SUPPORTING INFORMATION

S1 Definition of modelling regions

The nine modelling sub-regions were delineated as North Sulawesi and Gorontalo (formerly North Sulawesi, split since 2000), West and South Sulawesi (formerly South Sulawesi, split since 2004), Central Sulawesi, Southeast Sulawesi, East Nusa Tenggara and West Nusa Tenggara. The Maluku archipelago was treated as three regions, given the dispersed nature of the islands: North (including Halmahera, Sula islands and Obi islands), Central (Seram, Ambon and Buru) and South (including Tanimbar and Kai islands). Although the Sula archipelago is part of the sub-region of Sulawesi, they administratively belong to North Maluku. The islands of Banda, Wetar, Romang, Lemola, Damar and Tanimbar are closer to Nusa Tenggara, but are administratively in Maluku province. Borders were downloaded from the Global Administrative Areas database (Global Administrative Areas 2012) and all islands smaller than 5 km^2 where excluded.

S2 Processing of deforestation model predictors

All layers were converted to the Asia South Albers Equal Area Conic projection and resampled to the same extent and origin at 180 x 180 m pixel size (bilinear for continuous predictors, and nearest-neighbour resampling for categorical). All spatial manipulations were performed in Python (Van Rossum and Drake 2009), and aggregated, analysed and visualized in Python, R (R Core Team 2020) and ArcGIS Pro (Esri Inc. 2014).

Forest definition

We defined deforestation as the annual loss of forest including mangroves (Giri *et al* 2011, Margono *et al* 2014). Primary forest was defined as mature natural forest with an extent >5 ha, and a natural composition and structure that has not been cleared in recent history (Margono *et al* 2014). The forest definition includes mainly tall evergreen dipterocarps growing on drylands or swamps, including peat-swamps, with closed canopies (>90% cover) and high carbon stock (above-ground carbon: 150 - 310 Mg C/Ha). Young forest regrowth, agro-forests, mixed gardens, scrublands, tree plantations, agricultural land and non-vegetated areas were excluded (Margono *et al* 2014). This definition of forest cover, comprising both intact and degraded types of primary forest in the year 2000, corresponds well (90.2% agreement) to the forest definition used by the Ministry of Forestry in the year 2000 (Margono *et al* 2014, Ministry of Environment and Forestry Republic of Indonesia 2018). For the purpose of this study, the forest definition was expanded to include mangrove forests (Giri *et al* 2011), amounting to an additional 880 km^2 of coastal forest.

Forest loss, defined as the removal or mortality of tree cover, was based on the Tree Loss dataset (v1.6) developed at University of Maryland with Landsat time-series imagery (Hansen *et al* 2013). We have sought to minimized the inclusion of permanent or temporary forest loss within industrial plantations and small-holder agriculture by excluding the loss of tree cover within plantations, agro-forests, mixed gardens, regrowth or scrubland. Forested pixels were defined as having >70% tree canopy cover at the Landsat pixel (30 m resolution) scale. We used yearly measures of forest loss and aggregated forest cover and loss at a 180 m resolution using nearest-neighbour resampling, to minimize inclusion of short-term and small scale degradation and to facilitate data processing and modelling.

Slope

Slope was prepared from the Shuttle Radio Topography mission (SRTM) at a 30 m resolution (Farr *et al* 2007), re-projected to 180 m and transformed into slope by using the gdal function "gdaldem" (GDAL/OGR Contributors 2020).

Fire occurrence

We produced a layer of fire occurrence by combining VIIRS (VIIRS 375 m NRT 2018) and MODIS (MODIS Collection 6 NRT 2018) data and calculating how many fire alerts have been detected for a pixel, divided by the number of years the sensor had been active. Data were retained if they had a confidence marked as “N” or “H” (nominal and high respectively) for VIIR or a confidence larger than 50% for MODIS.

Accessibility

We measured human accessibility as the time (in hours) it takes to move from a population centre (village, town or city) to any pixel, following methodology in Deere et al. (2020). Population centres were merged from individual layers available from WRI (2019). Accessibility was then determined by three criteria: slope, land-cover and roads. Slope, influencing speed of movement, was derived from the Shuttle Radio Topography mission described above. We parametrised land-cover resistance values using information on travel-speed provided in Weiss et al. (2018). Road speed limits range from 5 to 100 km/h depending on the quality of the road (Table S1; World Bank, 2012).

Table S1 Road types and speed limits imposed in the human accessibility calculations (World Bank 2012)

Name in Bahasa	Description	Speed (km/h)
Jalan Kolektor, Jalan Arteri and *Jalan Tol*	Collector, arterial and toll roads (long and medium distance roads, connecting cities between regional and local activity centres, high to medium average speed and restricted side access)	100-80
Jalan Lokal	Local road (short distance with low average speed and no restriction to side access)	50
Jalan Lain and *Pematang*	Neighbourhood and elevated road (serving short distance in neighbourhoods, elevated roads usually in paddy fields)	<50
Jalan Setapak	Footpaths and trails	5

Human population pressure

For population pressure we combined human population density (Bright et al., 2017) with the accessibility layer using the methodology outlined in Deere et al. (2020). We only used the local pressure (sigma = 1) to parametrise the models, as the varying sizes and shapes of islands make pressure over larger spatial scales less informative. Likewise, human population pressure at larger spatial scales also correlated with measures of distance (i.e., predictors of commodity production and transmigrant settlements).

