**Appendix S4.** Additional output data from the two multi-season multi-species occupancy models.

## Results model 1: Binary multi-session multi-species occupancy model

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 1 | 1 | 0.07 | 1 | 1 | 1 | 1 | 1 |
| *Cuniculus paca* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Dasyprocta punctata* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Dasypus spp.* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Didelphis marsupialis* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.56 |
| *Eira barbara* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Galicitis vittata* | 0.27 | 0.19 | 1 | 0.26 | 0.24 | 0.24 | 0.24 | 0.27 |
| *Leopardus pardalis* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Leopardus wiedii* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Mazama americana* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Mazama nemorivaga* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Mitu tuberosum* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.26 |
| *Myoprocta pratti* | 1 | 1 | 1 | 1 | 1 | 1 | 0.06 | 1 |
| *Myrmecophaga tridactyla* | 1 | 1 | 1 | 0.35 | 1 | 1 | 1 | 1 |
| *Nasua nasua* | 1 | 1 | 1 | 1 | 1 | 0.4 | 1 | 1 |
| *Panthera onca* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Pecari tajacu* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Penelope jacquacu* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Priodontes maximus* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.66 |
| *Procyon cancrivorus* | 0.56 | 0.37 | 1 | 0.43 | 1 | 1 | 1 | 0.57 |
| *Psophia leucoptera* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Puma concolor* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Puma yagouaroundi* | 0.65 | 1 | 1 | 1 | 1 | 1 | 0.50 | 1 |
| *Speothos venaticus* | 0.2 | 0.13 | 1 | 0.19 | 0.17 | 0.16 | 0.16 | 0.20 |
| *Sylvilagus brasiliensis* | 0.61 | 0.52 | 1 | 0.44 | 1 | 1 | 1 | 0.63 |
| *Tapirus terrestris* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Tayassu pecari* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.47 |

Probability of occurrence of 27 species for eight camera trap surveys in the Peruvian Amazon estimated with a multi-session multi-species occupancy model. The values were calculated as the mean of the latent variable *wij* (where *i* is the species and *t* is the survey) over all MMCM runs. A value of 1 indicates that the species was detected during the survey.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| Sobs | 22 | 23 | 26 | 22 | 25 | 24 | 23 | 19 |
| Mean | 24.3 | 24.2 | 26.1 | 23.7 | 25.4 | 24.8 | 24 | 22.6 |
| SE | 24 | 24 | 26 | 24 | 25 | 25 | 24 | 23 |
| L CRI | 1.1 | 0.9 | 0.2 | 1 | 0.6 | 0.7 | 0.8 | 1.3 |
| U CRI | 22 | 23 | 26 | 22 | 25 | 24 | 23 | 20 |

Observed (Sobs) and estimated species richness (number of occurring species) for eight camera trap surveys in the Peruvian Amazon estimated under a multi-session multi-species occupancy model. The summary shows the mean, standard deviation (SD), and the lower and upper credible interval (CRI) of the posterior distribution.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.046±0.015 (0.024-0.081) | 0.047±0.012 (0.028-0.076) | 0.041±0.018 (0.006-0.082) | 0.046±0.019 (0.019-0.084) | 0.043±0.015 (0.019-0.077) | 0.044±0.015 (0.019-0.079) | 0.051±0.018 (0.026-0.095) | 0.044±0.015 (0.021-0.079) |
| *Cuniculus paca* | 0.225±0.063 (0.121-0.365) | 0.205±0.019 (0.168-0.244) | 0.167±0.056 (0.068-0.28) | 0.085±0.051 (0.018-0.205) | 0.101±0.049 (0.028-0.212) | 0.145±0.056 (0.049-0.257) | 0.126±0.053 (0.041-0.236) | 0.098±0.064 (0.012-0.239) |
| *Dasyprocta punctata* | 0.217±0.06 (0.116-0.343) | 0.23±0.019 (0.195-0.269) | 0.143±0.032 (0.085-0.211) | 0.201±0.055 (0.107-0.321) | 0.145±0.042 (0.074-0.233) | 0.177±0.045 (0.099-0.27) | 0.336±0.063 (0.215-0.462) | 0.396±0.069 (0.271-0.544) |
| *Dasypus spp.* | 0.146±0.034 (0.093-0.23) | 0.13±0.02 (0.093-0.172) | 0.113±0.028 (0.059-0.165) | 0.103±0.037 (0.025-0.168) | 0.12±0.031 (0.058-0.183) | 0.136±0.035 (0.074-0.22) | 0.115±0.031 (0.054-0.178) | 0.123±0.035 (0.061-0.199) |
| *Didelphis marsupialis* | 0.089±0.043 (0.032-0.197) | 0.033±0.015 (0.012-0.068) | 0.034±0.022 (0.008-0.089) | 0.185±0.107 (0.047-0.449) | 0.053±0.031 (0.015-0.135) | 0.049±0.03 (0.013-0.127) | 0.114±0.059 (0.038-0.263) | 0.038±0.041 (0.003-0.138) |
| *Eira barbara* | 0.047±0.022 (0.012-0.093) | 0.058±0.016 (0.032-0.094) | 0.069±0.031 (0.029-0.15) | 0.051±0.022 (0.015-0.101) | 0.048±0.02 (0.015-0.092) | 0.05±0.021 (0.017-0.094) | 0.043±0.02 (0.01-0.086) | 0.052±0.021 (0.02-0.101) |
| *Galicitis vittata* | 0.022±0.087 (0-0.1) | 0.014±0.039 (0-0.069) | 0.019±0.023 (0.001-0.082) | 0.02±0.061 (0-0.084) | 0.019±0.051 (0-0.115) | 0.016±0.048 (0-0.068) | 0.017±0.057 (0-0.063) | 0.022±0.074 (0-0.1) |
| *Leopardus pardalis* | 0.104±0.042 (0.043-0.209) | 0.084±0.022 (0.047-0.133) | 0.142±0.039 (0.075-0.226) | 0.041±0.018 (0.015-0.084) | 0.065±0.023 (0.029-0.119) | 0.052±0.019 (0.022-0.096) | 0.042±0.016 (0.018-0.079) | 0.058±0.029 (0.02-0.129) |
| *Leopardus wiedii* | 0.04±0.016 (0.017-0.078) | 0.041±0.015 (0.02-0.077) | 0.035±0.014 (0.013-0.069) | 0.035±0.015 (0.01-0.071) | 0.044±0.018 (0.019-0.087) | 0.046±0.019 (0.021-0.091) | 0.046±0.019 (0.021-0.092) | 0.04±0.016 (0.017-0.079) |
| *Mazama americana* | 0.199±0.047 (0.111-0.288) | 0.262±0.022 (0.221-0.306) | 0.194±0.042 (0.115-0.273) | 0.145±0.067 (0.037-0.267) | 0.177±0.055 (0.076-0.274) | 0.179±0.057 (0.075-0.281) | 0.197±0.051 (0.099-0.29) | 0.266±0.066 (0.164-0.432) |
| *Mazama nemorivaga* | 0.19±0.037 (0.126-0.277) | 0.184±0.019 (0.148-0.221) | 0.163±0.043 (0.068-0.237) | 0.193±0.049 (0.119-0.313) | 0.191±0.045 (0.118-0.301) | 0.177±0.043 (0.099-0.272) | 0.22±0.058 (0.146-0.362) | 0.18±0.037 (0.107-0.259) |
| *Mitu tuberosum* | 0.044±0.03 (0.009-0.119) | 0.163±0.021 (0.123-0.205) | 0.188±0.047 (0.107-0.291) | 0.076±0.029 (0.033-0.143) | 0.057±0.023 (0.024-0.111) | 0.062±0.024 (0.026-0.121) | 0.068±0.026 (0.029-0.131) | 0.029±0.032 (0.002-0.134) |
| *Myoprocta pratti* | 0.167±0.044 (0.091-0.264) | 0.13±0.035 (0.065-0.201) | 0.208±0.051 (0.129-0.329) | 0.151±0.057 (0.051-0.281) | 0.196±0.064 (0.107-0.355) | 0.219±0.074 (0.118-0.403) | 0.093±0.077 (0.004-0.253) | 0.161±0.07 (0.048-0.322) |
| *Myrmecophaga tridactyla* | 0.046±0.018 (0.016-0.086) | 0.055±0.017 (0.029-0.094) | 0.046±0.016 (0.02-0.082) | 0.042±0.02 (0.009-0.088) | 0.043±0.018 (0.012-0.082) | 0.057±0.024 (0.026-0.116) | 0.053±0.021 (0.023-0.105) | 0.054±0.02 (0.026-0.101) |
| *Nasua nasua* | 0.038±0.022 (0.012-0.095) | 0.032±0.016 (0.011-0.07) | 0.03±0.02 (0.005-0.079) | 0.036±0.024 (0.009-0.097) | 0.034±0.021 (0.009-0.084) | 0.028±0.018 (0.003-0.073) | 0.041±0.027 (0.012-0.106) | 0.049±0.057 (0.013-0.179) |
| *Panthera onca* | 0.036±0.015 (0.014-0.072) | 0.037±0.01 (0.021-0.059) | 0.061±0.02 (0.031-0.108) | 0.026±0.011 (0.01-0.052) | 0.032±0.012 (0.014-0.06) | 0.045±0.018 (0.02-0.089) | 0.02±0.011 (0.006-0.047) | 0.031±0.015 (0.01-0.065) |
| *Pecari tajacu* | 0.116±0.04 (0.054-0.204) | 0.2±0.02 (0.162-0.24) | 0.193±0.04 (0.121-0.281) | 0.16±0.046 (0.084-0.263) | 0.133±0.04 (0.068-0.218) | 0.199±0.051 (0.116-0.325) | 0.205±0.053 (0.119-0.328) | 0.094±0.045 (0.03-0.198) |
| *Penelope jacquacu* | 0.087±0.027 (0.047-0.152) | 0.076±0.015 (0.049-0.108) | 0.063±0.021 (0.024-0.106) | 0.066±0.025 (0.026-0.118) | 0.054±0.023 (0.014-0.101) | 0.082±0.028 (0.04-0.152) | 0.08±0.028 (0.036-0.145) | 0.062±0.022 (0.023-0.11) |
| *Priodontes maximus* | 0.041±0.018 (0.015-0.08) | 0.043±0.015 (0.02-0.076) | 0.042±0.016 (0.017-0.08) | 0.043±0.018 (0.017-0.083) | 0.048±0.028 (0.018-0.108) | 0.043±0.018 (0.017-0.083) | 0.039±0.016 (0.014-0.076) | 0.039±0.018 (0.012-0.076) |
| *Procyon cancrivorus* | 0.019±0.018 (0.002-0.064) | 0.017±0.019 (0.002-0.064) | 0.025±0.026 (0.003-0.089) | 0.019±0.02 (0.002-0.07) | 0.021±0.021 (0.002-0.077) | 0.024±0.022 (0.003-0.083) | 0.024±0.023 (0.003-0.085) | 0.02±0.021 (0.002-0.074) |
| *Psophia leucoptera* | 0.311±0.049 (0.222-0.414) | 0.275±0.022 (0.233-0.319) | 0.205±0.044 (0.129-0.3) | 0.31±0.077 (0.18-0.478) | 0.402±0.076 (0.267-0.564) | 0.252±0.06 (0.151-0.39) | 0.336±0.075 (0.211-0.5) | 0.186±0.047 (0.102-0.284) |
| *Puma concolor* | 0.02±0.009 (0.007-0.044) | 0.019±0.008 (0.008-0.038) | 0.028±0.011 (0.012-0.056) | 0.029±0.015 (0.011-0.069) | 0.02±0.009 (0.007-0.041) | 0.026±0.013 (0.01-0.062) | 0.02±0.009 (0.008-0.041) | 0.021±0.01 (0.007-0.045) |
| *Puma yagouaroundi* | 0.022±0.014 (0.004-0.059) | 0.027±0.014 (0.008-0.061) | 0.025±0.018 (0.006-0.065) | 0.025±0.017 (0.006-0.066) | 0.024±0.017 (0.005-0.064) | 0.026±0.02 (0.006-0.067) | 0.021±0.014 (0.003-0.054) | 0.026±0.018 (0.006-0.071) |
| *Speothos venaticus* | 0.016±0.031 (0-0.068) | 0.021±0.079 (0-0.112) | 0.019±0.017 (0.002-0.065) | 0.021±0.07 (0-0.081) | 0.02±0.061 (0-0.065) | 0.017±0.051 (0-0.072) | 0.02±0.068 (0-0.065) | 0.017±0.045 (0-0.067) |
| *Sylvilagus brasiliensis* | 0.033±0.071 (0-0.152) | 0.031±0.067 (0-0.172) | 0.105±0.045 (0.036-0.208) | 0.025±0.05 (0-0.139) | 0.029±0.029 (0.002-0.108) | 0.019±0.023 (0.001-0.088) | 0.018±0.025 (0-0.092) | 0.034±0.069 (0-0.169) |
| *Tapirus terrestris* | 0.086±0.028 (0.042-0.152) | 0.211±0.019 (0.175-0.25) | 0.124±0.039 (0.056-0.209) | 0.055±0.023 (0.02-0.109) | 0.05±0.021 (0.018-0.097) | 0.09±0.032 (0.037-0.161) | 0.068±0.025 (0.027-0.125) | 0.119±0.029 (0.069-0.182) |
| *Tayassu pecari* | 0.123±0.025 (0.073-0.175) | 0.132±0.017 (0.1-0.168) | 0.121±0.028 (0.056-0.171) | 0.13±0.03 (0.084-0.188) | 0.125±0.028 (0.078-0.178) | 0.137±0.032 (0.09-0.201) | 0.124±0.028 (0.074-0.176) | 0.125±0.035 (0.063-0.182) |

