	1,141	950
Saxony-Anhalt	1,139	732	1,024	1,471	403	314	3,106	788	389	673	1,067	1,479
Schleswig-Holstein	11	10	14	20	15	42	77	55	36	128	76	97
Thuringia	660	512	481	1,213	179	550	2,431	747	353	529	1,425	876

federal state	coniferous_33	coniferous_34	coniferous_35	coniferous_36	coniferous_37	coniferous_38	coniferous_39	coniferous_40	deciduous forest, total loss	deciduous forest, loss 2018	deciduous forest, loss 2019	deciduous forest, loss 2020
Baden-Wuerttemberg	504	377	1,770	999	3,053	2,792	1,090	107	1,973	673	602	668
Bavaria	1,428	500	2,399	1,002	2,846	6,245	2,894	1,197	3,711	1,477	1,097	1,094
Berlin	1	2	65	29	87	137	48	14	18	3	2	13
Brandenburg	259	312	1,795	995	1,425	3,234	802	299	2,097	579	452	1,053
Bremen	1	1	1	1	1	1	1	1	1	1	1	1
Hamburg	1	1	5	1	1	4	3	1	4	1	1	3
Hesse	2,388	436	2,332	703	1,737	5,078	1,282	159	4,007	925	1,675	1,351
Lower Saxony	2,182	332	2,452	767	3,826	1,818	1,783	399	2,336	745	836	728
Mecklenburg-Western Pomerania	119	54	1,056	300	698	708	476	96	628	216	177	229
North Rhine-Westphalia	6,543	1,140	7,143	345	3,359	10,846	2,730	241	4,179	823	1,640	1,645
Rhineland-Palatinate	1,793	635	2,813	435	1,703	4,918	1,401	146	1,891	450	646	762
Saarland	65	33	120	18	103	685	201	4	104	22	38	42
Saxony	796	389	1,054	605	769	2,688	807	152	1,891	736	557	580
Saxony-Anhalt	2,221	232	2,189	180	3,565	1,616	1,163	177	2,383	736	903	725
Schleswig-Holstein	26	28	182	41	58	157	130	31	120	37	20	63
Thuringia	2,062	224	1,320	712	1,977	2,204	677	193	1,843	531	731	567

federal state	deciduous forest, loss 2021	coniferous forest, total loss	coniferous forest, loss 2018	coniferous forest, loss 2019	coniferous forest, loss 2020	coniferous forest, loss 2021	all forest types, total loss	all forest types, loss 2018	all forest types, loss 2019	all forest types, loss 2020	all forest types, loss 2021
Baden-Wuerttemberg	32	30,530	6,235	6,938	10,319	7,040	32,503	6,908	7,539	10,986	7,071
Bavaria	45	67,174	20,400	16,703	16,892	13,181	70,884	21,876	17,799	17,985	13,226
Berlin	1	489	45	39	122	284	506	48	41	134	285
Brandenburg	15	33,628	10,721	8,165	8,985	5,759	35,725	11,300	8,616	10,037	5,773
Bremen	0	4	2	1	2	2	4	2	1	2	2
Hamburg	1	27	4	4	12	8	31	5	5	15	8
Hesse	58	54,269	8,578	17,125	20,315	8,254	58,276	9,502	18,799	21,665	8,312
Lower Saxony	27	47,732	11,234	12,865	15,810	7,825	50,067	11,979	13,701	16,537	7,852
Mecklenburg-Western Pomerania	7	11,192	2,905	2,629	3,683	1,976	11,819	3,121	2,806	3,912	1,982
North Rhine-Westphalia	72	85,084	8,835	20,716	38,359	17,175	89,263	9,658	22,356	40,004	17,247
Rhineland-Palatinate	35	35,949	3,708	8,838	15,239	8,166	37,840	4,157	9,484	16,000	8,201
Saarland	3	2,501	279	527	704	992	2,604	301	565	745	994
Saxony	19	33,517	10,433	9,536	9,136	4,414	35,408	11,169	10,093	9,716	4,433
Saxony-Anhalt	20	42,242	11,138	11,552	13,035	6,519	44,624	11,873	12,455	13,760	6,538
Schleswig-Holstein	2	1,970	448	353	798	373	2,090	484	372	860	375
Thuringia	16	27,874	4,587	6,837	11,402	5,050	29,717	5,117	7,568	11,968	5,065

Table S2. Canopy cover loss per German federal states in percentages.

