Table A.1. SDM framework’s outcomes for each taxonomic unit (TU) according to the combination of modelling method/partitioning method/replications. Chosen models to be combined in order to produce the habitat suitability map for each TU were marked by (\*). See main document for details on the choosing criterion and combining procedure.

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| --- | --- | --- | --- | --- | --- | --- |
| Taxonomic unit (n° occurrence/pseudo-absence) | Method | AUC | COR | Deviance | TSS | Partitioning method |
| *Morimus asper/funereus* (696/1400) | GLM | 0.772 | 0.443 | 1.069010029 | 0.455 | subsampling |
|  | GLM | 0.767 | 0.434 | 1.060497441 | 0.424 | subsampling |
|  | GLM\* | 0.800 | 0.494 | 0.998660985 | 0.508 | subsampling |
|  | GLM | 0.788 | 0.471 | 1.038119683 | 0.455 | bootstrap |
|  | GLM | 0.796 | 0.483 | 1.024128065 | 0.490 | bootstrap |
|  | GLM | 0.797 | 0.489 | 1.025661470 | 0.472 | bootstrap |
|  | BRT | 0.771 | 0.446 | 1.111578757 | 0.433 | subsampling |
|  | BRT | 0.778 | 0.451 | 1.110723269 | 0.425 | subsampling |
|  | BRT\* | 0.808 | 0.508 | 1.080758720 | 0.480 | subsampling |
|  | BRT\* | 0.828 | 0.540 | 1.080116422 | 0.520 | bootstrap |
|  | BRT\* | 0.790 | 0.480 | 1.116295297 | 0.466 | bootstrap |
|  | BRT\* | 0.827 | 0.553 | 1.074674253 | 0.544 | bootstrap |
|  | RF\* | 0.815 | 0.527 | 0.974367996 | 0.493 | subsampling |
|  | RF\* | 0.822 | 0.532 | 0.960174692 | 0.492 | subsampling |
|  | RF\* | 0.854 | 0.596 | 0.880809240 | 0.523 | subsampling |
|  | RF\* | 0.940 | 0.766 | 0.654167508 | 0.750 | bootstrap |
|  | RF\* | 0.931 | 0.749 | 0.673334080 | 0.687 | bootstrap |
|  | RF\* | 0.942 | 0.779 | 0.632018421 | 0.756 | bootstrap |
|  | MaxEnt\* | 0.793 | 0.481 | 1.076275020 | 0.449 | subsampling |
|  | MaxEnt\* | 0.793 | 0.487 | 1.062257771 | 0.478 | subsampling |
|  | MaxEnt\* | 0.823 | 0.529 | 1.019063959 | 0.496 | subsampling |
|  | MaxEnt\* | 0.841 | 0.557 | 0.991600638 | 0.551 | bootstrap |
|  | MaxEnt\* | 0.830 | 0.547 | 0.996539421 | 0.571 | bootstrap |
|  | MaxEnt\* | 0.856 | 0.584 | 0.961828891 | 0.559 | bootstrap |
| *Lucanus cervus* (894/1800) | GLM\* | 0.906 | 0.688 | 0.741107866 | 0.673 | subsampling |
|  | GLM\* | 0.914 | 0.704 | 0.697885604 | 0.687 | subsampling |
|  | GLM\* | 0.908 | 0.694 | 0.724888517 | 0.686 | subsampling |
|  | GLM\* | 0.902 | 0.681 | 0.747029640 | 0.653 | bootstrap |
|  | GLM\* | 0.910 | 0.701 | 0.704743854 | 0.700 | bootstrap |
|  | GLM\* | 0.921 | 0.729 | 0.671501597 | 0.714 | bootstrap |
|  | BRT\* | 0.898 | 0.683 | 0.890760407 | 0.682 | subsampling |
|  | BRT\* | 0.906 | 0.695 | 0.876878626 | 0.674 | subsampling |
|  | BRT\* | 0.904 | 0.696 | 0.882907681 | 0.687 | subsampling |
|  | BRT\* | 0.906 | 0.69 | 0.880936305 | 0.685 | bootstrap |
|  | BRT\* | 0.911 | 0.704 | 0.864456925 | 0.698 | bootstrap |