Off-trail detection probability *p* (posterior mean, standard error and 95% credible interval) for eight camera trap surveys in the Peruvian Amazon estimated under a multi-session multi-species occupancy model.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.038±0.014 (0.019-0.073) | 0.039±0.013 (0.021-0.072) | 0.034±0.015 (0.007-0.066) | 0.037±0.015 (0.018-0.069) | 0.035±0.01 (0.018-0.059) | 0.035±0.011 (0.019-0.059) | 0.04±0.01 (0.025-0.064) | 0.036±0.013 (0.016-0.064) |
| *Cuniculus paca* | 0.346±0.135 (0.166-0.674) | 0.326±0.109 (0.173-0.571) | 0.255±0.036 (0.187-0.328) | 0.127±0.042 (0.06-0.215) | 0.153±0.032 (0.094-0.217) | 0.221±0.034 (0.161-0.292) | 0.193±0.03 (0.135-0.254) | 0.149±0.076 (0.031-0.316) |
| *Dasyprocta punctata* | 0.288±0.084 (0.15-0.478) | 0.307±0.062 (0.203-0.441) | 0.194±0.024 (0.15-0.241) | 0.264±0.043 (0.182-0.354) | 0.194±0.031 (0.135-0.257) | 0.234±0.027 (0.181-0.289) | 0.422±0.027 (0.369-0.475) | 0.488±0.097 (0.312-0.686) |
| *Dasypus spp.* | 0.145±0.053 (0.083-0.288) | 0.13±0.037 (0.077-0.223) | 0.11±0.026 (0.063-0.165) | 0.099±0.032 (0.035-0.159) | 0.116±0.023 (0.074-0.163) | 0.132±0.03 (0.085-0.203) | 0.111±0.023 (0.07-0.16) | 0.121±0.04 (0.059-0.217) |
| *Didelphis marsupialis* | 0.146±0.078 (0.042-0.341) | 0.059±0.036 (0.013-0.149) | 0.053±0.024 (0.016-0.11) | 0.26±0.092 (0.1-0.446) | 0.079±0.024 (0.038-0.133) | 0.073±0.025 (0.034-0.13) | 0.165±0.036 (0.103-0.242) | 0.065±0.06 (0.004-0.212) |
| *Eira barbara* | 0.036±0.02 (0.011-0.079) | 0.048±0.023 (0.02-0.111) | 0.056±0.03 (0.021-0.133) | 0.039±0.018 (0.014-0.085) | 0.036±0.013 (0.016-0.067) | 0.038±0.013 (0.017-0.069) | 0.033±0.015 (0.01-0.066) | 0.042±0.022 (0.015-0.096) |
| *Galicitis vittata* | 0.017±0.083 (0-0.075) | 0.01±0.035 (0-0.056) | 0.012±0.027 (0-0.073) | 0.013±0.06 (0-0.069) | 0.013±0.051 (0-0.093) | 0.01±0.05 (0-0.047) | 0.01±0.055 (0-0.04) | 0.015±0.065 (0-0.089) |
| *Leopardus pardalis* | 0.236±0.089 (0.106-0.445) | 0.202±0.066 (0.099-0.356) | 0.303±0.022 (0.26-0.346) | 0.1±0.03 (0.052-0.165) | 0.153±0.029 (0.101-0.214) | 0.124±0.026 (0.079-0.179) | 0.103±0.02 (0.067-0.148) | 0.142±0.064 (0.052-0.292) |
| *Leopardus wiedii* | 0.047±0.016 (0.02-0.084) | 0.048±0.016 (0.022-0.085) | 0.04±0.014 (0.016-0.069) | 0.041±0.015 (0.014-0.072) | 0.05±0.014 (0.028-0.083) | 0.053±0.014 (0.032-0.084) | 0.052±0.013 (0.032-0.083) | 0.047±0.017 (0.02-0.087) |
| *Mazama americana* | 0.141±0.042 (0.078-0.248) | 0.193±0.056 (0.116-0.325) | 0.134±0.018 (0.102-0.172) | 0.094±0.033 (0.036-0.154) | 0.12±0.023 (0.077-0.167) | 0.121±0.027 (0.071-0.178) | 0.135±0.021 (0.097-0.181) | 0.198±0.083 (0.104-0.417) |
| *Mazama nemorivaga* | 0.25±0.05 (0.147-0.358) | 0.245±0.045 (0.149-0.332) | 0.216±0.055 (0.081-0.302) | 0.25±0.04 (0.171-0.335) | 0.248±0.032 (0.185-0.314) | 0.23±0.036 (0.157-0.296) | 0.282±0.036 (0.218-0.361) | 0.237±0.05 (0.129-0.333) |
| *Mitu tuberosum* | 0.067±0.043 (0.014-0.17) | 0.241±0.064 (0.138-0.383) | 0.265±0.021 (0.224-0.307) | 0.112±0.025 (0.07-0.169) | 0.084±0.022 (0.049-0.136) | 0.092±0.022 (0.055-0.144) | 0.1±0.023 (0.061-0.153) | 0.048±0.045 (0.003-0.177) |
| *Myoprocta pratti* | 0.112±0.037 (0.041-0.185) | 0.088±0.036 (0.028-0.162) | 0.137±0.025 (0.09-0.188) | 0.1±0.041 (0.026-0.181) | 0.128±0.031 (0.073-0.194) | 0.143±0.032 (0.09-0.217) | 0.055±0.053 (0.002-0.154) | 0.108±0.05 (0.022-0.21) |
| *Myrmecophaga tridactyla* | 0.023±0.011 (0.008-0.047) | 0.029±0.013 (0.012-0.064) | 0.023±0.008 (0.011-0.042) | 0.02±0.011 (0.005-0.042) | 0.021±0.009 (0.007-0.042) | 0.029±0.012 (0.014-0.059) | 0.027±0.01 (0.012-0.05) | 0.028±0.013 (0.012-0.061) |
| *Nasua nasua* | 0.022±0.016 (0.006-0.063) | 0.018±0.011 (0.005-0.045) | 0.017±0.011 (0.003-0.045) | 0.02±0.013 (0.006-0.051) | 0.018±0.01 (0.005-0.044) | 0.015±0.011 (0.002-0.039) | 0.022±0.012 (0.007-0.054) | 0.03±0.048 (0.007-0.117) |
| *Panthera onca* | 0.116±0.048 (0.047-0.234) | 0.119±0.04 (0.058-0.212) | 0.176±0.018 (0.142-0.216) | 0.082±0.024 (0.045-0.135) | 0.097±0.019 (0.064-0.138) | 0.136±0.027 (0.09-0.194) | 0.064±0.028 (0.027-0.127) | 0.098±0.044 (0.033-0.195) |
| *Pecari tajacu* | 0.084±0.033 (0.03-0.152) | 0.149±0.036 (0.087-0.23) | 0.139±0.021 (0.101-0.184) | 0.113±0.025 (0.069-0.166) | 0.093±0.022 (0.056-0.142) | 0.143±0.023 (0.103-0.193) | 0.147±0.024 (0.106-0.198) | 0.068±0.035 (0.016-0.144) |
| *Penelope jacquacu* | 0.075±0.033 (0.037-0.166) | 0.065±0.023 (0.033-0.124) | 0.051±0.013 (0.027-0.08) | 0.053±0.016 (0.027-0.09) | 0.043±0.016 (0.017-0.076) | 0.067±0.016 (0.04-0.104) | 0.065±0.018 (0.038-0.11) | 0.052±0.02 (0.021-0.097) |
| *Priodontes maximus* | 0.045±0.022 (0.017-0.092) | 0.048±0.021 (0.02-0.098) | 0.047±0.019 (0.02-0.092) | 0.046±0.019 (0.02-0.089) | 0.052±0.026 (0.022-0.117) | 0.046±0.017 (0.021-0.085) | 0.043±0.016 (0.018-0.082) | 0.045±0.021 (0.014-0.091) |
| *Procyon cancrivorus* | 0.021±0.016 (0.003-0.062) | 0.02±0.016 (0.002-0.061) | 0.023±0.017 (0.005-0.068) | 0.02±0.016 (0.003-0.058) | 0.02±0.015 (0.004-0.059) | 0.023±0.015 (0.006-0.063) | 0.022±0.015 (0.006-0.06) | 0.022±0.018 (0.004-0.066) |
| *Psophia leucoptera* | 0.199±0.051 (0.109-0.315) | 0.173±0.042 (0.099-0.264) | 0.121±0.022 (0.083-0.167) | 0.194±0.04 (0.122-0.279) | 0.264±0.027 (0.213-0.32) | 0.151±0.022 (0.11-0.198) | 0.213±0.033 (0.153-0.28) | 0.113±0.041 (0.044-0.202) |
| *Puma concolor* | 0.056±0.02 (0.02-0.098) | 0.054±0.019 (0.019-0.091) | 0.073±0.013 (0.052-0.1) | 0.074±0.022 (0.043-0.132) | 0.052±0.015 (0.026-0.085) | 0.067±0.018 (0.04-0.11) | 0.054±0.013 (0.031-0.082) | 0.058±0.021 (0.02-0.1) |
| *Puma yagouaroundi* | 0.012±0.01 (0.002-0.037) | 0.015±0.011 (0.003-0.046) | 0.013±0.009 (0.003-0.036) | 0.013±0.01 (0.003-0.038) | 0.012±0.009 (0.002-0.036) | 0.013±0.009 (0.003-0.038) | 0.01±0.009 (0.001-0.03) | 0.014±0.013 (0.003-0.043) |
| *Speothos venaticus* | 0.01±0.027 (0-0.058) | 0.017±0.074 (0-0.087) | 0.011±0.013 (0.001-0.048) | 0.012±0.059 (0-0.054) | 0.011±0.052 (0-0.057) | 0.01±0.051 (0-0.036) | 0.012±0.064 (0-0.038) | 0.012±0.045 (0-0.057) |
| *Sylvilagus brasiliensis* | 0.068±0.099 (0-0.29) | 0.065±0.101 (0.001-0.339) | 0.212±0.032 (0.155-0.28) | 0.052±0.087 (0-0.257) | 0.062±0.052 (0.007-0.2) | 0.043±0.044 (0.004-0.175) | 0.039±0.05 (0.001-0.189) | 0.071±0.103 (0.001-0.32) |
| *Tapirus terrestris* | 0.269±0.09 (0.131-0.49) | 0.513±0.098 (0.338-0.719) | 0.349±0.024 (0.304-0.396) | 0.177±0.031 (0.123-0.241) | 0.163±0.024 (0.118-0.213) | 0.27±0.029 (0.215-0.327) | 0.214±0.021 (0.175-0.257) | 0.348±0.102 (0.181-0.581) |
| *Tayassu pecari* | 0.274±0.041 (0.179-0.343) | 0.292±0.041 (0.223-0.393) | 0.27±0.047 (0.161-0.341) | 0.284±0.023 (0.241-0.332) | 0.275±0.021 (0.231-0.314) | 0.297±0.021 (0.259-0.343) | 0.273±0.021 (0.229-0.312) | 0.278±0.045 (0.181-0.366) |