federal state	district area (ha)	forestarea	forestarea deciduous	forestarea coniferous	forestarea not labeled	allforest intact	allforest_01	allforest_02	allforest_03	allforest_04	allforest_05	allforest_06	allforest_07	allforest_08	allforest_09	allforest_10	allforest_11	allforest_12
Baden-Wuerttemberg	3,607,426	38.24	50.33	44.85	4.82	97.64	0.00	0.05	0.11	0.09	0.02	0.02	0.04	0.02	0.08	0.02	0.02	0.03
Bavaria	7,054,491	35.57	41.04	53.88	5.07	97.18	0.02	0.16	0.18	0.13	0.04	0.04	0.06	0.06	0.08	0.05	0.03	0.04
Berlin	89,186	18.61	51.36	41.95	6.70	96.95	0.01	0.16	0.01	0.07	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Brandenburg	2,965,421	36.54	25.18	67.62	7.20	96.70	0.04	0.26	0.08	0.27	0.05	0.03	0.12	0.04	0.05	0.05	0.02	0.03
Bremen	39,981	2.45	68.81	16.16	15.13	99.69	0.00	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.00	0.00	0.10
Hamburg	73,638	5.41	62.97	30.25	6.80	99.22	0.00	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Hesse	2,111,517	41.57	65.04	31.19	3.77	93.36	0.03	0.10	0.06	0.19	0.11	0.13	0.08	0.04	0.13	0.07	0.07	0.08
Lower Saxony	4,767,230	20.77	42.57	53.35	4.08	94.94	0.07	0.14	0.07	0.34	0.12	0.09	0.08	0.04	0.10	0.07	0.05	0.05
Mecklenburg-Western Pomerania	2,337,659	21.38	49.08	45.31	5.61	97.63	0.01	0.14	0.02	0.20	0.08	0.03	0.07	0.01	0.02	0.03	0.01	0.01
North Rhine-Westphalia	3,411,567	24.06	53.31	40.28	6.41	89.12	0.03	0.18	0.06	0.25	0.11	0.13	0.06	0.04	0.12	0.09	0.05	0.06
Rhineland-Palatinate	1,985,639	41.03	58.23	37.75	4.02	95.36	0.01	0.06	0.03	0.09	0.03	0.04	0.04	0.04	0.09	0.03	0.02	0.04
Saarland	257,101	36.03	68.45	27.61	3.94	97.19	0.00	0.05	0.02	0.06	0.02	0.02	0.03	0.02	0.05	0.02	0.01	0.02
Saxony	1,844,886	27.04	32.39	60.61	7.00	92.90	0.04	0.49	0.35	0.36	0.12	0.09	0.23	0.12	0.13	0.15	0.09	0.07
Saxony-Anhalt	2,055,238	22.82	42.15	51.96	5.88	90.49	0.07	0.44	0.29	0.45	0.18	0.15	0.28	0.11	0.24	0.15	0.10	0.08
Schleswig-Holstein	1,562,866	10.06	64.11	26.95	8.94	98.67	0.00	0.05	0.02	0.11	0.03	0.02	0.04	0.01	0.01	0.01	0.01	0.01
Thuringia	1,620,101	33.77	44.06	52.56	3.38	94.57	0.01	0.08	0.11	0.18	0.08	0.06	0.07	0.03	0.14	0.06	0.05	0.06

federal state	allforest_13	allforest_14	allforest_15	allforest_16	allforest_17	allforest_18	allforest_19	allforest_20	allforest_21	allforest_22	allforest_23	allforest_24	allforest_25	allforest_26	allforest_27	allforest_28	allforest_29	allforest_30	allforest_31	allforest_32
Baden-Wuerttemberg	0.03	0.11	0.06	0.05	0.05	0.04	0.02	0.06	0.03	0.03	0.03	0.04	0.02	0.01	0.23	0.05	0.07	0.03	0.04	0.05
Bavaria	0.05	0.11	0.09	0.12	0.04	0.05	0.02	0.06	0.07	0.03	0.02	0.04	0.02	0.05	0.16	0.09	0.03	0.03	0.06	0.05