Commodity production

Village commodity production was derived from the Government of Indonesia's PODES census data from 2018, using question R403B *"Jenis komoditi utama yang diproduksi sebagian besar penduduk desa/kelurahan"* (which asks about the main types of commodities produced by most villagers/villages). All villages where the main commodity was indicated as rice, palawija (side-crops, either corn, beans, sweet potatoes), coffee, cocoa, coconut, pepper, cloves, tobacco and sugar cane were considered staple food agriculture. Rubber and oil palm are crops cultivated in plantations and thus, together with forest cultivation as main commodity, were grouped into plantation agriculture. Capture fisheries and aquaculture (both including other biota) were grouped into fisheries, as these play an important role in some villages in Wallacea. Villages for which the main commodity was classified as horticulture, animal husbandry, collection of forest products, capture of wild animals, captivity of wild animals and plants, agricultural services and other were classified as non-agriculture commodity production. Each pixel was assigned a distance to the closest village of each of the livelihood class using the gdal_proximity.py function in Python (GDAL/OGR Contributors 2020, Van Rossum and Drake 2009).

Distance to transmigrant settlements

To determine the location of transmigrant settlements we used the PODES census data from 2011, using the question that asked what the main ethnicity ("*nama suku*") in each village was. If the main ethnicity was from outside Wallacea (e.g., Aceh, Aneuk Jamee, Bali, Bali Hindu, Jawa, Madura, Sunda) the village was classified as a transmigrant village. Additionally, transmigrant settlements were extracted from the Government of Indonesia's land-cover layer from 2011 (http://webgis.menlhk.go.id:8080/pl/pl.htm).

Mining

Mining concession types were extracted from a mining layer available from WRI (2017). We classified the concessions as being either in the process of exploration (exploration, "*Eksplorasi*"; feasibility study, "*Studi Kelayakan*"; Country Reserves Area, "*Wilayah Pencadangan Negara*"; Special Mining Efforts Area License, "*Wilayah Izin Usaha Pertambangan Khusus*") or operational ("*Konstruksi*"; "*Eksploitasi*"; "*Operasi produksi*").

Land-use type

Land-use types were extracted from Indonesia's official land-use classification map (http://webgis.menlhk.go.id:8080/pl/pl.htm). Indonesian land-use classification distinguishes between 'non-forest land' (APL), which comprises areas designated for other uses (e.g., oil palm plantations, other agriculture, settlements) and forest land. Forest land can be further classified as 'conservation' (HK), 'protection' (HL) or 'production' forest. Conservation and protection forests are designed to preserve biodiversity and protect ecosystem services respectively, and for this study were combined into a single protection category. Production forest can be further differentiated into 'limited production forest' (HPT; low intensity logging is allowed, but no stand replacement), 'regular production forest' (HP; logging is allowed, as well as clear-cutting for silvicultural plantations) and 'convertible production forest' (HPK; logging is also allowed, but so is conversion to agriculture and others land-uses). HPT was kept as 'limited production forest', while HP and HPK were combined into a single 'production forest' category. Protected forests were used as a reference category and coded as 0.

S3 Description of deforestation model

Modelling framework

The model of forest loss for each province and state was adapted from Rosa et al. (2013) and is based on $P_{trloss,x,t}$, the probability that trees in a pixel x are lost in a time interval t. The probability of loss is defined as a logistic function:

$$Ptrloss_{x,t} = \frac{1}{1 + exp^{-k_{x,t}}} \quad (1)$$

in which $k_{x,t}$ can range from minus to plus infinity and $P_{trloss,x,t}$ from 0 to 1. We then used linear models to describe $k_{x,t}$ as a function of the predictor variables that affect forest loss at location x and time t.

Using a forward stepwise regression, a set of models was fitted to the observed forest loss data (2014 – 2018). Each model differed in the combination of predictor variables that define $k_{x,t}$. The total number of models was depended on the number of predictors for the respective sub-regions and varied from 56 to 79. The models were fitted using 'Filzbach', a freely available library (https://github.com/predictionmachines/Filzbach), which uses a Markov Chain Monte Carlo (MCMC) sampling method to return a posterior probability distribution for each parameter. From this distribution, given a specific parameter combination Θ, the posterior mean and credible interval was extracted. To estimate the parameters, the log-likelihood, a measure of the goodness of fit between the observations and the model predictions, is defined for a particular combination of variables:

$$L(X|s,\theta) = \sum log\left(Z_{x,t}Ptrloss_{x,t} + \left(1 - Z_{x,t}\right)\left(1 - Ptrloss_{x,t}\right)\right) \quad (2)$$

in which $Z_{x,t}$ is the observed forest loss at location *x* and time *t*, and *s* one of the models considered.