On-trail detection probability *p* (posterior mean, standard error and 95% credible interval) for eight camera trap surveys in the Peruvian Amazon estimated under a multi-session multi-species occupancy model.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.756±0.173 (0.348-0.997) | 0.801±0.129 (0.539-0.997) | 0.006±0.052 (0-0.052) | 0.62±0.232 (0.134-0.972) | 0.761±0.15 (0.425-0.992) | 0.708±0.165 (0.352-0.979) | 0.857±0.119 (0.587-0.999) | 0.744±0.179 (0.324-0.995) |
| *Cuniculus paca* | 0.454±0.122 (0.245-0.719) | 0.774±0.091 (0.581-0.927) | 0.291±0.075 (0.156-0.449) | 0.51±0.135 (0.279-0.804) | 0.46±0.095 (0.278-0.653) | 0.458±0.084 (0.295-0.624) | 0.467±0.088 (0.303-0.641) | 0.321±0.181 (0.056-0.739) |
| *Dasyprocta punctata* | 0.516±0.125 (0.282-0.76) | 0.828±0.076 (0.667-0.953) | 0.595±0.079 (0.441-0.748) | 0.486±0.102 (0.283-0.684) | 0.498±0.091 (0.319-0.671) | 0.673±0.081 (0.509-0.827) | 0.723±0.07 (0.576-0.847) | 0.546±0.098 (0.352-0.733) |
| *Dasypus spp.* | 0.538±0.129 (0.349-0.84) | 0.467±0.082 (0.324-0.641) | 0.349±0.089 (0.175-0.518) | 0.373±0.104 (0.157-0.565) | 0.446±0.085 (0.291-0.627) | 0.424±0.082 (0.27-0.602) | 0.448±0.089 (0.29-0.643) | 0.393±0.107 (0.176-0.604) |
| *Didelphis marsupialis* | 0.509±0.183 (0.244-0.936) | 0.481±0.177 (0.228-0.911) | 0.379±0.147 (0.159-0.767) | 0.23±0.1 (0.064-0.433) | 0.49±0.155 (0.27-0.874) | 0.505±0.165 (0.264-0.912) | 0.348±0.09 (0.184-0.534) | 0.178±0.209 (0-0.671) |
| *Eira barbara* | 0.411±0.185 (0.086-0.823) | 0.559±0.147 (0.325-0.884) | 0.359±0.146 (0.127-0.691) | 0.413±0.175 (0.113-0.819) | 0.543±0.172 (0.264-0.926) | 0.531±0.172 (0.256-0.915) | 0.398±0.175 (0.105-0.806) | 0.498±0.176 (0.207-0.906) |
| *Galicitis vittata* | 0.086±0.205 (0-0.801) | 0.046±0.147 (0-0.574) | 0.398±0.29 (0.019-0.999) | 0.087±0.207 (0-0.791) | 0.075±0.193 (0-0.757) | 0.072±0.189 (0-0.751) | 0.074±0.191 (0-0.759) | 0.08±0.188 (0-0.719) |
| *Leopardus pardalis* | 0.56±0.155 (0.269-0.877) | 0.465±0.118 (0.253-0.702) | 0.795±0.082 (0.614-0.933) | 0.521±0.141 (0.259-0.817) | 0.456±0.104 (0.266-0.672) | 0.501±0.116 (0.286-0.737) | 0.636±0.123 (0.408-0.893) | 0.536±0.172 (0.208-0.868) |
| *Leopardus wiedii* | 0.61±0.168 (0.274-0.94) | 0.574±0.156 (0.283-0.902) | 0.554±0.161 (0.265-0.894) | 0.533±0.186 (0.172-0.905) | 0.619±0.156 (0.336-0.944) | 0.672±0.15 (0.404-0.966) | 0.698±0.148 (0.428-0.975) | 0.621±0.168 (0.298-0.951) |
| *Mazama americana* | 0.609±0.124 (0.358-0.856) | 0.804±0.075 (0.644-0.932) | 0.753±0.083 (0.59-0.913) | 0.558±0.15 (0.276-0.848) | 0.574±0.114 (0.361-0.798) | 0.516±0.122 (0.291-0.758) | 0.695±0.099 (0.503-0.891) | 0.482±0.126 (0.25-0.727) |
| *Mazama nemorivaga* | 0.603±0.148 (0.332-0.909) | 0.807±0.081 (0.634-0.945) | 0.11±0.064 (0.028-0.25) | 0.328±0.105 (0.145-0.55) | 0.363±0.086 (0.207-0.537) | 0.401±0.09 (0.235-0.584) | 0.481±0.092 (0.304-0.664) | 0.565±0.159 (0.295-0.914) |
| *Mitu tuberosum* | 0.65±0.18 (0.184-0.911) | 0.694±0.084 (0.513-0.841) | 0.812±0.069 (0.675-0.939) | 0.755±0.101 (0.544-0.954) | 0.697±0.114 (0.452-0.896) | 0.691±0.117 (0.441-0.901) | 0.668±0.12 (0.414-0.881) | 0.154±0.287 (0-0.836) |
| *Myoprocta pratti* | 0.324±0.103 (0.179-0.576) | 0.243±0.064 (0.115-0.375) | 0.316±0.074 (0.198-0.492) | 0.227±0.081 (0.075-0.384) | 0.257±0.067 (0.134-0.407) | 0.276±0.067 (0.156-0.421) | 0.011±0.053 (0-0.185) | 0.222±0.081 (0.06-0.375) |
| *Myrmecophaga tridactyla* | 0.558±0.188 (0.203-0.937) | 0.571±0.154 (0.313-0.911) | 0.636±0.166 (0.351-0.968) | 0.156±0.254 (0-0.797) | 0.517±0.198 (0.135-0.912) | 0.614±0.174 (0.306-0.966) | 0.612±0.177 (0.303-0.971) | 0.634±0.169 (0.34-0.97) |
| *Nasua nasua* | 0.498±0.21 (0.174-0.959) | 0.493±0.204 (0.188-0.948) | 0.373±0.206 (0.061-0.851) | 0.462±0.218 (0.124-0.948) | 0.47±0.212 (0.143-0.936) | 0.137±0.22 (0-0.742) | 0.492±0.216 (0.156-0.954) | 0.419±0.214 (0.079-0.914) |
| *Panthera onca* | 0.773±0.148 (0.402-0.982) | 0.823±0.102 (0.591-0.985) | 0.88±0.067 (0.735-0.987) | 0.761±0.138 (0.449-0.973) | 0.793±0.108 (0.56-0.976) | 0.72±0.123 (0.468-0.939) | 0.599±0.22 (0.208-0.937) | 0.727±0.183 (0.281-0.976) |
| *Pecari tajacu* | 0.655±0.101 (0.41-0.826) | 0.703±0.066 (0.574-0.836) | 0.655±0.073 (0.502-0.784) | 0.692±0.08 (0.534-0.852) | 0.668±0.083 (0.49-0.817) | 0.69±0.073 (0.542-0.838) | 0.677±0.071 (0.531-0.812) | 0.63±0.126 (0.287-0.821) |
| *Penelope jacquacu* | 0.673±0.123 (0.447-0.929) | 0.655±0.11 (0.458-0.886) | 0.578±0.129 (0.323-0.83) | 0.623±0.132 (0.355-0.891) | 0.567±0.151 (0.254-0.851) | 0.663±0.12 (0.444-0.916) | 0.614±0.126 (0.368-0.868) | 0.605±0.141 (0.308-0.879) |
| *Priodontes maximus* | 0.318±0.136 (0.099-0.637) | 0.399±0.141 (0.192-0.743) | 0.318±0.12 (0.134-0.588) | 0.333±0.14 (0.114-0.684) | 0.27±0.126 (0.071-0.551) | 0.356±0.136 (0.157-0.694) | 0.341±0.141 (0.136-0.698) | 0.186±0.173 (0-0.535) |
| *Procyon cancrivorus* | 0.162±0.221 (0-0.801) | 0.084±0.166 (0-0.611) | 0.308±0.214 (0.055-0.901) | 0.112±0.19 (0-0.677) | 0.299±0.218 (0.038-0.866) | 0.389±0.245 (0.079-0.965) | 0.371±0.24 (0.074-0.958) | 0.16±0.216 (0-0.804) |
| *Psophia leucoptera* | 0.667±0.091 (0.492-0.857) | 0.714±0.074 (0.571-0.856) | 0.573±0.089 (0.393-0.737) | 0.523±0.108 (0.307-0.716) | 0.676±0.07 (0.541-0.81) | 0.737±0.085 (0.579-0.906) | 0.499±0.096 (0.308-0.683) | 0.67±0.106 (0.468-0.893) |
| *Puma concolor* | 0.704±0.197 (0.212-0.98) | 0.724±0.17 (0.322-0.98) | 0.85±0.095 (0.638-0.992) | 0.725±0.149 (0.399-0.972) | 0.713±0.161 (0.369-0.976) | 0.692±0.157 (0.373-0.961) | 0.788±0.127 (0.519-0.988) | 0.708±0.192 (0.218-0.978) |
| *Puma yagouaroundi* | 0.208±0.235 (0-0.838) | 0.455±0.213 (0.148-0.931) | 0.365±0.218 (0.077-0.896) | 0.365±0.228 (0.048-0.899) | 0.341±0.227 (0.032-0.897) | 0.371±0.226 (0.058-0.909) | 0.159±0.229 (0-0.806) | 0.386±0.225 (0.069-0.909) |
| *Speothos venaticus* | 0.068±0.187 (0-0.764) | 0.035±0.136 (0-0.549) | 0.505±0.283 (0.073-1) | 0.069±0.195 (0-0.779) | 0.06±0.178 (0-0.732) | 0.052±0.165 (0-0.67) | 0.053±0.167 (0-0.685) | 0.071±0.195 (0-0.786) |
| *Sylvilagus brasiliensis* | 0.099±0.145 (0-0.475) | 0.071±0.124 (0-0.408) | 0.298±0.079 (0.154-0.461) | 0.061±0.122 (0-0.399) | 0.138±0.125 (0.008-0.429) | 0.169±0.144 (0.01-0.515) | 0.151±0.15 (0.004-0.511) | 0.103±0.146 (0-0.454) |
| *Tapirus terrestris* | 0.804±0.094 (0.557-0.943) | 0.847±0.051 (0.742-0.944) | 0.83±0.05 (0.722-0.921) | 0.813±0.071 (0.643-0.94) | 0.795±0.07 (0.633-0.911) | 0.774±0.069 (0.608-0.884) | 0.865±0.055 (0.762-0.967) | 0.843±0.067 (0.704-0.965) |
| *Tayassu pecari* | 0.677±0.192 (0.32-0.997) | 0.845±0.089 (0.657-0.995) | 0.05±0.061 (0.004-0.143) | 0.896±0.078 (0.717-0.999) | 0.662±0.085 (0.492-0.819) | 0.948±0.046 (0.832-1) | 0.674±0.088 (0.489-0.836) | 0.024±0.057 (0-0.181) |