Berlin	0.01	0.04	0.06	0.08	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.11	0.01	0.01	0.01	0.02	0.05
Brandenburg	0.05	0.09	0.10	0.16	0.03	0.07	0.05	0.08	0.04	0.03	0.05	0.04	0.02	0.05	0.19	0.08	0.03	0.05	0.07	0.06
Bremen	0.00	0.00	0.00	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.10	0.10	0.10
Hamburg	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.05
Hesse	0.10	0.16	0.17	0.22	0.07	0.22	0.08	0.26	0.19	0.21	0.15	0.33	0.05	0.20	0.62	0.09	0.15	0.12	0.26	0.27
Lower Saxony	0.09	0.11	0.09	0.22	0.02	0.12	0.04	0.18	0.10	0.11	0.08	0.23	0.02	0.03	0.45	0.08	0.05	0.10	0.17	0.16
Mecklenburg-Western Pomerania	0.02	0.06	0.04	0.11	0.03	0.06	0.04	0.10	0.03	0.02	0.03	0.03	0.01	0.02	0.13	0.06	0.04	0.08	0.06	0.07
North Rhine-Westphalia	0.07	0.19	0.16	0.25	0.14	0.20	0.09	0.38	0.18	0.34	0.55	0.17	0.09	0.29	0.74	0.31	0.21	0.21	0.55	0.55
Rhineland-Palatinate	0.03	0.10	0.07	0.15	0.08	0.10	0.04	0.14	0.08	0.10	0.19	0.09	0.05	0.12	0.38	0.07	0.11	0.07	0.20	0.22
Saarland	0.02	0.07	0.06	0.09	0.04	0.06	0.02	0.08	0.05	0.03	0.07	0.02	0.01	0.05	0.26	0.03	0.06	0.03	0.04	0.05
Saxony	0.10	0.22	0.28	0.32	0.10	0.12	0.07	0.27	0.19	0.12	0.13	0.11	0.08	0.10	0.36	0.19	0.08	0.07	0.25	0.21
Saxony-Anhalt	0.12	0.29	0.25	0.31	0.05	0.18	0.10	0.35	0.26	0.17	0.24	0.34	0.09	0.07	0.69	0.17	0.09	0.15	0.25	0.34
Schleswig-Holstein	0.02	0.04	0.03	0.06	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.05	0.04	0.02	0.08	0.05	0.07
Thuringia	0.07	0.15	0.11	0.15	0.03	0.10	0.05	0.13	0.13	0.10	0.10	0.25	0.04	0.10	0.47	0.14	0.07	0.10	0.27	0.17

federal state	allforest_33	allforest_34	allforest_35	allforest_36	allforest_37	allforest_38	allforest_39	allforest_40	deciduous forest intact	deciduous_01	deciduous_02	deciduous_03	deciduous_04	deciduous_05	deciduous_06	deciduous_07	deciduous_08	deciduous_09	deciduous_10	deciduous_11
Baden-Wuerttemberg	0.04	0.04	0.13	0.07	0.22	0.20	0.08	0.01	99.72	0.00	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.01
Bavaria	0.06	0.03	0.10	0.04	0.11	0.25	0.12	0.05	99.64	0.01	0.05	0.02	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Berlin	0.03	0.02	0.39	0.17	0.53	0.83	0.29	0.08	99.79	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Brandenburg	0.04	0.07	0.17	0.09	0.13	0.30	0.07	0.03	99.23	0.03	0.07	0.01	0.02	0.01	0.00	0.02	0.01	0.01	0.02	0.01
Bremen	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	100.00	0.00	0.15	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
Hamburg	0.03	0.08	0.13	0.03	0.03	0.13	0.08	0.03	99.84	0.00	0.04	0.04	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.04