A cross-validation technique was used to assess the predictive power gained by adding variables to the model. This technique allowed us to check how accurately the model predictions compared to a randomly selected subset of 50% of the data that was not used to train the model. This cross-validation is necessary to find models that only comprise predictors with evident predictive ability. After successively adding the variable that resulted in the highest likelihood model, the overall best model (i.e. the one with the maximum test likelihood) was selected from the whole set of models for each province.

Simulations

The simulation was based on recalculating equation (1) for each time-step, while using a slightly different set of parameter values at each iteration, thereby incorporating parameter uncertainty. These values were drawn from a Gaussian distribution resulting from the MCMC fitting, using the estimated mean and standard deviation for each parameter. As a result we received an updated $P_{trloss,x,t}$ for each individual pixel in each individual time period . We subsequently evaluated whether or not the respective pixel was lost, by drawing a random number from a uniform distribution between 0 and 1. We then classified the pixel as lost if the number was less than the probability of deforestation $P_{trloss,x,t}$. This procedure was repeated for all seven time-steps and run multiple times (n = 100 iterations) to assess the uncertainty in model predictions over time. The different iterations were aggregated into the summed probability of deforestation and represent the fraction of simulation runs in which the forest in a pixel *x* was lost. All predictor variables were static (only one time-step was considered), apart from forest loss in the neighbourhood of a pixel, which was dynamically updated by the model in each time-step.

SUPPLEMENTARY REFERENCES

Bright E A, Coleman P R, Rose A N and Urban M L 2017 LandScan 2017 Online: http://www.ornl.gov/landscan/

Deere N J, Guillera-Arroita G, Platts P J, Mitchell S L, Baking E L, Bernard H, Haysom J K, Reynolds G, Seaman D J I, Davies Z G and Struebig M J 2020 Implications of zero-deforestation commitments: Forest quality and hunting pressure limit mammal persistence in fragmented tropical landscapes *Conservation Letters* **13** e12701

Esri Inc. 2014 *ArcGIS* (https://www.esri.com/en-us/arcgis/products/arcgis-pro/: Esri Inc.) Online: https://www.esri.com/en-us/arcgis/products/arcgis-pro/

Farr T G, Rosen P A, Caro E, Crippen R, Duren R, Hensley S, Kobrick M, Paller M, Rodriguez E and Roth L 2007 The shuttle radar topography mission *Reviews of geophysics* **45**

GDAL/OGR Contributors 2020 *GDAL/OGR Geospatial Data Abstraction software Library* (https://gdal.org: Open Source Geospatial Foundation) Online: http://www.gdal.org

Giri C, Ochieng E, Tieszen L L, Zhu Z, Singh A, Loveland T, Masek J and Duke N 2011 Status and distribution of mangrove forests of the world using earth observation satellite data *Global Ecology and Biogeography* **20** 154–9

Global Administrative Areas 2012 GADM database of Global Administrative Areas, version 2.0 Online: www.gadm.org

Hansen M C, Potapov P V, Moore R, Hancher M, Turubanova S, Tyukavina A, Thau D, Stehman S V, Goetz S J, Loveland T R, Kommareddy A, Egorov A, Chini L, Justice C O and Townshend J R G 2013 High-Resolution Global Maps of 21st-Century Forest Cover Change *Science* **342** 850–3

Margono B A, Potapov P V, Turubanova S, Stolle F and Hansen M C 2014 Primary forest cover loss in Indonesia over 2000-2012 *Nature Clim. Change* **4** 730–5

Ministry of Environment and Forestry Republic of Indonesia 2018 *The State of Indonesia's Forests 2018* (Ministry of Environment and Forestry Republic of Indonesia)

MODIS Collection 6 NRT 2018 MODIS Collection 6 NRT Hotspot / Active Fire Detections MCD14DL Online: https://earthdata.nasa.gov/firms

R Core Team 2020 *R: A language and environment for statistical computing.* (Vienna, Austria: R Foundation for Statistical Computing) Online: https://www.R-project.org/

Rosa I M D, Purves D, Jr C S and Ewers R M 2013 Predictive Modelling of Contagious Deforestation in the Brazilian Amazon *PLOS ONE* **8** e77231

Van Rossum G and Drake F L 2009 *Python 3 Reference Manual* (Scotts Valley, CA: CreateSpace)

VIIRS 375m NRT 2018 NRT VIIRS 375 m Active Fire product VNP14IMGT Online: https://earthdata.nasa.gov/firms

Weiss D J, Nelson A, Gibson H S, Temperley W, Peedell S, Lieber A, Hancher M, Poyart E, Belchior S, Fullman N, Mappin B, Dalrymple U, Rozier J, Lucas T C D, Howes R E, Tusting L S, Kang S Y, Cameron E, Bisanzio D, Battle K E, Bhatt S and Gething P W 2018 A global map of travel time to cities to assess inequalities in accessibility in 2015 *Nature* **553** 333–6

World Bank 2012 *Investing in Indonesia's Roads: Improving Efficiency and Closing the Financing Gap.* (World Bank Washington, DC)

Table S2 Validation (perfect match, omission and commission errors) of observed against projected forest maps in the calibration period (2014-2018) for Wallacea and the sub-regions. Percentage perfect match and omission were calculated in comparison to all observed forest pixels, while commission errors where calculated in comparison to all projected forest pixels. Median, 95% lower confidence interval (CI) and upper CI were calculated across binary projected forest maps (n = 100).