Occupancy ψ (posterior mean, standard error and 95% credible interval) for *terra firme* forests in eight camera trap surveys in the Peruvian Amazon estimated under a multi-session multi-species occupancy model.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 |
| *Atelocynus microtis* | 0.505±0.263 (0.05-0.942) | 0.648±0.202 (0.237-0.981) | 0.583±0.222 (0.151-0.957) | 0.795±0.14 (0.499-0.997) |
| *Cuniculus paca* | 0.537±0.138 (0.285-0.831) | 0.487±0.104 (0.287-0.699) | 0.486±0.098 (0.297-0.679) | 0.495±0.093 (0.317-0.683) |
| *Dasyprocta punctata* | 0.533±0.113 (0.315-0.748) | 0.545±0.1 (0.347-0.743) | 0.712±0.085 (0.543-0.867) | 0.759±0.07 (0.615-0.881) |
| *Dasypus spp.* | 0.261±0.101 (0.085-0.479) | 0.32±0.095 (0.163-0.53) | 0.301±0.089 (0.147-0.493) | 0.321±0.095 (0.166-0.529) |
| *Didelphis marsupialis* | 0.294±0.119 (0.088-0.549) | 0.565±0.164 (0.302-0.929) | 0.581±0.165 (0.307-0.943) | 0.428±0.099 (0.248-0.634) |
| *Eira barbara* | 0.467±0.186 (0.14-0.851) | 0.594±0.181 (0.26-0.95) | 0.585±0.173 (0.268-0.926) | 0.45±0.185 (0.134-0.852) |
| *Galicitis vittata* | 0.106±0.229 (0-0.821) | 0.093±0.216 (0-0.784) | 0.091±0.213 (0-0.786) | 0.091±0.212 (0-0.765) |
| *Leopardus pardalis* | 0.77±0.112 (0.522-0.949) | 0.728±0.102 (0.512-0.906) | 0.762±0.093 (0.558-0.917) | 0.843±0.082 (0.66-0.974) |
| *Leopardus wiedii* | 0.561±0.197 (0.164-0.908) | 0.647±0.153 (0.351-0.933) | 0.7±0.141 (0.418-0.962) | 0.724±0.139 (0.448-0.968) |
| *Mazama americana* | 0.581±0.153 (0.291-0.875) | 0.597±0.122 (0.367-0.834) | 0.54±0.132 (0.296-0.803) | 0.715±0.101 (0.516-0.91) |
| *Mazama nemorivaga* | 0.108±0.058 (0.029-0.252) | 0.123±0.057 (0.04-0.259) | 0.14±0.062 (0.048-0.287) | 0.182±0.067 (0.072-0.334) |
| *Mitu tuberosum* | 0.769±0.106 (0.551-0.961) | 0.713±0.12 (0.451-0.929) | 0.71±0.117 (0.472-0.919) | 0.686±0.125 (0.434-0.924) |
| *Myoprocta pratti* | 0.324±0.118 (0.111-0.573) | 0.364±0.105 (0.184-0.588) | 0.387±0.104 (0.204-0.611) | 0.014±0.067 (0-0.258) |
| *Myrmecophaga tridactyla* | 0.172±0.277 (0-0.835) | 0.565±0.199 (0.163-0.916) | 0.662±0.169 (0.317-0.963) | 0.66±0.17 (0.323-0.969) |
| *Nasua nasua* | 0.562±0.198 (0.189-0.945) | 0.567±0.202 (0.186-0.96) | 0.168±0.254 (0-0.786) | 0.593±0.192 (0.239-0.964) |
| *Panthera onca* | 0.772±0.135 (0.461-0.98) | 0.802±0.111 (0.568-0.984) | 0.741±0.108 (0.515-0.933) | 0.62±0.2 (0.243-0.935) |
| *Pecari tajacu* | 0.569±0.106 (0.369-0.791) | 0.542±0.107 (0.332-0.755) | 0.566±0.099 (0.377-0.765) | 0.552±0.093 (0.374-0.736) |
| *Penelope jacquacu* | 0.642±0.145 (0.345-0.911) | 0.588±0.155 (0.275-0.874) | 0.68±0.132 (0.423-0.931) | 0.634±0.135 (0.376-0.899) |
| *Priodontes maximus* | 0.512±0.165 (0.222-0.849) | 0.438±0.162 (0.153-0.772) | 0.54±0.155 (0.267-0.856) | 0.521±0.161 (0.237-0.869) |
| *Procyon cancrivorus* | 0.171±0.246 (0-0.797) | 0.437±0.218 (0.083-0.891) | 0.54±0.217 (0.173-0.972) | 0.522±0.212 (0.164-0.958) |
| *Psophia leucoptera* | 0.538±0.11 (0.316-0.74) | 0.688±0.084 (0.516-0.845) | 0.746±0.095 (0.554-0.92) | 0.514±0.094 (0.335-0.699) |
| *Puma concolor* | 0.644±0.173 (0.282-0.952) | 0.637±0.173 (0.293-0.946) | 0.61±0.173 (0.265-0.926) | 0.723±0.145 (0.434-0.977) |
| *Puma yagouaroundi* | 0.567±0.201 (0.157-0.936) | 0.537±0.207 (0.133-0.919) | 0.575±0.194 (0.197-0.942) | 0.242±0.294 (0-0.863) |
| *Speothos venaticus* | 0.08±0.211 (0-0.795) | 0.068±0.191 (0-0.735) | 0.06±0.179 (0-0.709) | 0.061±0.181 (0-0.718) |
| *Sylvilagus brasiliensis* | 0.14±0.226 (0-0.753) | 0.338±0.199 (0.049-0.763) | 0.394±0.211 (0.06-0.84) | 0.344±0.23 (0.026-0.838) |
| *Tapirus terrestris* | 0.798±0.083 (0.615-0.938) | 0.78±0.081 (0.596-0.914) | 0.757±0.084 (0.572-0.893) | 0.854±0.064 (0.722-0.965) |
| *Tayassu pecari* | 0.934±0.058 (0.786-0.999) | 0.775±0.084 (0.589-0.915) | 0.968±0.032 (0.88-1) | 0.787±0.074 (0.625-0.913) |

Occupancy ψ (posterior mean, standard error and 95% credible interval) for floodplain forests in eight camera trap surveys in the Peruvian Amazon estimated under a multi-session multi-species occupancy model.