Hesse	0.30	0.06	0.28	0.08	0.20	0.58	0.15	0.02	99.30	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.03	0.02	0.02
Lower Saxony	0.23	0.04	0.25	0.08	0.39	0.18	0.18	0.04	99.45	0.01	0.02	0.01	0.03	0.02	0.01	0.01	0.01	0.02	0.02	0.01
Mecklenburg-Western Pomerania	0.03	0.02	0.21	0.06	0.14	0.14	0.10	0.02	99.74	0.01	0.03	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00
North Rhine-Westphalia	0.84	0.15	0.89	0.04	0.41	1.33	0.33	0.03	99.05	0.01	0.03	0.00	0.03	0.02	0.01	0.01	0.01	0.02	0.02	0.01
Rhineland-Palatinate	0.23	0.09	0.35	0.05	0.21	0.61	0.17	0.02	99.60	0.00	0.03	0.00	0.01	0.00	0.00	0.01	0.01	0.02	0.01	0.01
Saarland	0.08	0.04	0.13	0.02	0.11	0.74	0.22	0.00	99.84	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Saxony	0.17	0.11	0.21	0.12	0.16	0.54	0.16	0.03	98.83	0.02	0.16	0.06	0.03	0.01	0.01	0.03	0.02	0.03	0.04	0.03
Saxony-Anhalt	0.50	0.06	0.47	0.04	0.76	0.34	0.25	0.04	98.80	0.01	0.07	0.02	0.03	0.02	0.01	0.03	0.02	0.06	0.04	0.03
Schleswig-Holstein	0.02	0.03	0.12	0.03	0.04	0.10	0.08	0.02	99.88	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Thuringia	0.40	0.05	0.25	0.13	0.36	0.40	0.12	0.04	99.24	0.00	0.03	0.01	0.02	0.01	0.01	0.02	0.01	0.04	0.02	0.02

federal state	deciduous_12	deciduous_13	deciduous_14	deciduous_15	deciduous_16	deciduous_17	deciduous_18	deciduous_19	deciduous_20	deciduous_21	deciduous_22	deciduous_23	deciduous_24	deciduous_25	deciduous_26	deciduous_27	deciduous_28	deciduous_29	deciduous_30	deciduous_31
Baden-Wuerttemberg	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.01
Bavaria	0.01	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.00	0.00	0.01
Berlin	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Brandenburg	0.01	0.01	0.02	0.01	0.02	0.00	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.01	0.00	0.01	0.04
Bremen	0.15	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
Hamburg	0.04	0.04	0.04	0.00	0.04	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.04	0.04	0.04	0.04	0.00	0.00	0.04	0.04
Hesse	0.02	0.02	0.03	0.02	0.02	0.01	0.03	0.01	0.03	0.03	0.03	0.02	0.06	0.01	0.02	0.06	0.01	0.01	0.01	0.02
Lower Saxony	0.01	0.01	0.02	0.01	0.02	0.00	0.02	0.01	0.02	0.01	0.02	0.02	0.05	0.00	0.00	0.04	0.00	0.01	0.01	0.02
Mecklenburg-Western Pomerania	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.01
North Rhine-Westphalia	0.02	0.01	0.03	0.02	0.02	0.01	0.02	0.01	0.04	0.02	0.05	0.09	0.03	0.01	0.03	0.06	0.02	0.02	0.02	0.05
Rhineland-Palatinate	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.03	0.01	0.01	0.01	0.03	0.00	0.01	0.01	0.02
Saarland	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00