		Wallacea	**North Sulawesi & Gorontalo**	**Central Sulawesi**	**West & South Sulawesi**	**Southeast Sulawesi**	**North Maluku**	**Central Maluku**	**South Maluku**	**West Nusa Tenggara**	**East Nusa Tenggara**
Match (% observed)	Median	97	97	96	97	96	97	97	99	99	99
	Lower CI	95.64	96.44	95.6	96.8	96.39	96.57	97.24	99.18	99.2	99.43
	Upper CI	99.49	96.57	95.7	96.88	96.48	96.66	97.32	99.27	99.29	99.52
Omission error (% of observed)	Median	3	3	4	3	4	3	3	1	1	1
	Lower CI	0.51	3.43	4.3	3.12	3.52	3.34	2.68	0.73	0.71	0.48
	Upper CI	4.36	3.56	4.4	3.2	3.61	3.43	2.76	0.82	0.8	0.57
Comission error (% of projected)	Median	2	3	4	2	3	3	2	1	1	0
	Lower CI	0.41	3.1	3.56	2.35	3.04	2.63	2.38	0.7	0.69	0.4
	Upper CI	3.57	3.13	3.58	2.38	3.07	2.66	2.4	0.72	0.72	0.43

Table S3 Deforestation model coefficients for the nine sub-regions of Wallacea. Continuous predictors that were correlated with other predictors (Pearson's correlation coefficient >0.7) were not considered in the model and marked as 'nm'. Only predictors included in the best model were considered for the projections. Predictors that were not considered for the projection are marked as 'nb'. The effect of mining concessions is relative to the effect of not having a mining concession (*). The effect of non-forest, production forest and limited production forest is relative to the effect of protected forests (†).

	North Sulawesi & Gorontalo	**Central Sulawesi**	**West & South Sulawesi**	**Southeast Sulawesi**	**North Maluku**	**Central Maluku**	**South Maluku**	**West Nusa Tenggara**	**East Nusa Tenggara**	**In model**	**In optimal model**
Intercept	-3.06	-3.814	-3.363	-3.176	-4.303	-4.612	-5.612	-5.809	-5.651	9	9
Past deforestation	3.235	4.973	5.788	3.417	6.986	3.429	7.895	5.195	2.686	9	9
Slope	-0.021	nb	-0.031	-0.005	-0.025	-0.020	-0.030	-0.078	-0.011	9	8
Fire (yearly average)	9.509	1.999	14.827	12.532	15.281	13.442	13.338	11.947	5.189	9	9
Access by foot or road (hours)	nb	nb	nb	0.000	0.000	nb	nb	0.001	nb	9	3
Human population pressure	0.000	nb	nb	0.211	nb	nb	0.000	nb	0.000	9	4
Staple food agricultural commodities	-0.101	-0.046	-0.007	-0.076	-0.033	0.008	0.002	-0.059	-0.251	9	9
Plantation commodities	0.000	0.000	0.001	-0.001	0.000	0.001	nm	0.002	nm	7	7
Non-agricultural commodities	-0.004	-0.004	0.001	0.000	-0.001	0.002	0.001	0.001	-0.006	9	9
Fisheries commodities	-0.001	0.004	-0.002	-0.003	nb	-0.003	-0.002	nb	0.004	9	7
Transmigrant settlements	nb	0.000	-0.001	nm	nb	-0.005	nb	nm	nm	6	3
Mining (exploration)*	nb	0.247	0.539	-0.345	-0.089	-0.232	-0.840	nb	1.454	9	7
Mining (exploitation)*	nb	0.313	0.730	0.201	0.240	0.290	0.102	nb	-0.694	9	7
Non-forest†	0.887	0.675	nb	0.607	1.210	1.682	1.958	0.607	0.409	9	8
Production forest†	0.871	0.195	nb	0.262	0.415	0.708	0.545	0.440	0.490	9	8
Limited production forest †	0.303	0.028	nb	0.196	0.186	0.468	0.374	0.138	-0.336	9	8

Table S4 Sub-region area, forest area and forest cover in the past (2000 and 2018), projected into the future (2033 and 2053) and percentage annual deforestation rate.