|  | BRT\* | 0.924 | 0.734 | 0.874064902 | 0.725 | bootstrap |
|  | RF\* | 0.922 | 0.725 | 0.683473792 | 0.718 | subsampling |
|  | RF\* | 0.934 | 0.753 | 0.637462891 | 0.742 | subsampling |
|  | RF\* | 0.932 | 0.748 | 0.632395702 | 0.715 | subsampling |
|  | RF\* | 0.967 | 0.840 | 0.450791198 | 0.805 | bootstrap |
|  | RF\* | 0.973 | 0.852 | 0.425959957 | 0.847 | bootstrap |
|  | RF\* | 0.980 | 0.873 | 0.410146152 | 0.882 | bootstrap |
|  | MaxEnt\* | 0.916 | 0.709 | 0.701777159 | 0.684 | subsampling |
|  | MaxEnt\* | 0.924 | 0.721 | 0.684351787 | 0.716 | subsampling |
|  | MaxEnt\* | 0.921 | 0.719 | 0.689332215 | 0.704 | subsampling |
|  | MaxEnt\* | 0.924 | 0.715 | 0.700455043 | 0.710 | bootstrap |
|  | MaxEnt\* | 0.931 | 0.728 | 0.676770301 | 0.723 | bootstrap |
|  | MaxEnt\* | 0.942 | 0.757 | 0.661152339 | 0.773 | bootstrap |
| *Cerambyx cerdo* (124/300) | GLM | 0.768 | 0.436 | 1.12514073 | 0.437 | subsampling |
|  | GLM | 0.743 | 0.409 | 1.111239894 | 0.418 | subsampling |
|  | GLM | 0.716 | 0.303 | 1.260084309 | 0.365 | subsampling |
|  | GLM\* | 0.807 | 0.494 | 1.158177692 | 0.554 | bootstrap |
|  | GLM | 0.745 | 0.405 | 1.331748799 | 0.462 | bootstrap |
|  | GLM\* | 0.855 | 0.573 | 0.915611441 | 0.545 | bootstrap |
|  | BRT | 0.722 | 0.387 | 1.124234656 | 0.376 | subsampling |
|  | BRT | 0.755 | 0.435 | 1.097161848 | 0.412 | subsampling |
|  | BRT | 0.776 | 0.467 | 1.080053824 | 0.455 | subsampling |
|  | BRT\* | 0.856 | 0.575 | 1.017445451 | 0.624 | bootstrap |
|  | BRT\* | 0.823 | 0.556 | 1.078039079 | 0.512 | bootstrap |
|  | BRT | 0.778 | 0.561 | 0.982408639 | 0.526 | bootstrap |
|  | RF | 0.772 | 0.504 | 1.007109341 | 0.418 | subsampling |
|  | RF | 0.781 | 0.493 | 0.997099572 | 0.452 | subsampling |
|  | RF | 0.766 | 0.489 | 1.004129065 | 0.484 | subsampling |
|  | RF\* | 0.933 | 0.754 | 0.675518953 | 0.760 | bootstrap |
|  | RF\* | 0.913 | 0.742 | 0.718400866 | 0.721 | bootstrap |
|  | RF\* | 0.846 | 0.669 | 0.776394598 | 0.615 | bootstrap |
|  | MaxEnt | 0.713 | 0.337 | 1.201026681 | 0.416 | subsampling |
|  | MaxEnt | 0.736 | 0.37 | 1.243564880 | 0.423 | subsampling |
|  | MaxEnt | 0.717 | 0.352 | 1.206140802 | 0.424 | subsampling |
|  | MaxEnt\* | 0.817 | 0.506 | 1.099813109 | 0.612 | bootstrap |
|  | MaxEnt | 0.799 | 0.483 | 1.084411390 | 0.533 | bootstrap |
|  | MaxEnt\* | 0.856 | 0.613 | 0.838947972 | 0.588 | bootstrap |
| *Rosalia alpina* (243/600) | GLM\* | 0.960 | 0.820 | 0.481033974 | 0.854 | subsampling |
|  | GLM\* | 0.964 | 0.848 | 0.460541139 | 0.857 | subsampling |
|  | GLM\* | 0.968 | 0.849 | 0.419495191 | 0.884 | subsampling |
|  | GLM\* | 0.952 | 0.781 | 0.520921193 | 0.790 | bootstrap |
|  | GLM\* | 0.947 | 0.798 | 0.531221093 | 0.835 | bootstrap |
|  | GLM\* | 0.967 | 0.841 | 0.446080268 | 0.864 | bootstrap |
|  | BRT\* | 0.956 | 0.794 | 0.719285807 | 0.805 | subsampling |