Saxony	0.02	0.02	0.05	0.04	0.03	0.01	0.01	0.01	0.04	0.04	0.02	0.03	0.03	0.02	0.02	0.04	0.01	0.01	0.01	0.05
Saxony-Anhalt	0.02	0.03	0.06	0.04	0.06	0.01	0.03	0.01	0.04	0.04	0.03	0.05	0.06	0.02	0.01	0.07	0.02	0.01	0.02	0.05
Schleswig-Holstein	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thuringia	0.02	0.02	0.03	0.02	0.03	0.01	0.02	0.01	0.03	0.03	0.02	0.03	0.07	0.01	0.01	0.06	0.01	0.01	0.01	0.03

federal state	deciduous_32	deciduous_33	deciduous_34	deciduous_35	deciduous_36	deciduous_37	deciduous_38	deciduous_39	deciduous_40	coniferous forest intact	coniferous_01	coniferous_02	coniferous_03	coniferous_04	coniferous_05	coniferous_06	coniferous_07	coniferous_08	coniferous_09	coniferous_10
Baden-Wuerttemberg	0.01	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	95.07	0.01	0.10	0.22	0.19	0.04	0.04	0.08	0.03	0.16	0.05
Bavaria	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	95.03	0.04	0.25	0.32	0.24	0.07	0.07	0.10	0.10	0.13	0.08
Berlin	0.07	0.05	0.02	0.01	0.00	0.01	0.01	0.01	0.00	92.98	0.01	0.34	0.03	0.17	0.01	0.01	0.03	0.03	0.01	0.03
Brandenburg	0.07	0.04	0.18	0.00	0.00	0.00	0.00	0.00	0.00	95.41	0.05	0.36	0.12	0.39	0.08	0.04	0.17	0.05	0.06	0.07
Bremen	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	98.10	0.00	0.63	0.63	0.63	0.63	0.63	0.00	0.00	0.00	0.00
Hamburg	0.04	0.04	0.08	0.04	0.04	0.00	0.04	0.04	0.00	97.76	0.00	0.08	0.08	0.17	0.08	0.08	0.08	0.08	0.08	0.08
Hesse	0.03	0.04	0.01	0.01	0.00	0.00	0.01	0.00	0.00	80.18	0.08	0.28	0.19	0.56	0.31	0.40	0.24	0.12	0.37	0.18
Lower Saxony	0.02	0.03	0.03	0.01	0.00	0.00	0.00	0.00	0.00	90.96	0.13	0.24	0.13	0.61	0.21	0.17	0.14	0.06	0.17	0.11
Mecklenburg-Western Pomerania	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	95.06	0.02	0.27	0.05	0.42	0.17	0.07	0.14	0.02	0.04	0.05
North Rhine-Westphalia	0.04	0.08	0.03	0.03	0.00	0.01	0.01	0.00	0.00	74.26	0.08	0.40	0.14	0.60	0.25	0.31	0.14	0.08	0.27	0.19
Rhineland-Palatinate	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	88.31	0.01	0.13	0.06	0.24	0.08	0.09	0.09	0.08	0.22	0.07
Saarland	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	90.23	0.02	0.16	0.06	0.22	0.07	0.06	0.09	0.08	0.18	0.07
Saxony	0.05	0.04	0.10	0.01	0.00	0.00	0.01	0.00	0.00	88.91	0.06	0.72	0.55	0.57	0.20	0.14	0.36	0.19	0.20	0.22
Saxony-Anhalt	0.05	0.07	0.03	0.01	0.00	0.01	0.00	0.00	0.00	82.67	0.12	0.78	0.55	0.83	0.33	0.28	0.51	0.19	0.42	0.25
Schleswig-Holstein	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	95.35	0.01	0.14	0.06	0.39	0.09	0.08	0.14	0.02	0.04	0.04