Posterior distribution of species richness estimates for six camera trap surveys with a multi-session multi-species occupancy model. The dashed line indicates the observed number of species.

## Results model 2: Royle-Nichols multi-session multi-species occupancy model

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|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| Atelocynus microtis | 1 | 1 | 0.01 | 1 | 1 | 1 | 1 | 1 |
| Cuniculus paca | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Dasyprocta punctata | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Dasypus spp. | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Didelphis marsupialis | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.51 |
| Eira barbara | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Galicitis vittata | 0.27 | 0.17 | 1 | 0.27 | 0.23 | 0.23 | 0.22 | 0.27 |
| Leopardus pardalis | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Leopardus wiedii | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mazama americana | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mazama nemorivaga | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Mitu tuberosum | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.22 |
| Myoprocta pratti | 1 | 1 | 1 | 1 | 1 | 1 | 0.04 | 1 |
| Myrmecophaga tridactyla | 1 | 1 | 1 | 0.33 | 1 | 1 | 1 | 1 |
| Nasua nasua | 1 | 1 | 1 | 1 | 1 | 0.35 | 1 | 1 |
| Panthera onca | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Pecari tajacu | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Penelope jacquacu | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Priodontes maximus | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.63 |
| Procyon cancrivorus | 0.54 | 0.34 | 1 | 0.40 | 1 | 1 | 1 | 0.55 |
| Psophia leucoptera | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Puma concolor | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Puma yagouaroundi | 0.65 | 1 | 1 | 1 | 1 | 1 | 0.46 | 1 |
| Speothos venaticus | 0.22 | 0.12 | 1 | 0.19 | 0.17 | 0.15 | 0.15 | 0.22 |
| Sylvilagus brasiliensis | 0.56 | 0.46 | 1 | 0.41 | 1 | 1 | 1 | 0.55 |
| Tapirus terrestris | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Tayassu pecari | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.45 |

Probability of occurrence of 27 species for eight camera trap surveys in the Peruvian Amazon estimated with a Royle-Nichols multi-session multi-species occupancy model. The values were calculated as the mean of the latent variable *wij* (where *i* is the species and *t* is the survey) over all MMCM runs. A value of 1 indicates that the species was detected during the survey.

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|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.025±0.011 (0.009-0.05) | 0.026±0.01 (0.01-0.049) | 0.019±0.011 (0.002-0.041) | 0.025±0.011 (0.008-0.049) | 0.024±0.01 (0.008-0.048) | 0.024±0.011 (0.009-0.048) | 0.028±0.012 (0.01-0.056) | 0.024±0.01 (0.008-0.048) |
| *Cuniculus paca* | 0.12±0.045 (0.059-0.234) | 0.1±0.023 (0.058-0.149) | 0.109±0.033 (0.052-0.181) | 0.073±0.031 (0.018-0.133) | 0.081±0.03 (0.026-0.142) | 0.097±0.032 (0.043-0.17) | 0.088±0.029 (0.035-0.148) | 0.077±0.035 (0.015-0.147) |
| *Dasyprocta punctata* | 0.133±0.045 (0.061-0.239) | 0.126±0.023 (0.083-0.174) | 0.098±0.025 (0.055-0.154) | 0.14±0.044 (0.067-0.236) | 0.107±0.035 (0.049-0.186) | 0.116±0.033 (0.059-0.19) | 0.207±0.052 (0.12-0.324) | 0.229±0.068 (0.118-0.38) |
| *Dasypus spp.* | 0.098±0.029 (0.052-0.167) | 0.088±0.02 (0.054-0.129) | 0.079±0.022 (0.037-0.124) | 0.076±0.026 (0.024-0.125) | 0.086±0.025 (0.044-0.141) | 0.094±0.028 (0.051-0.159) | 0.084±0.024 (0.04-0.132) | 0.084±0.026 (0.039-0.14) |
| *Didelphis marsupialis* | 0.063±0.031 (0.023-0.14) | 0.032±0.014 (0.012-0.064) | 0.032±0.017 (0.009-0.072) | 0.085±0.062 (0.023-0.261) | 0.044±0.022 (0.014-0.099) | 0.041±0.02 (0.013-0.093) | 0.07±0.038 (0.024-0.165) | 0.031±0.02 (0.005-0.073) |
| *Eira barbara* | 0.034±0.015 (0.01-0.068) | 0.039±0.014 (0.017-0.071) | 0.04±0.018 (0.015-0.085) | 0.035±0.015 (0.012-0.072) | 0.036±0.015 (0.012-0.069) | 0.036±0.015 (0.013-0.073) | 0.032±0.014 (0.009-0.065) | 0.036±0.016 (0.013-0.072) |
| *Galicitis vittata* | 0.011±0.011 (0.001-0.042) | 0.009±0.012 (0-0.04) | 0.015±0.016 (0.001-0.058) | 0.012±0.014 (0-0.048) | 0.012±0.014 (0-0.052) | 0.011±0.014 (0-0.042) | 0.011±0.024 (0-0.041) | 0.012±0.014 (0.001-0.053) |
| *Leopardus pardalis* | 0.052±0.025 (0.02-0.115) | 0.046±0.018 (0.019-0.086) | 0.075±0.034 (0.028-0.159) | 0.027±0.015 (0.007-0.066) | 0.04±0.019 (0.013-0.088) | 0.03±0.015 (0.009-0.065) | 0.027±0.013 (0.008-0.059) | 0.035±0.018 (0.01-0.08) |
| *Leopardus wiedii* | 0.026±0.011 (0.01-0.053) | 0.026±0.011 (0.01-0.051) | 0.024±0.011 (0.008-0.049) | 0.024±0.011 (0.007-0.05) | 0.028±0.012 (0.011-0.058) | 0.029±0.013 (0.011-0.059) | 0.028±0.012 (0.011-0.057) | 0.026±0.012 (0.01-0.054) |
| *Mazama americana* | 0.109±0.028 (0.057-0.167) | 0.125±0.023 (0.083-0.175) | 0.11±0.026 (0.06-0.16) | 0.098±0.032 (0.032-0.157) | 0.107±0.029 (0.049-0.164) | 0.107±0.031 (0.047-0.165) | 0.114±0.029 (0.06-0.17) | 0.123±0.034 (0.071-0.206) |
| *Mazama nemorivaga* | 0.113±0.032 (0.062-0.192) | 0.104±0.021 (0.064-0.148) | 0.099±0.032 (0.032-0.161) | 0.114±0.038 (0.06-0.21) | 0.116±0.041 (0.064-0.216) | 0.108±0.035 (0.057-0.186) | 0.131±0.052 (0.071-0.274) | 0.108±0.03 (0.058-0.176) |
| *Mitu tuberosum* | 0.035±0.023 (0.006-0.087) | 0.074±0.021 (0.039-0.121) | 0.078±0.032 (0.033-0.157) | 0.045±0.021 (0.014-0.092) | 0.04±0.021 (0.011-0.087) | 0.042±0.021 (0.012-0.091) | 0.044±0.021 (0.013-0.094) | 0.028±0.022 (0.002-0.081) |
| *Myoprocta pratti* | 0.127±0.037 (0.065-0.21) | 0.105±0.031 (0.046-0.167) | 0.144±0.04 (0.083-0.241) | 0.112±0.041 (0.036-0.196) | 0.137±0.046 (0.07-0.246) | 0.149±0.053 (0.077-0.283) | 0.077±0.059 (0.004-0.197) | 0.116±0.046 (0.035-0.214) |
| *Myrmecophaga tridactyla* | 0.03±0.013 (0.01-0.061) | 0.035±0.013 (0.015-0.065) | 0.031±0.012 (0.012-0.059) | 0.028±0.014 (0.006-0.058) | 0.029±0.013 (0.008-0.058) | 0.036±0.016 (0.014-0.076) | 0.034±0.014 (0.013-0.068) | 0.034±0.014 (0.013-0.069) |
| *Nasua nasua* | 0.03±0.017 (0.009-0.073) | 0.026±0.014 (0.008-0.061) | 0.024±0.015 (0.005-0.06) | 0.028±0.018 (0.007-0.071) | 0.027±0.016 (0.008-0.069) | 0.023±0.015 (0.004-0.061) | 0.031±0.019 (0.009-0.083) | 0.033±0.029 (0.009-0.09) |
| *Panthera onca* | 0.018±0.008 (0.007-0.038) | 0.018±0.007 (0.008-0.034) | 0.023±0.011 (0.009-0.052) | 0.016±0.007 (0.005-0.034) | 0.017±0.007 (0.007-0.035) | 0.021±0.009 (0.008-0.045) | 0.015±0.007 (0.004-0.032) | 0.017±0.008 (0.005-0.035) |
| *Pecari tajacu* | 0.072±0.025 (0.03-0.125) | 0.105±0.02 (0.068-0.147) | 0.101±0.027 (0.059-0.164) | 0.086±0.028 (0.041-0.148) | 0.075±0.026 (0.033-0.129) | 0.101±0.032 (0.054-0.178) | 0.105±0.033 (0.056-0.189) | 0.063±0.029 (0.017-0.125) |
| *Penelope jacquacu* | 0.047±0.018 (0.02-0.093) | 0.042±0.013 (0.02-0.072) | 0.037±0.015 (0.014-0.07) | 0.039±0.016 (0.014-0.075) | 0.034±0.015 (0.009-0.066) | 0.045±0.018 (0.018-0.089) | 0.045±0.018 (0.018-0.087) | 0.037±0.015 (0.014-0.071) |
| *Priodontes maximus* | 0.031±0.014 (0.011-0.065) | 0.032±0.013 (0.013-0.062) | 0.032±0.014 (0.013-0.066) | 0.033±0.015 (0.012-0.067) | 0.033±0.016 (0.012-0.069) | 0.033±0.014 (0.013-0.066) | 0.031±0.014 (0.012-0.064) | 0.03±0.013 (0.011-0.059) |
| *Procyon cancrivorus* | 0.016±0.016 (0.002-0.048) | 0.013±0.014 (0.001-0.04) | 0.02±0.018 (0.003-0.065) | 0.015±0.015 (0.002-0.051) | 0.017±0.015 (0.002-0.052) | 0.02±0.016 (0.003-0.061) | 0.019±0.017 (0.003-0.064) | 0.016±0.016 (0.002-0.051) |
| *Psophia leucoptera* | 0.178±0.043 (0.105-0.275) | 0.16±0.025 (0.112-0.211) | 0.123±0.034 (0.065-0.194) | 0.171±0.054 (0.088-0.305) | 0.225±0.066 (0.123-0.379) | 0.142±0.041 (0.075-0.234) | 0.187±0.057 (0.104-0.331) | 0.12±0.035 (0.058-0.193) |
| *Puma concolor* | 0.012±0.006 (0.004-0.027) | 0.012±0.006 (0.004-0.025) | 0.014±0.007 (0.005-0.031) | 0.014±0.008 (0.005-0.033) | 0.012±0.006 (0.004-0.027) | 0.014±0.008 (0.005-0.033) | 0.012±0.006 (0.004-0.027) | 0.012±0.006 (0.004-0.027) |
| *Puma yagouaroundi* | 0.018±0.013 (0.003-0.049) | 0.022±0.012 (0.006-0.052) | 0.019±0.012 (0.004-0.048) | 0.02±0.013 (0.004-0.051) | 0.019±0.012 (0.004-0.048) | 0.02±0.013 (0.004-0.051) | 0.017±0.013 (0.002-0.048) | 0.02±0.012 (0.004-0.05) |
| *Speothos venaticus* | 0.013±0.021 (0.001-0.041) | 0.01±0.011 (0-0.035) | 0.017±0.015 (0.002-0.059) | 0.012±0.013 (0.001-0.044) | 0.011±0.01 (0-0.039) | 0.011±0.01 (0.001-0.04) | 0.012±0.018 (0.001-0.042) | 0.015±0.041 (0.001-0.051) |
| *Sylvilagus brasiliensis* | 0.017±0.027 (0-0.085) | 0.015±0.037 (0-0.095) | 0.092±0.041 (0.03-0.186) | 0.016±0.049 (0-0.103) | 0.02±0.024 (0.002-0.085) | 0.015±0.019 (0.001-0.071) | 0.013±0.02 (0-0.074) | 0.019±0.04 (0-0.094) |
| *Tapirus terrestris* | 0.043±0.016 (0.019-0.082) | 0.095±0.019 (0.059-0.133) | 0.074±0.025 (0.033-0.133) | 0.036±0.016 (0.012-0.072) | 0.033±0.015 (0.011-0.069) | 0.057±0.022 (0.023-0.107) | 0.042±0.017 (0.015-0.079) | 0.054±0.017 (0.026-0.095) |
| *Tayassu pecari* | 0.058±0.021 (0.023-0.105) | 0.06±0.017 (0.03-0.095) | 0.049±0.027 (0.001-0.099) | 0.076±0.053 (0.03-0.229) | 0.074±0.047 (0.029-0.21) | 0.079±0.058 (0.03-0.259) | 0.069±0.039 (0.028-0.18) | 0.049±0.026 (0.001-0.097) |