Year			North Sulawesi & Gorontalo	Central Sulawesi	West & South Sulawesi	Southeast Sulawesi	North Maluku	Central Maluku	South Maluku	West Nusa Tenggara	East Nusa Tenggara
-	Region area (km2)		26,549	61,154	62,045	36,633	31,510	28,010	10,203	19,669	46,445
2000	Forest area (km2)		13,521	40,785	23,637	20,381	22,661	19,500	4,534	4,517	1,777
	Forest cover (%)		51	67	38	56	72	70	44	23	4
2018	Forest area (km2)		12,579	37,523	21,904	18,582	21,258	18,632	4,448	4,420	1,734
	Forest cover (%)		47	61	35	51	67	67	44	22	4
2033	Forest area (km2)	Median	10,990	29,735	19,174	16,347	17,222	16,746	4,315	4,307	1,711
		Lower CI	10,973	29,703	19,156	16,330	17,188	16,731	4,309	4,303	1,710
		Upper CI	11,006	29,775	19,193	16,365	17,261	16,761	4,321	4,311	1,713
2053	Forest area (km2)	Median	9,136	19,189	15,590	13,635	9,870	14,189	4,066	4,147	1,683
		Lower CI	9,115	19,140	15,555	13,615	9,805	14,168	4,054	4,140	1,681
		Upper CI	9,156	19,264	15,629	13,659	9,924	14,222	4,076	4,153	1,686
2000-2018	% annual loss rate		0.4	0.46	0.42	0.51	0.35	0.25	0.11	0.12	0.14
2018-2053	% annual loss rate	Median	0.91	1.9	0.97	0.88	2.17	0.78	0.26	0.18	0.09
		Lower CI	0.9	1.88	0.96	0.88	2.15	0.77	0.25	0.18	0.08
		Upper CI	0.92	1.91	0.97	0.89	2.19	0.78	0.27	0.19	0.09
2000-2053	% annual loss rate	Median	0.74	1.41	0.78	0.76	1.56	0.6	0.21	0.16	0.1
		Lower CI	0.73	1.4	0.78	0.75	1.55	0.59	0.2	0.16	0.1
		Upper CI	0.74	1.42	0.79	0.76	1.57	0.6	0.21	0.16	0.11

Table S5 Forest fragmentation (number of fragments, median area of fragments, and percentage of the forest extent in fragments <=2 km2) in the nine sub-regions of Wallacea in the past (2000 and 2018) and projected into the future (2033 and 2053).

Year			North Sulawesi & Gorontalo	Central Sulawesi	West & South Sulawesi	Southeast Sulawesi	North Maluku	Central Maluku	South Maluku	West Nusa Tenggara	East Nusa Tenggara
2000	Number		2,768	7,306	5,886	3,402	2,906	2,069	2,420	1,545	3,509
	Area		260	720	520	353	293	204	252	124	312
	Area (%)		1.92	1.76	2.2	1.73	1.29	1.05	5.55	2.75	17.56
2018	Number		3,700	10,970	8,380	5,390	3,991	2,513	2,505	1,642	3,542
	Area		342	1,017	739	504	393	241	255	132	311
	Area (%)		2.72	2.71	3.37	2.71	1.85	1.29	5.72	2.99	17.96
2033	Number	Median	9,228	36,182	15,716	12,618	16,700	7,882	2,820	1,841	3,557
		Lower CI	9,092	35,752	15,458	12,422	16,493	7,715	2,791	1,804	3,528
		Upper CI	9,354	36,472	15,881	12,803	17,001	7,999	2,865	1,870	3,585
	Area	Median	752	2,637	1,107	1,025	1,275	688	276	145	308
		Lower CI	735	2,603	1,080	1,000	1,243	665	269	139	307
		Upper CI	770	2,672	1,128	1,051	1,307	707	284	150	313
	Area (%)	Median	6.85	8.87	5.77	6.27	7.41	4.1	6.41	3.35	18.02
		Lower CI	6.69	8.75	5.63	6.12	7.22	3.97	6.24	3.23	17.91
		Upper CI	7.02	8.99	5.89	6.43	7.6	4.22	6.59	3.48	18.26
2053	Number	Median	14,202	57,294	21,571	20,266	25,739	15,424	3,143	2,096	3,549
		Lower CI	13,964	56,760	21,362	20,051	25,362	15,173	3,059	2,042	3,520
		Upper CI	14,408	57,780	21,852	20,472	26,075	15,672	3,222	2,149	3,585
	Area	Median	948	3,499	1,436	1,413	1,443	1,238	284	164	305
		Lower CI	927	3,440	1,405	1,390	1,413	1,201	273	156	301
		Upper CI	970	3,544	1,471	1,440	1,475	1,267	296	172	310
	Area (%)	Median	10.37	18.23	9.2	10.37	14.63	8.73	6.99	3.97	18.13
		Lower CI	10.13	17.92	9.01	10.18	14.32	8.45	6.7	3.77	17.91
		Upper CI	10.62	18.47	9.45	10.57	14.98	8.93	7.27	4.14	18.41

Table S6 Forest fragmentation (number of fragments, median area of fragments, and percentage of the forest extent in fragments <=2 km^2) in individual Key Biodiversity Areas (KBAs) across the nine sub-regions of Wallacea in the past (2000 and 2018) and projected into the future (2033 and 2053).