Thuringia	0.03	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	90.31	0.01	0.13	0.20	0.33	0.14	0.10	0.13	0.05	0.23	0.10

federal state	coniferous_11	coniferous_12	coniferous_13	coniferous_14	coniferous_15	coniferous_16	coniferous_17	coniferous_18	coniferous_19	coniferous_20	coniferous_21	coniferous_22	coniferous_23	coniferous_24	coniferous_25	coniferous_26	coniferous_27	coniferous_28	coniferous_29	coniferous_30
Baden-Wuerttemberg	0.03	0.06	0.07	0.21	0.12	0.11	0.10	0.09	0.04	0.12	0.06	0.06	0.07	0.08	0.04	0.03	0.49	0.10	0.16	0.07
Bavaria	0.04	0.07	0.08	0.18	0.17	0.21	0.08	0.09	0.03	0.11	0.11	0.06	0.04	0.07	0.03	0.09	0.29	0.17	0.05	0.05
Berlin	0.01	0.01	0.03	0.09	0.14	0.20	0.01	0.06	0.01	0.04	0.03	0.01	0.01	0.01	0.01	0.03	0.27	0.03	0.01	0.01
Brandenburg	0.02	0.05	0.06	0.12	0.15	0.22	0.05	0.10	0.08	0.12	0.06	0.04	0.06	0.05	0.03	0.07	0.28	0.12	0.04	0.08
Bremen	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.63
Hamburg	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Hesse	0.18	0.22	0.27	0.45	0.49	0.64	0.21	0.66	0.24	0.77	0.54	0.62	0.42	0.94	0.14	0.60	1.86	0.26	0.44	0.37
Lower Saxony	0.08	0.08	0.16	0.19	0.16	0.40	0.04	0.21	0.07	0.31	0.18	0.19	0.13	0.40	0.03	0.05	0.82	0.15	0.08	0.18
Mecklenburg-Western Pomerania	0.02	0.02	0.04	0.13	0.08	0.23	0.06	0.13	0.08	0.21	0.05	0.04	0.05	0.06	0.02	0.05	0.28	0.14	0.08	0.16
North Rhine-Westphalia	0.10	0.12	0.15	0.43	0.37	0.59	0.33	0.47	0.22	0.89	0.42	0.78	1.24	0.38	0.21	0.68	1.76	0.74	0.51	0.51
Rhineland-Palatinate	0.05	0.09	0.07	0.24	0.17	0.37	0.21	0.24	0.09	0.35	0.21	0.24	0.46	0.23	0.12	0.30	0.97	0.18	0.29	0.19
Saarland	0.04	0.07	0.07	0.23	0.19	0.31	0.14	0.23	0.07	0.28	0.18	0.11	0.20	0.07	0.04	0.18	0.90	0.09	0.21	0.12
Saxony	0.13	0.10	0.15	0.34	0.44	0.51	0.16	0.19	0.12	0.42	0.30	0.18	0.19	0.16	0.12	0.15	0.57	0.31	0.12	0.12
Saxony-Anhalt	0.18	0.14	0.21	0.51	0.45	0.55	0.08	0.33	0.18	0.65	0.47	0.30	0.42	0.60	0.17	0.13	1.27	0.32	0.16	0.28
Schleswig-Holstein	0.02	0.03	0.08	0.13	0.10	0.21	0.04	0.08	0.02	0.05	0.03	0.02	0.03	0.05	0.04	0.10	0.18	0.13	0.08	0.30
Thuringia	0.07	0.10	0.12	0.26	0.20	0.26	0.05	0.18	0.08	0.23	0.23	0.18	0.17	0.42	0.06	0.19	0.85	0.26	0.12	0.18

federal state	coniferous_31	coniferous_32	coniferous_33	coniferous_34	coniferous_35	coniferous_36	coniferous_37	coniferous_38	coniferous_39	coniferous_40	deciduous forest, total loss	deciduous forest, loss 2018	deciduous forest, loss 2019	deciduous forest, loss 2020	deciduous forest, loss 2021	coniferous forest, total loss	coniferous forest, loss 2018	coniferous forest, loss 2019	coniferous forest, loss 2020	coniferous forest, loss 2021