Off-trail individual detection probability *r* (posterior mean, standard error and 95% credible interval) for eight camera trap surveys in the Peruvian Amazon estimated under a Royle-Nichols multi-session multi-species occupancy model.

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|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.02±0.009 (0.007-0.041) | 0.02±0.009 (0.007-0.041) | 0.013±0.008 (0.002-0.026) | 0.019±0.008 (0.007-0.038) | 0.019±0.008 (0.007-0.036) | 0.019±0.008 (0.007-0.037) | 0.021±0.008 (0.008-0.041) | 0.019±0.009 (0.007-0.039) |
| *Cuniculus paca* | 0.187±0.08 (0.101-0.416) | 0.159±0.052 (0.089-0.296) | 0.167±0.034 (0.111-0.243) | 0.111±0.034 (0.046-0.17) | 0.122±0.028 (0.068-0.173) | 0.148±0.028 (0.098-0.209) | 0.134±0.025 (0.084-0.188) | 0.118±0.046 (0.03-0.204) |
| *Dasyprocta punctata* | 0.159±0.056 (0.069-0.293) | 0.153±0.041 (0.084-0.248) | 0.117±0.025 (0.073-0.168) | 0.164±0.04 (0.093-0.249) | 0.126±0.03 (0.07-0.188) | 0.136±0.025 (0.087-0.188) | 0.239±0.034 (0.174-0.308) | 0.268±0.088 (0.141-0.471) |
| *Dasypus spp.* | 0.089±0.035 (0.045-0.18) | 0.08±0.025 (0.042-0.14) | 0.07±0.02 (0.034-0.112) | 0.067±0.022 (0.025-0.113) | 0.076±0.019 (0.043-0.12) | 0.084±0.023 (0.048-0.141) | 0.074±0.019 (0.04-0.115) | 0.076±0.026 (0.034-0.139) |
| *Didelphis marsupialis* | 0.098±0.051 (0.036-0.233) | 0.054±0.026 (0.014-0.112) | 0.049±0.021 (0.016-0.097) | 0.122±0.066 (0.047-0.305) | 0.066±0.02 (0.032-0.111) | 0.062±0.02 (0.027-0.104) | 0.102±0.031 (0.052-0.173) | 0.053±0.032 (0.006-0.123) |
| *Eira barbara* | 0.024±0.012 (0.008-0.052) | 0.029±0.013 (0.011-0.06) | 0.029±0.014 (0.012-0.065) | 0.026±0.011 (0.009-0.053) | 0.026±0.01 (0.01-0.051) | 0.026±0.01 (0.011-0.051) | 0.023±0.01 (0.008-0.048) | 0.027±0.013 (0.01-0.059) |
| *Galicitis vittata* | 0.008±0.012 (0-0.037) | 0.006±0.009 (0-0.034) | 0.01±0.015 (0-0.048) | 0.006±0.01 (0-0.032) | 0.006±0.01 (0-0.034) | 0.006±0.011 (0-0.025) | 0.006±0.017 (0-0.03) | 0.009±0.015 (0-0.046) |
| *Leopardus pardalis* | 0.102±0.051 (0.039-0.234) | 0.09±0.039 (0.036-0.193) | 0.135±0.039 (0.066-0.213) | 0.051±0.022 (0.018-0.102) | 0.074±0.024 (0.035-0.128) | 0.056±0.02 (0.024-0.101) | 0.051±0.018 (0.022-0.092) | 0.068±0.034 (0.019-0.144) |
| *Leopardus wiedii* | 0.029±0.012 (0.011-0.055) | 0.029±0.012 (0.011-0.057) | 0.026±0.01 (0.01-0.049) | 0.026±0.011 (0.009-0.05) | 0.03±0.011 (0.013-0.057) | 0.032±0.011 (0.013-0.058) | 0.031±0.011 (0.013-0.056) | 0.029±0.012 (0.011-0.058) |
| *Mazama americana* | 0.067±0.02 (0.036-0.112) | 0.078±0.024 (0.047-0.139) | 0.066±0.014 (0.041-0.095) | 0.058±0.017 (0.024-0.092) | 0.064±0.016 (0.036-0.097) | 0.064±0.017 (0.034-0.102) | 0.069±0.015 (0.042-0.103) | 0.076±0.029 (0.042-0.154) |
| *Mazama nemorivaga* | 0.176±0.044 (0.086-0.265) | 0.165±0.041 (0.078-0.239) | 0.158±0.047 (0.038-0.233) | 0.176±0.036 (0.105-0.246) | 0.178±0.031 (0.119-0.239) | 0.167±0.032 (0.099-0.229) | 0.197±0.035 (0.139-0.277) | 0.171±0.043 (0.075-0.255) |
| *Mitu tuberosum* | 0.046±0.026 (0.008-0.1) | 0.104±0.041 (0.049-0.206) | 0.105±0.032 (0.054-0.17) | 0.059±0.019 (0.026-0.1) | 0.052±0.02 (0.021-0.095) | 0.055±0.02 (0.023-0.096) | 0.058±0.02 (0.024-0.102) | 0.041±0.028 (0.002-0.098) |
| *Myoprocta pratti* | 0.093±0.032 (0.036-0.162) | 0.078±0.03 (0.024-0.139) | 0.104±0.023 (0.063-0.153) | 0.082±0.032 (0.022-0.143) | 0.098±0.027 (0.051-0.158) | 0.107±0.027 (0.06-0.167) | 0.048±0.043 (0.002-0.129) | 0.086±0.036 (0.019-0.157) |
| *Myrmecophaga tridactyla* | 0.016±0.008 (0.005-0.036) | 0.019±0.01 (0.007-0.043) | 0.016±0.007 (0.006-0.033) | 0.014±0.007 (0.003-0.03) | 0.015±0.007 (0.004-0.032) | 0.019±0.009 (0.007-0.041) | 0.018±0.008 (0.007-0.037) | 0.019±0.01 (0.006-0.044) |
| *Nasua nasua* | 0.018±0.012 (0.004-0.047) | 0.016±0.01 (0.004-0.04) | 0.014±0.009 (0.003-0.037) | 0.016±0.01 (0.004-0.041) | 0.016±0.009 (0.004-0.039) | 0.012±0.008 (0.002-0.032) | 0.018±0.01 (0.005-0.044) | 0.02±0.026 (0.004-0.059) |
| *Panthera onca* | 0.052±0.019 (0.02-0.095) | 0.051±0.017 (0.021-0.088) | 0.064±0.018 (0.034-0.104) | 0.046±0.016 (0.018-0.08) | 0.049±0.014 (0.024-0.08) | 0.058±0.017 (0.031-0.096) | 0.042±0.018 (0.012-0.077) | 0.048±0.019 (0.016-0.089) |
| *Pecari tajacu* | 0.056±0.021 (0.018-0.098) | 0.082±0.023 (0.044-0.136) | 0.076±0.016 (0.048-0.111) | 0.065±0.017 (0.034-0.1) | 0.056±0.017 (0.028-0.091) | 0.076±0.017 (0.046-0.114) | 0.079±0.019 (0.047-0.122) | 0.049±0.023 (0.011-0.093) |
| *Penelope jacquacu* | 0.039±0.018 (0.017-0.087) | 0.035±0.014 (0.016-0.068) | 0.03±0.01 (0.013-0.053) | 0.031±0.011 (0.014-0.056) | 0.026±0.011 (0.009-0.05) | 0.036±0.012 (0.018-0.064) | 0.035±0.012 (0.017-0.063) | 0.03±0.012 (0.011-0.057) |
| *Priodontes maximus* | 0.032±0.015 (0.011-0.069) | 0.033±0.015 (0.012-0.07) | 0.032±0.014 (0.012-0.068) | 0.033±0.015 (0.012-0.069) | 0.033±0.016 (0.013-0.071) | 0.033±0.014 (0.013-0.066) | 0.031±0.014 (0.011-0.064) | 0.032±0.015 (0.01-0.067) |
| *Procyon cancrivorus* | 0.018±0.014 (0.003-0.051) | 0.017±0.012 (0.003-0.047) | 0.02±0.014 (0.004-0.054) | 0.016±0.012 (0.003-0.048) | 0.017±0.011 (0.003-0.047) | 0.02±0.012 (0.005-0.052) | 0.019±0.012 (0.005-0.051) | 0.018±0.014 (0.004-0.052) |
| *Psophia leucoptera* | 0.117±0.035 (0.059-0.199) | 0.105±0.028 (0.056-0.168) | 0.077±0.02 (0.043-0.119) | 0.109±0.03 (0.06-0.18) | 0.146±0.028 (0.095-0.206) | 0.089±0.02 (0.052-0.129) | 0.12±0.028 (0.074-0.186) | 0.078±0.028 (0.029-0.133) |
| *Puma concolor* | 0.029±0.012 (0.01-0.054) | 0.028±0.011 (0.009-0.053) | 0.033±0.011 (0.015-0.058) | 0.034±0.013 (0.014-0.063) | 0.028±0.01 (0.012-0.051) | 0.032±0.012 (0.014-0.058) | 0.029±0.01 (0.013-0.052) | 0.029±0.012 (0.01-0.054) |
| *Puma yagouaroundi* | 0.01±0.009 (0.002-0.029) | 0.012±0.009 (0.003-0.034) | 0.01±0.006 (0.002-0.026) | 0.01±0.007 (0.002-0.028) | 0.01±0.007 (0.002-0.026) | 0.01±0.007 (0.002-0.027) | 0.008±0.006 (0.001-0.024) | 0.01±0.008 (0.002-0.029) |
| *Speothos venaticus* | 0.01±0.019 (0-0.041) | 0.008±0.01 (0-0.034) | 0.012±0.013 (0.001-0.046) | 0.007±0.008 (0-0.027) | 0.006±0.008 (0-0.029) | 0.006±0.008 (0-0.027) | 0.007±0.01 (0-0.028) | 0.011±0.041 (0-0.044) |
| *Sylvilagus brasiliensis* | 0.034±0.046 (0-0.161) | 0.031±0.06 (0-0.158) | 0.157±0.036 (0.094-0.236) | 0.028±0.065 (0-0.158) | 0.037±0.038 (0.004-0.143) | 0.029±0.033 (0.002-0.13) | 0.025±0.036 (0.001-0.134) | 0.037±0.059 (0-0.175) |
| *Tapirus terrestris* | 0.107±0.043 (0.045-0.213) | 0.224±0.075 (0.114-0.402) | 0.168±0.025 (0.122-0.221) | 0.085±0.023 (0.048-0.135) | 0.078±0.02 (0.046-0.123) | 0.133±0.026 (0.088-0.189) | 0.099±0.019 (0.062-0.138) | 0.135±0.053 (0.061-0.269) |
| *Tayassu pecari* | 0.11±0.039 (0.019-0.176) | 0.114±0.035 (0.032-0.179) | 0.1±0.049 (0.001-0.171) | 0.125±0.026 (0.077-0.181) | 0.124±0.024 (0.079-0.175) | 0.128±0.024 (0.085-0.181) | 0.117±0.025 (0.069-0.164) | 0.103±0.047 (0.001-0.173) |