Year			North Sulawesi & Gorontalo	Central Sulawesi	West & South Sulawesi	Southeast Sulawesi	North Maluku	Central Maluku	South Maluku	West Nusa Tenggara	East Nusa Tenggara
2000	Number		7	30	55	22	2	11	47	46	10
	Area		0.81	1.78	4.6	2.43	0.16	0.65	4.21	2.49	0.84
	Area (%)		1.46	0.55	4.29	0.53	0.18	0.39	6.67	1.38	38.33
2018	Number		7	48	66	19	6	12	47	50	10
	Area		1.2	4.37	5.09	1.98	0.29	0.84	4.2	2.43	0.84
	Area (%)		2.14	1.07	5.6	0.76	0.25	0.49	6.71	1.83	38.33
2033	Number	Median	26	308	88	43	34	29	48	62	12
		Lower CI	22	282	82	35	30	22	46	53	10
		Upper CI	32	336	101	52	39	36	51	74	13
	Area	Median	2.85	19.89	6.2	4.6	2.92	2.27	5.05	3.64	0.96
		Lower CI	2.33	17.49	5.49	3.28	2.36	1.85	3.94	2.56	0.87
		Upper CI	3.42	22.24	7.89	7.29	3.63	2.82	6.42	4.94	1
	Area (%)	Median	13.78	6.8	27.95	2.9	4.08	1.31	6.79	4.58	48.39
		Lower CI	9.23	5.46	23.38	2.41	2.11	0.98	6.43	4.28	47.94
		Upper CI	21.03	10.04	31.82	4.3	6.6	1.51	7.67	5.37	51.78
2053	Number	Median	50	528	109	69	71	55	51	108	14
		Lower CI	42	445	98	58	59	45	48	101	12
		Upper CI	58	624	120	81	81	68	54	114	15
	Area	Median	4.16	33.29	6.93	6.8	4.28	4.6	6.58	7.13	0.94
		Lower CI	3.11	27.16	6.08	5.48	3.49	3.73	4.96	6.24	0.79
		Upper CI	5.17	38.11	7.83	7.9	5.18	6	8.48	8.35	0.99
	Area (%)	Median	29.14	25.81	50.86	9.38	13.5	2.01	6.96	5.2	48.35
		Lower CI	22.44	18.2	45.68	7.31	10.74	1.43	4.71	4.25	47.5
		Upper CI	36.73	33.64	59.74	10.54	16.38	3.18	7.9	6.4	58.02

Table S7 Key Biodiversity Areas (KBAs) that ranked in the top 20% for vulnerability to percentage forest loss and fragmentation, including the forest area in 2000, 2053, percentage forest loss between 2000 and 2053, percentage forest area in fragments, and percentage of forest in KBA protected. KBAs ranked in order of highest percentage forest loss.

Rank	Name	KBA area (km^2)	Forest area in 2000 (km^2)	Forest area in 2053 (km^2)	% forest loss 2000-2053	% area in fragments	% of KBA protected
1	Rawa Sagu Ake Jailolo	8.29	6	0	96	100	0
2	Wayaloar	108.54	91	5	94	100	0
3	Hutan Bakau Dodaga	11.96	11	1	94	100	0
4	Kao	25.21	7	0	93	100	0
5	Pulau Tana Jampea	157.24	55	4	92	100	39
6	Siraro	7.81	4	0	91	100	17
7	Pulau Kayoa	72.67	7	1	89	100	25
8	Galela	20.25	8	1	89	100	0
9	Pasoso	181.86	89	11	88	100	13
10	Tanjung Panjang	74.91	9	1	87	100	50
11	Lamiko-miko	333.66	55	7	86	100	26
12	Teluk Kayeli	56.86	29	5	82	100	0
13	Danau Manis	25.79	13	2	81	100	0
14	Danggamangu	5.02	3	1	81	100	0
15	Ambuau	35.12	13	3	80	100	7
16	Lamadae	6.54	6	1	79	100	100
17	Karakelang Selatan	64.28	48	11	76	100	87
18	Tambu	98.85	9	2	76	100	0
19	Rokoraka - Matalombu	34.18	6	2	75	100	32
20	Lariang	71.09	12	3	74	100	29
21	Pulau Kalatoa	77.95	37	10	74	100	0

Table S8 Key Biodiversity Areas (KBAs) that ranked in the top 20% for vulnerability to forest area lost and fragmented, including the forest area in 2000, 2053, forest area lost between 2000 and 2053, forest area in fragments, and percentage of forest in KBA protected. KBAs ranked in order of forest area lost (Rank 1) and fragmented (Rank 2).