Baden-Wuerttemberg	0.09	0.10	0.08	0.06	0.29	0.16	0.49	0.45	0.18	0.02	0.28	0.10	0.09	0.10	0.00	4.93	1.01	1.12	1.67	1.14
Bavaria	0.09	0.07	0.11	0.04	0.18	0.07	0.21	0.46	0.21	0.09	0.36	0.14	0.11	0.11	0.00	4.97	1.51	1.24	1.25	0.97
Berlin	0.03	0.04	0.01	0.03	0.93	0.42	1.25	1.97	0.69	0.20	0.21	0.04	0.02	0.15	0.01	7.02	0.65	0.56	1.75	4.08
Brandenburg	0.09	0.06	0.04	0.04	0.24	0.14	0.19	0.44	0.11	0.04	0.77	0.21	0.17	0.39	0.01	4.59	1.46	1.11	1.23	0.79
Bremen	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.15	0.15	0.15	0.15	0.00	2.53	1.27	0.63	1.27	1.27
Hamburg	0.08	0.08	0.08	0.08	0.41	0.08	0.08	0.33	0.25	0.08	0.16	0.04	0.04	0.12	0.04	2.24	0.33	0.33	1.00	0.66
Hesse	0.79	0.83	0.87	0.16	0.85	0.26	0.63	1.85	0.47	0.06	0.70	0.16	0.29	0.24	0.01	19.82	3.13	6.26	7.42	3.01
Lower Saxony	0.31	0.29	0.41	0.06	0.46	0.15	0.72	0.34	0.34	0.08	0.55	0.18	0.20	0.17	0.01	9.04	2.13	2.44	2.99	1.48
Mecklenburg-Western Pomerania	0.11	0.12	0.05	0.02	0.47	0.13	0.31	0.31	0.21	0.04	0.26	0.09	0.07	0.09	0.00	4.94	1.28	1.16	1.63	0.87
North Rhine-Westphalia	1.30	1.31	1.98	0.34	2.16	0.10	1.02	3.28	0.83	0.07	0.96	0.19	0.37	0.38	0.02	25.74	2.67	6.27	11.60	5.20
Rhineland-Palatinate	0.52	0.55	0.58	0.21	0.91	0.14	0.55	1.60	0.46	0.05	0.40	0.09	0.14	0.16	0.01	11.69	1.21	2.87	4.96	2.66
Saarland	0.14	0.18	0.25	0.13	0.47	0.07	0.40	2.68	0.79	0.02	0.16	0.03	0.06	0.07	0.00	9.78	1.09	2.06	2.75	3.88
Saxony	0.38	0.31	0.26	0.13	0.35	0.20	0.25	0.89	0.27	0.05	1.17	0.46	0.34	0.36	0.01	11.09	3.45	3.15	3.02	1.46
Saxony-Anhalt	0.44	0.61	0.91	0.10	0.90	0.07	1.46	0.66	0.48	0.07	1.21	0.37	0.46	0.37	0.01	17.33	4.57	4.74	5.35	2.67
Schleswig-Holstein	0.18	0.23	0.06	0.07	0.43	0.10	0.14	0.37	0.31	0.07	0.12	0.04	0.02	0.06	0.00	4.65	1.06	0.83	1.88	0.88
Thuringia	0.50	0.30	0.72	0.08	0.46	0.25	0.69	0.77	0.24	0.07	0.76	0.22	0.30	0.24	0.01	9.69	1.60	2.38	3.97	1.76

federal state	all forest types, total loss	all forest types, loss 2018	all forest types, loss 2019	all forest types, loss 2020	all forest types, loss 2021
Baden-Wuerttemberg	2.48	0.53	0.57	0.84	0.54
Bavaria	2.98	0.92	0.75	0.76	0.56
Berlin	3.27	0.31	0.26	0.87	1.84
Brandenburg	3.55	1.12	0.86	1.00	0.57
Bremen	0.48	0.24	0.12	0.24	0.24
Hamburg	0.84	0.13	0.13	0.40	0.22
Hesse	6.90	1.12	2.23	2.56	0.98
Lower Saxony	5.27	1.26	1.44	1.74	0.83
Mecklenburg-Western Pomerania	2.51	0.66	0.59	0.83	0.42
North Rhine-Westphalia	11.62	1.26	2.91	5.21	2.25
Rhineland-Palatinate	4.84	0.53	1.21	2.05	1.05
Saarland	2.93	0.34	0.63	0.84	1.12
Saxony	7.63	2.41	2.18	2.09	0.96
Saxony-Anhalt	10.11	2.69	2.82	3.12	1.48
Schleswig-Holstein	1.46	0.34	0.26	0.60	0.26
Thuringia	5.62	0.97	1.43	2.26	0.96