On-trail individual detection probability *r* (posterior mean, standard error and 95% credible interval) for eight camera trap surveys in the Peruvian Amazon estimated under a Royle-Nichols multi-session multi-species occupancy model.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Alerta 2008 | CM2 2010 | Espinoza 2009 | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 | Monterey 2008 |
| *Atelocynus microtis* | 0.754±0.129 (0.484-0.972) | 0.779±0.114 (0.546-0.975) | 0.003±0.04 (0-0) | 0.726±0.142 (0.42-0.96) | 0.754±0.125 (0.496-0.97) | 0.741±0.131 (0.465-0.964) | 0.81±0.115 (0.571-0.989) | 0.741±0.134 (0.445-0.965) |
| *Cuniculus paca* | 0.579±0.13 (0.341-0.837) | 0.834±0.088 (0.63-0.968) | 0.357±0.078 (0.217-0.519) | 0.463±0.115 (0.268-0.719) | 0.448±0.097 (0.272-0.657) | 0.503±0.086 (0.339-0.674) | 0.507±0.086 (0.347-0.679) | 0.32±0.138 (0.09-0.624) |
| *Dasyprocta punctata* | 0.588±0.114 (0.353-0.798) | 0.828±0.069 (0.685-0.947) | 0.646±0.082 (0.476-0.793) | 0.556±0.1 (0.356-0.748) | 0.547±0.093 (0.371-0.73) | 0.695±0.075 (0.551-0.84) | 0.768±0.063 (0.64-0.886) | 0.665±0.102 (0.462-0.869) |
| *Dasypus spp.* | 0.564±0.125 (0.377-0.861) | 0.508±0.086 (0.365-0.7) | 0.422±0.088 (0.244-0.587) | 0.423±0.104 (0.199-0.61) | 0.482±0.086 (0.319-0.67) | 0.479±0.088 (0.323-0.666) | 0.479±0.086 (0.321-0.663) | 0.45±0.096 (0.252-0.641) |
| *Didelphis marsupialis* | 0.443±0.121 (0.274-0.765) | 0.408±0.095 (0.251-0.628) | 0.376±0.09 (0.208-0.574) | 0.363±0.09 (0.184-0.548) | 0.416±0.095 (0.266-0.651) | 0.425±0.101 (0.269-0.676) | 0.404±0.082 (0.264-0.587) | 0.19±0.199 (0-0.539) |
| *Eira barbara* | 0.463±0.136 (0.198-0.739) | 0.555±0.129 (0.345-0.833) | 0.478±0.127 (0.256-0.749) | 0.472±0.134 (0.215-0.748) | 0.513±0.127 (0.284-0.778) | 0.518±0.126 (0.299-0.791) | 0.45±0.138 (0.182-0.729) | 0.507±0.132 (0.278-0.783) |
| *Galicitis vittata* | 0.069±0.144 (0-0.511) | 0.038±0.105 (0-0.394) | 0.297±0.178 (0.046-0.724) | 0.072±0.148 (0-0.511) | 0.058±0.136 (0-0.491) | 0.058±0.134 (0-0.484) | 0.059±0.137 (0-0.502) | 0.068±0.14 (0-0.49) |
| *Leopardus pardalis* | 0.67±0.139 (0.391-0.928) | 0.597±0.128 (0.352-0.841) | 0.859±0.088 (0.666-0.988) | 0.598±0.137 (0.331-0.85) | 0.589±0.119 (0.365-0.823) | 0.639±0.12 (0.405-0.867) | 0.659±0.118 (0.428-0.883) | 0.603±0.154 (0.286-0.874) |
| *Leopardus wiedii* | 0.609±0.134 (0.346-0.871) | 0.599±0.128 (0.358-0.851) | 0.572±0.128 (0.33-0.826) | 0.559±0.141 (0.276-0.829) | 0.626±0.128 (0.39-0.889) | 0.662±0.129 (0.43-0.931) | 0.674±0.13 (0.44-0.936) | 0.616±0.135 (0.351-0.884) |
| *Mazama americana* | 0.684±0.103 (0.47-0.87) | 0.854±0.066 (0.71-0.96) | 0.787±0.074 (0.638-0.924) | 0.607±0.128 (0.339-0.838) | 0.665±0.098 (0.471-0.846) | 0.627±0.112 (0.407-0.833) | 0.759±0.084 (0.583-0.908) | 0.67±0.109 (0.436-0.857) |
| *Mazama nemorivaga* | 0.65±0.127 (0.399-0.885) | 0.811±0.078 (0.647-0.942) | 0.147±0.082 (0.039-0.332) | 0.38±0.111 (0.187-0.623) | 0.413±0.093 (0.238-0.605) | 0.426±0.094 (0.256-0.623) | 0.562±0.095 (0.385-0.749) | 0.585±0.133 (0.335-0.848) |
| *Mitu tuberosum* | 0.599±0.206 (0.185-0.913) | 0.79±0.091 (0.592-0.954) | 0.901±0.071 (0.745-0.992) | 0.777±0.105 (0.548-0.957) | 0.687±0.134 (0.421-0.924) | 0.698±0.13 (0.438-0.919) | 0.687±0.13 (0.429-0.911) | 0.112±0.246 (0-0.827) |
| *Myoprocta pratti* | 0.353±0.095 (0.213-0.595) | 0.279±0.07 (0.139-0.418) | 0.359±0.08 (0.23-0.541) | 0.269±0.083 (0.103-0.43) | 0.298±0.074 (0.165-0.459) | 0.326±0.076 (0.2-0.496) | 0.007±0.044 (0-0.086) | 0.269±0.086 (0.101-0.436) |
| *Myrmecophaga tridactyla* | 0.558±0.141 (0.287-0.836) | 0.586±0.132 (0.346-0.854) | 0.586±0.132 (0.342-0.855) | 0.167±0.257 (0-0.738) | 0.531±0.149 (0.237-0.823) | 0.6±0.142 (0.339-0.899) | 0.589±0.14 (0.339-0.882) | 0.603±0.139 (0.353-0.894) |
| *Nasua nasua* | 0.433±0.155 (0.189-0.793) | 0.424±0.143 (0.195-0.741) | 0.37±0.146 (0.122-0.687) | 0.411±0.152 (0.161-0.768) | 0.406±0.147 (0.169-0.736) | 0.127±0.195 (0-0.596) | 0.431±0.155 (0.181-0.787) | 0.411±0.153 (0.163-0.755) |
| *Panthera onca* | 0.779±0.136 (0.47-0.975) | 0.83±0.1 (0.598-0.985) | 0.93±0.054 (0.799-0.995) | 0.739±0.127 (0.473-0.949) | 0.799±0.097 (0.58-0.961) | 0.817±0.088 (0.63-0.961) | 0.595±0.175 (0.299-0.921) | 0.721±0.164 (0.342-0.96) |
| *Pecari tajacu* | 0.671±0.099 (0.445-0.832) | 0.751±0.075 (0.607-0.901) | 0.705±0.072 (0.557-0.845) | 0.712±0.08 (0.545-0.869) | 0.68±0.09 (0.489-0.847) | 0.729±0.074 (0.59-0.88) | 0.714±0.074 (0.57-0.866) | 0.634±0.125 (0.343-0.822) |
| *Penelope jacquacu* | 0.722±0.119 (0.5-0.956) | 0.704±0.109 (0.501-0.921) | 0.626±0.117 (0.388-0.853) | 0.653±0.12 (0.413-0.877) | 0.601±0.134 (0.314-0.849) | 0.708±0.111 (0.497-0.927) | 0.671±0.115 (0.451-0.894) | 0.637±0.129 (0.354-0.874) |
| *Priodontes maximus* | 0.356±0.117 (0.167-0.623) | 0.392±0.118 (0.207-0.668) | 0.357±0.111 (0.173-0.609) | 0.363±0.118 (0.171-0.627) | 0.349±0.114 (0.153-0.602) | 0.374±0.116 (0.187-0.642) | 0.36±0.114 (0.174-0.615) | 0.212±0.187 (0-0.56) |
| *Procyon cancrivorus* | 0.146±0.17 (0-0.545) | 0.081±0.137 (0-0.45) | 0.285±0.142 (0.09-0.632) | 0.106±0.158 (0-0.516) | 0.273±0.141 (0.078-0.613) | 0.312±0.155 (0.101-0.707) | 0.308±0.153 (0.099-0.678) | 0.149±0.171 (0-0.54) |
| *Psophia leucoptera* | 0.72±0.082 (0.559-0.891) | 0.737±0.068 (0.61-0.874) | 0.631±0.084 (0.457-0.786) | 0.632±0.092 (0.428-0.788) | 0.737±0.074 (0.598-0.883) | 0.736±0.076 (0.597-0.891) | 0.618±0.084 (0.439-0.766) | 0.674±0.086 (0.491-0.837) |
| *Puma concolor* | 0.709±0.157 (0.334-0.953) | 0.708±0.144 (0.399-0.942) | 0.849±0.094 (0.649-0.989) | 0.781±0.119 (0.519-0.973) | 0.719±0.128 (0.447-0.944) | 0.75±0.12 (0.495-0.956) | 0.764±0.114 (0.529-0.959) | 0.714±0.153 (0.341-0.954) |
| *Puma yagouaroundi* | 0.204±0.194 (0-0.619) | 0.399±0.166 (0.152-0.794) | 0.345±0.15 (0.113-0.69) | 0.347±0.157 (0.106-0.709) | 0.328±0.152 (0.088-0.676) | 0.351±0.157 (0.111-0.717) | 0.141±0.184 (0-0.581) | 0.353±0.154 (0.108-0.716) |
| *Speothos venaticus* | 0.062±0.142 (0-0.5) | 0.027±0.091 (0-0.339) | 0.345±0.184 (0.083-0.791) | 0.058±0.145 (0-0.522) | 0.046±0.127 (0-0.467) | 0.041±0.119 (0-0.427) | 0.041±0.119 (0-0.444) | 0.061±0.141 (0-0.523) |
| *Sylvilagus brasiliensis* | 0.133±0.157 (0-0.473) | 0.101±0.148 (0-0.455) | 0.34±0.089 (0.183-0.524) | 0.09±0.141 (0-0.441) | 0.233±0.134 (0.026-0.504) | 0.246±0.138 (0.03-0.529) | 0.229±0.141 (0.016-0.51) | 0.133±0.159 (0-0.485) |
| *Tapirus terrestris* | 0.832±0.075 (0.638-0.941) | 0.879±0.047 (0.785-0.969) | 0.862±0.042 (0.773-0.938) | 0.836±0.065 (0.677-0.935) | 0.826±0.065 (0.67-0.926) | 0.824±0.058 (0.689-0.915) | 0.875±0.045 (0.782-0.962) | 0.865±0.056 (0.739-0.968) |
| *Tayassu pecari* | 0.711±0.144 (0.412-0.953) | 0.866±0.078 (0.693-0.985) | 0.188±0.251 (0.013-0.864) | 0.86±0.068 (0.703-0.971) | 0.743±0.08 (0.574-0.887) | 0.902±0.049 (0.785-0.977) | 0.754±0.084 (0.587-0.916) | 0.103±0.2 (0-0.81) |

