Supplementary Figures and Table

C:\Users\Michael\Dropbox\Kyasanur Forest Disease\Paper\IJE\S1 Fig 1.tiff

Figure S1. The distribution of the environmental layers used in the point process models. Boundaries reflect individual states with the area of the Western Ghats region. All maps created in R (v. 3.3.1).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| KFD suitability models | AIC | AUC | Forest loss (%)  β (S.E.) | Mammal biodiversity (#)  β (S.E.) | Annual precipitation (mm)  β (S.E.) | Dry qtr precipitation (mm)  β (S.E.) | Dry qtr temperature (C)  β (S.E.) | Waterways (km)  β (S.E.) | Surface water (%)  β (S.E.) |
| **Model 1: Full** |  | | | | | | | | |
| *2.5 arc-minutes* | - 131.2 | 98.1% | 0.61 (0.16) | 0.26 (0.05) | 0.00006 (0.0002) | -0.039 (0.023) | 0.29 (0.13) | 3.5 (10.2) | -0.66 (1.7) |
| *10 arc-minutes* | -127.2 | 98.1% | 0.58 (0.19) | 0.24 (0.06) | 0.00004 (0.0002) | -0.045 (0.026) | 0.31 (0.15) | -4.9 (28.1) | -1.9 (1.3) |
| **Model 2: Model 1 sans waterways** |  | | | | | | | | |
| *2.5 arc-minutes* | - 133.1 | 98.1% | 0.60 (0.16) | 0.25 (0.05) | 0.00005 (0.0002) | -0.04 (0.02) | 0.29 (0.13) |  | -0.63 (1.7) |
| *10 arc-minutes* | - 129.2 | 98.2% | 0.58 (0.19) | 0.25 (0.05) | 0.00005 (0.0002) | -0.04 (0.025) | 0.31 (0.15) | -2.0 (1.3) |
| **Model 3: Model 1 sans surface water** |  | | | | | | | | |
| *2.5 arc-minutes* | - 133.0 | 98.2% | 0.61 (0.16) | 0.25 (0.05) | 0.00005 (0.0002) | -0.039 (0.023) | 0.28 (0.13) | 3.2 (10.2) |  |
| *10 arc-minutes* | - 127.0 | 98.1% | 0.62 (0.19) | 0.23 (0.05) | 0.00002 (0.0002) | -0.04 (0.026) | 0.30 (0.15) | -16.1 (28.0) |
| **Model 4: Model 1 sans surface water & waterways** |  | | | | | | | | |
| *2.5 arc-minutes* | - 135.0 | 98.2% | 0.60 (0.16) | 0.25 (0.05) | 0.00005 (0.0002) | -0.04 (0.02) | 0.28 (0.13) |  | |
| *10 arc-minutes* | - 129.0 | 98.2% | 0.62 (0.19) | 0.24 (0.05) | 0.00005 (0.0002) | -0.039 (0.025) | 0.30 (0.15) |
| **Model 5: Model 1 sans surface water, waterways & precipitation** |  | | | | | | | | |
| *2.5 arc-minutes* | - 135.0 | 97.0% | 0.59 (0.14) | 0.23 (0.05) |  | | 0.34 (0.11) |  | |
| *10 arc-minutes* | - 129.9 | 95.8% | 0.61 (0.16) | 0.22 (0.05) | 0.38 (0.12) |
| **Model 6: Model 1 sans surface water, waterways**  **& temperature** |  | | | | | | | | |
| *2.5 arc-minutes* | - 133.3 | 98.2% | 0.55 (0.16) | 0.22 (0.05) | 0.0002 (0.0001) | -0.06 (0.02) |  | | |
| *10 arc-minutes* | - 126.6 | 98.1% | 0.50 (0.17) | 0.22 (0.05) | 0.0002 (0.0002) | -0.06 (0.023) |
| **Model 7: Climate & forest loss only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 108.9 | 97.9% | 0.68 (0.16) |  | -0.0001 (0.0002) | -0.022 (0.026) | 0.10 (0.12) |  | |
| *10 arc-minutes* | - 106.1 | 97.8% | 0.71 (0.18) | -0.0002 (0.0002) | -0.02 (0.028) | 0.29 (0.15) |
| **Model 8: Climate only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 96.9 | 96.9% |  | | 0.0004 (0.0001) | -0.02 (0.026) | 0.07 (0.12) |  | |
| *10 arc-minutes* | - 85.9 | 95.9% | 0.0003 (0.0001) | -0.02 (0.029) | -0.11 (0.14) |
| **Model 9: Precipitation only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 87.5 | 97.0% |  | | 0.0003 (0.0001) | -0.01 (0.021) |  | | |
| *10 arc-minutes* | - 87.3 | 96.1% | 0.0003 (0.0001) | -0.01 (0.022) |
| **Model 10: Temperature only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 78.1 | 73.4% |  | | | | 0.02 (0.10) |  | |
| *10 arc-minutes* | - 80.8 | 71.9% | 0.01 (0.10) |
| **Model 11: Forest loss only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 111.8 | 93.9% | 0.57 (0.13) |  | | | | | |
| *10 arc-minutes* | -107.0 | 93.0% | 0.50 (0.13) |
| **Model 12: Mammal biodiversity only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 101.9 | 92.2% |  | 0.19 (0.04) |  | | | | |
| *10 arc-minutes* | - 101.1 | 90.4% | 0.18 (0.04) |
| **Model 13: Forest loss & mammal biodiversity only** |  | | | | | | | | |
| *2.5 arc-minutes* | - 127.4 | 95.8% | 0.56 (0.14) | 0.16 (0.04) |  | | | | |
| *10 arc-minutes* | - 120.7 | 95.2% | 0.50 (0.14) | 0.16 (0.04) |

Table S1. Point process model comparisons by Akaike information criterion (AIC) and the area under the receiver operating characteristic curve (AUC). Model regression coefficients (β) are presented with their standard errors (S.E.). All models are presented at fine (2.5 arc-minutes) and coarse (10 arc-minutes) scale.



Figure S2. Kyasanur Forest disease (KFD) landscape suitability based on predicted intensity at 10 arc-minutes (approximately 20 km). The center panel depicts KFD suitability based on the predicted intensity from the best fitting and performing inhomogeneous Poisson point process model (Table 1; S2 Table 1). The left and right panels depict the lower and upper 95% confidence limits, respectively, for the predicted intensity.



Figure S3. Evaluation of the inhomogeneous K-function for the Kyasanur Forest disease (KFD) outbreak point process at 10 arc-minutes (approximately 20 km). The model-based inhomogeneous K-function shows that the spatial dependency was largely accounted for by the model covariates (overlapping empirical and theoretical functions). The x-axes, *r*, represent increasing radii of subregions of the window of KFD outbreaks, while the y-axes represents the K-functions.