Rank 1	Rank 2	Name	KBA area (km^2)	Forest area in 2000 (km^2)	Forest area in 2053 (km^2)	Forest loss 2000-53 (km^2)	Forest in fragments (km^2)	% of KBA protected
1	1	Pegunungan Tokalekaju	3908.22	3347	2348	999	221	53
2	11	Gunung Lumut	942.61	884	146	739	81	51
3	5	Routa	1426.05	1401	664	737	102	21
4	2	Lore Lindu	2496.61	2215	1519	696	118	86
5	4	Bogani Nani Wartabone	3924.13	3685	3072	612	104	81
6	6	Morowali	2759.54	2356	1755	601	95	96
7	23	Halmahera Timur	1850.23	1811	1297	514	42	56
8	13	Buol - Tolitoli	1713.83	1702	1199	503	70	44
9	7	Feruhumpenai - Matano	1599.07	1307	804	502	91	83
10	3	Gunung Sojol	939.99	845	360	486	113	69
11	8	Bakiriang	723.27	662	210	452	87	32
12	19	Mekongga	4644.6	4502	4073	429	56	89
13	14	Mambuliling	2588.24	2116	1690	425	69	83
14	12	Waebula	633.26	537	143	394	78	6
15	22	Taliabu Utara	777.76	644	288	357	44	16
16	9	Rawa Aopa Watumohai	1409.21	635	329	306	86	76
17	17	Buton Utara	1165.1	1069	768	301	57	80
18	10	Gunung Kepala Madang	1325.22	1056	781	274	82	31
19	21	Pegunungan Latimojong	1456.67	1147	881	267	47	83
20	15	Kepulauan Togean	734.99	345	87	258	66	22
21	25	Danau Towuti	970.54	343	97	245	40	24
22	26	Danau Poso	681.37	270	48	221	34	36
23	18	Leksula	799.24	696	480	216	56	17
24	27	Balantak	422.3	372	189	183	33	37
25	30	Manusela	2479.09	2223	2045	177	28	74
26	20	Danau Rana	631.25	587	427	160	54	56
27	38	Morotai	1198.64	1141	991	150	18	76
28	28	Lambusango	583.07	468	323	145	31	60
29	34	Gunung Batu Putih	378.01	377	234	144	20	9
30	24	Pulau Wawonii	706.09	409	272	137	42	22
31	32	Gamkonora	432.25	277	142	135	22	39
32	37	Gunung Dako	633.78	588	467	121	19	35
33	29	Gunung Simbalang	352.54	321	206	116	31	33
34	39	Gunung Tinombala	450.91	447	333	114	15	89

Rank 1	Rank 2	Name	KBA area (km^2)	Forest area in 2000 (km^2)	Forest area in 2053 (km^2)	Forest loss 2000-53 (km^2)	Forest in fragments (km^2)	% of KBA protected
35	16	Bajomote - Pondipondi	504.69	201	99	102	59	4
36	36	Popayato - Paguat	713.25	709	611	98	19	11
37	31	Panua	499.15	405	316	90	24	74
38	33	Gunung Tambora	1025.07	307	222	85	20	67
39	40	Dulamayo	251.26	244	167	78	15	46
40	35	Kokolomboi	502.04	277	206	71	20	46
41	41	Tanimbar Tengah	1160.83	1004	950	54	13	51

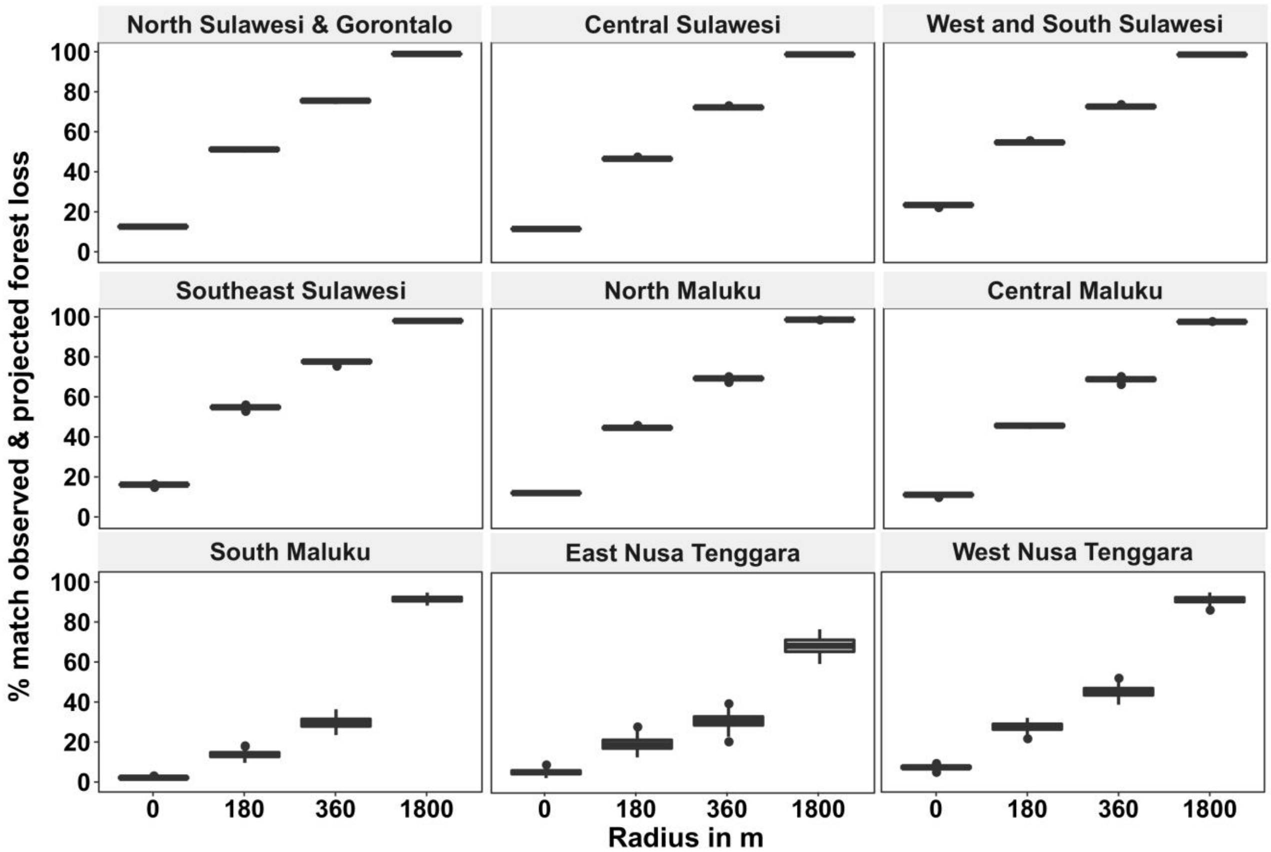

Figure S1 Percentage observed deforestation matched by projected deforestation in the pixel (0 m, perfect match) and near-misses where the pixel is matched in its neighbourhood (1 pixel, 180; 2 pixels, 360; 10 pixels, 1800 m) for the sub-regions of Wallacea. Boxplots show the median across simulations (n = 100).