|  | BRT\* | 0.936 | 0.775 | 0.732689875 | 0.775 | subsampling |
|  | BRT\* | 0.957 | 0.799 | 0.720591038 | 0.806 | subsampling |
|  | BRT\* | 0.963 | 0.818 | 0.628855500 | 0.849 | bootstrap |
|  | BRT\* | 0.966 | 0.826 | 0.673973145 | 0.872 | bootstrap |
|  | BRT\* | 0.964 | 0.814 | 0.627434332 | 0.838 | bootstrap |
|  | RF\* | 0.965 | 0.823 | 0.458045630 | 0.874 | subsampling |
|  | RF\* | 0.963 | 0.826 | 0.483741520 | 0.840 | subsampling |
|  | RF\* | 0.968 | 0.828 | 0.460559132 | 0.858 | subsampling |
|  | RF\* | 0.989 | 0.915 | 0.260073686 | 0.947 | bootstrap |
|  | RF\* | 0.992 | 0.907 | 0.297852837 | 0.930 | bootstrap |
|  | RF\* | 0.979 | 0.878 | 0.315629060 | 0.897 | bootstrap |
|  | MaxEnt\* | 0.966 | 0.836 | 0.490613456 | 0.877 | subsampling |
|  | MaxEnt\* | 0.964 | 0.849 | 0.515291912 | 0.840 | subsampling |
|  | MaxEnt\* | 0.969 | 0.850 | 0.465858881 | 0.894 | subsampling |
|  | MaxEnt\* | 0.969 | 0.826 | 0.441054059 | 0.853 | bootstrap |
|  | MaxEnt\* | 0.977 | 0.853 | 0.442012099 | 0.910 | bootstrap |
|  | MaxEnt\* | 0.964 | 0.829 | 0.467132245 | 0.854 | bootstrap |
| *Osmoderma* spp. | GLM | 0.561 | 0.110 | 25.07384584 | 0.122 | subsampling |
|  | GLM | 0.657 | 0.234 | 17.05360722 | 0.333 | subsampling |
|  | GLM | 0.604 | -0.004 | 19.23564370 | 0.456 | subsampling |
|  | GLM | 0.723 | 0.375 | 13.72449413 | 0.572 | bootstrap |
|  | GLM | 0.646 | 0.309 | 10.60192057 | 0.410 | bootstrap |
|  | GLM | 0.635 | 0.425 | 13.33969614 | 0.413 | bootstrap |
|  | BRT\* | 0.861 | 0.619 | 0.812004166 | 0.800 | subsampling |
|  | BRT\* | 0.800 | 0.584 | 0.789906156 | 0.717 | subsampling |
|  | BRT\* | 0.939 | 0.716 | 0.781830035 | 0.750 | subsampling |
|  | BRT\* | 0.848 | 0.577 | 0.817967180 | 0.678 | bootstrap |
|  | BRT\* | 0.868 | 0.530 | 0.707447618 | 0.708 | bootstrap |
|  | BRT | 0.717 | 0.365 | 1.04038361 | 0.398 | bootstrap |
|  | RF\* | 0.853 | 0.575 | 0.782126532 | 0.717 | subsampling |
|  | RF | 0.772 | 0.549 | 0.88647708 | 0.661 | subsampling |
|  | RF\* | 0.844 | 0.505 | 0.767802742 | 0.639 | subsampling |
|  | RF\* | 0.906 | 0.722 | 0.610704408 | 0.767 | bootstrap |
|  | RF\* | 0.926 | 0.660 | 0.520283237 | 0.715 | bootstrap |
|  | RF | 0.781 | 0.474 | 0.990848433 | 0.500 | bootstrap |
|  | MaxEnt\* | 0.883 | 0.593 | 0.730203542 | 0.744 | subsampling |
|  | MaxEnt | 0.797 | 0.536 | 0.927104072 | 0.689 | subsampling |
|  | MaxEnt\* | 0.903 | 0.599 | 0.808230567 | 0.717 | subsampling |
|  | MaxEnt\* | 0.826 | 0.608 | 0.830733471 | 0.600 | bootstrap |
|  | MaxEnt\* | 0.831 | 0.480 | 0.768925208 | 0.681 | bootstrap |
|  | MaxEnt | 0.794 | 0.397 | 1.065931793 | 0.573 | bootstrap |

AUC: area under the ROC function; COR: correlation; TSS: true skill statistic; GLM: generalized linear model; BRT: boosted regression tree; RF: random forest; MaxEnt: maximum entropy.