Occupancy ψ (posterior mean, standard error and 95% credible interval) for *terra firme* forests for eight camera trap surveys in the Peruvian Amazon estimated under a Royle-Nichols multi-session multi-species occupancy model.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Los Amigos 2005 | Los Amigos 2006 | Los Amigos 2007 | Tambopata 2007 |
| *Atelocynus microtis* | 0.659±0.153 (0.344-0.927) | 0.687±0.139 (0.409-0.941) | 0.674±0.143 (0.38-0.935) | 0.749±0.132 (0.488-0.974) |
| *Cuniculus paca* | 0.493±0.121 (0.281-0.749) | 0.477±0.103 (0.295-0.689) | 0.534±0.095 (0.355-0.719) | 0.538±0.093 (0.36-0.725) |
| *Dasyprocta punctata* | 0.646±0.106 (0.432-0.836) | 0.637±0.098 (0.447-0.823) | 0.78±0.075 (0.625-0.916) | 0.845±0.057 (0.722-0.943) |
| *Dasypus spp.* | 0.344±0.105 (0.147-0.561) | 0.396±0.097 (0.221-0.598) | 0.394±0.098 (0.221-0.606) | 0.393±0.094 (0.226-0.59) |
| *Didelphis marsupialis* | 0.464±0.116 (0.231-0.688) | 0.523±0.107 (0.336-0.765) | 0.532±0.112 (0.345-0.793) | 0.51±0.099 (0.33-0.722) |
| *Eira barbara* | 0.494±0.142 (0.226-0.784) | 0.535±0.136 (0.294-0.818) | 0.541±0.135 (0.295-0.828) | 0.471±0.144 (0.202-0.758) |
| *Galicitis vittata* | 0.097±0.188 (0-0.648) | 0.077±0.17 (0-0.611) | 0.078±0.171 (0-0.597) | 0.077±0.171 (0-0.618) |
| *Leopardus pardalis* | 0.828±0.116 (0.55-0.985) | 0.826±0.101 (0.594-0.977) | 0.862±0.092 (0.647-0.989) | 0.877±0.085 (0.674-0.991) |
| *Leopardus wiedii* | 0.604±0.151 (0.287-0.872) | 0.67±0.131 (0.417-0.919) | 0.705±0.127 (0.459-0.943) | 0.717±0.126 (0.472-0.949) |
| *Mazama americana* | 0.609±0.133 (0.341-0.85) | 0.667±0.107 (0.452-0.861) | 0.629±0.118 (0.404-0.848) | 0.76±0.09 (0.569-0.92) |
| *Mazama nemorivaga* | 0.167±0.068 (0.06-0.317) | 0.182±0.064 (0.078-0.325) | 0.189±0.066 (0.085-0.335) | 0.266±0.074 (0.136-0.424) |
| *Mitu tuberosum* | 0.798±0.104 (0.569-0.973) | 0.712±0.132 (0.45-0.94) | 0.722±0.13 (0.453-0.944) | 0.712±0.128 (0.459-0.932) |
| *Myoprocta pratti* | 0.331±0.107 (0.117-0.553) | 0.365±0.096 (0.194-0.572) | 0.397±0.097 (0.233-0.616) | 0.008±0.053 (0-0.107) |
| *Myrmecophaga tridactyla* | 0.183±0.279 (0-0.782) | 0.58±0.158 (0.264-0.874) | 0.649±0.147 (0.367-0.931) | 0.638±0.145 (0.369-0.92) |
| *Nasua nasua* | 0.505±0.163 (0.217-0.856) | 0.5±0.16 (0.222-0.843) | 0.158±0.238 (0-0.721) | 0.526±0.165 (0.243-0.871) |
| *Panthera onca* | 0.743±0.127 (0.472-0.955) | 0.803±0.1 (0.58-0.967) | 0.821±0.092 (0.625-0.969) | 0.599±0.171 (0.3-0.919) |
| *Pecari tajacu* | 0.679±0.097 (0.484-0.861) | 0.648±0.102 (0.443-0.833) | 0.696±0.093 (0.507-0.875) | 0.682±0.091 (0.501-0.854) |
| *Penelope jacquacu* | 0.674±0.128 (0.41-0.903) | 0.622±0.141 (0.32-0.876) | 0.728±0.118 (0.491-0.943) | 0.691±0.117 (0.465-0.912) |
| *Priodontes maximus* | 0.519±0.143 (0.263-0.811) | 0.503±0.144 (0.236-0.799) | 0.534±0.14 (0.282-0.828) | 0.517±0.139 (0.274-0.809) |
| *Procyon cancrivorus* | 0.156±0.218 (0-0.665) | 0.401±0.163 (0.135-0.76) | 0.45±0.172 (0.173-0.834) | 0.445±0.169 (0.174-0.814) |
| *Psophia leucoptera* | 0.642±0.104 (0.421-0.82) | 0.746±0.077 (0.588-0.893) | 0.745±0.083 (0.582-0.902) | 0.628±0.095 (0.436-0.801) |
| *Puma concolor* | 0.739±0.128 (0.476-0.965) | 0.675±0.135 (0.398-0.925) | 0.706±0.127 (0.451-0.942) | 0.721±0.12 (0.483-0.94) |
| *Puma yagouaroundi* | 0.538±0.183 (0.198-0.899) | 0.514±0.183 (0.18-0.876) | 0.543±0.18 (0.219-0.9) | 0.218±0.269 (0-0.794) |
| *Speothos venaticus* | 0.073±0.175 (0-0.619) | 0.059±0.155 (0-0.569) | 0.053±0.147 (0-0.551) | 0.052±0.145 (0-0.543) |
| *Sylvilagus brasiliensis* | 0.154±0.232 (0-0.716) | 0.395±0.199 (0.062-0.79) | 0.414±0.199 (0.068-0.813) | 0.385±0.209 (0.039-0.796) |
| *Tapirus terrestris* | 0.842±0.071 (0.674-0.951) | 0.832±0.071 (0.671-0.945) | 0.831±0.063 (0.685-0.929) | 0.88±0.051 (0.769-0.97) |
| *Tayassu pecari* | 0.954±0.036 (0.86-0.997) | 0.884±0.061 (0.744-0.976) | 0.973±0.022 (0.917-0.998) | 0.891±0.06 (0.753-0.984) |

Occupancy ψ (posterior mean, standard error and 95% credible interval) for floodplain forests for four camera trap surveys in the Peruvian Amazon estimated under a Royle-Nichols multi-session multi-species occupancy model.