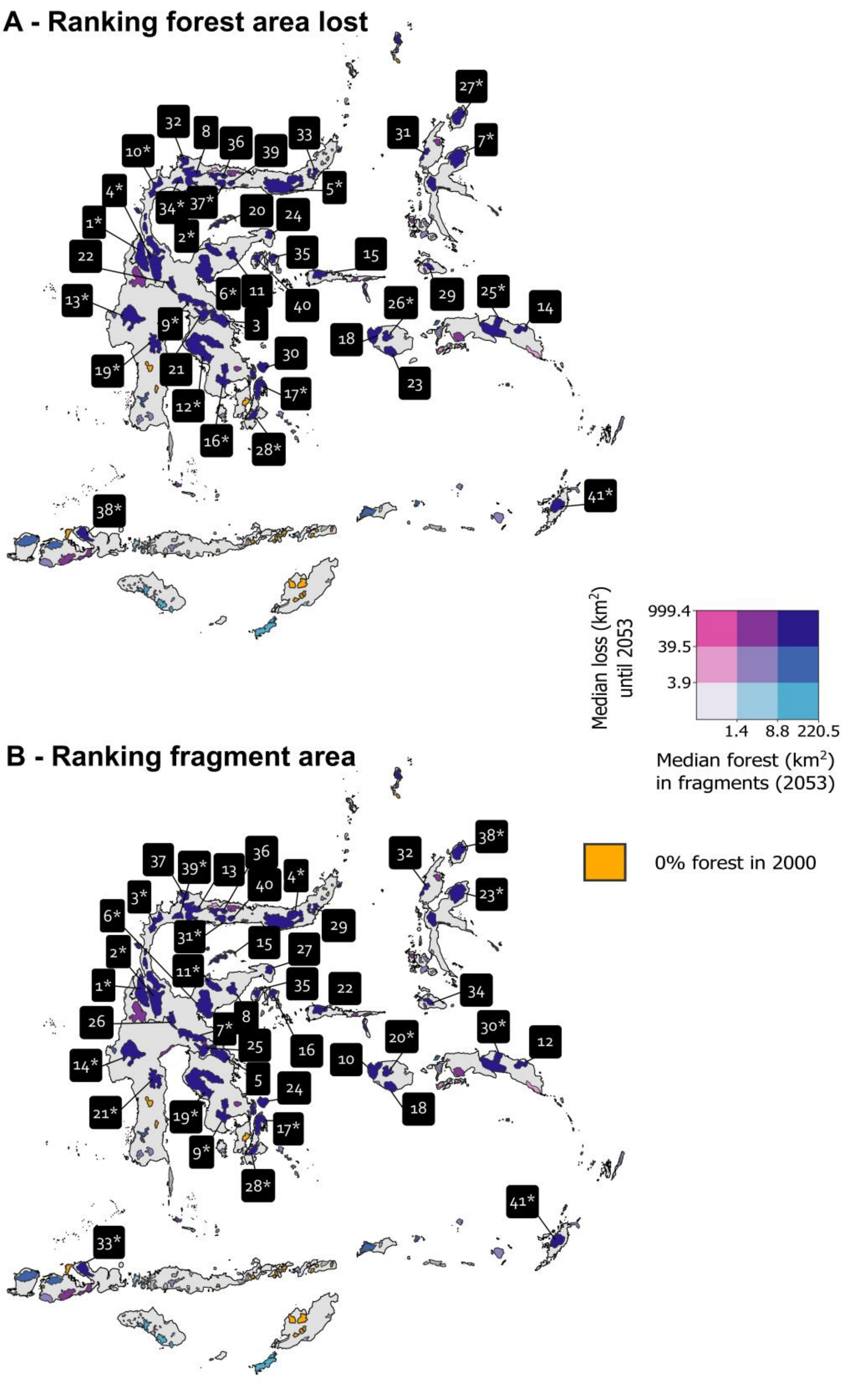

Figure S2 Vulnerability of Key Biodiversity Areas (KBAs) to forest area lost and area fragmented. Map of KBAs with bivariate colour coding of the forest area lost in KBAs between 2000 and 2053 (blues) and forest in fragments (=<2 km^2; purples). KBAs that were ranked in highest 20% for both percentage forest loss and fragmentation are labelled with their ranks, according to the area lost (A) and area in fragments (B) (Table S8). An asterisk marks KBAs in which the majority of their forest area are protected.