

**Supplementary material**

## Supplementary Materials

### Appendix 1

Table A1. Sample size for age categories of house martins hatched outside our study colonies (' $\geq$ ', i.e. captured for the first time as unringed adult) and hatched within our study colonies (i.e. ringed when nestlings). See Methods for more details. This original sample size (N = 300) was used to assign individuals to isotopic clusters and depict wintering areas. Individuals with age  $\geq$  one year old were excluded from the analysis of winter habitat use and carry-over effect (second and third objectives respectively).

| Age (years) | N   | Males | Females | Age class   |
|-------------|-----|-------|---------|-------------|
| 1           | 51  | 22    | 29      | Young       |
| $\geq 1$    | 103 | 39    | 64      |             |
| 2           | 20  | 8     | 12      | Experienced |
| $\geq 2$    | 51  | 22    | 28      | Experienced |
| 3           | 6   | 4     | 2       | Experienced |
| $\geq 3$    | 42  | 16    | 26      | Experienced |
| 4           | 1   | 1     | 0       | Experienced |
| $\geq 4$    | 15  | 1     | 14      | Experienced |
| 5           | 1   | 0     | 1       | Experienced |
| $\geq 5$    | 5   | 4     | 1       | Experienced |
| $\geq 6$    | 3   | 2     | 1       | Experienced |
| $\geq 7$    | 1   | 0     | 1       | Experienced |
| $\geq 8$    | 1   | 1     | 0       | Experienced |

Table B1. Summary results from the probability approach to assign sample feathers to isotopic clusters. Here is shown the probability of a given sample feather to be grown at a particular isotopic cluster.

| Ring    | Year | Colony | d2Hf   | d13C   | d15N | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | Assigned cluster |
|---------|------|--------|--------|--------|------|-----------|-----------|-----------|-----------|------------------|
| 282744  | 2005 | RUCAB  | -33.77 | -18.49 | 6.98 | 9.58E-01  | 4.21E-02  | 4.86E-08  | 8.70E-17  | 1                |
| 282199  | 2005 | RUCAB  | -45.81 | -19.59 | 7.03 | 9.84E-01  | 1.60E-02  | 8.84E-10  | 1.69E-20  | 1                |
| N746683 | 2008 | BOTOA  | -41.23 | -19.02 | 7.19 | 9.25E-01  | 7.47E-02  | 3.99E-06  | 1.33E-13  | 1                |
| 123997  | 2005 | RUCAB  | -41.01 | -19.21 | 7.21 | 9.74E-01  | 2.64E-02  | 7.76E-09  | 1.31E-18  | 1                |
| 144511  | 2005 | RUCAB  | -33.61 | -19.76 | 7.48 | 9.96E-01  | 4.47E-03  | 5.73E-09  | 1.75E-17  | 1                |
| 282356  | 2005 | RUCAB  | -49.94 | -19.2  | 7.51 | 8.96E-01  | 1.04E-01  | 1.40E-08  | 1.87E-19  | 1                |
| 746374  | 2009 | RUCAB  | -41.13 | -20.02 | 7.56 | 9.93E-01  | 6.69E-03  | 2.20E-09  | 5.11E-19  | 1                |
| 282200  | 2005 | RUCAB  | -48.61 | -20.25 | 7.58 | 9.90E-01  | 9.92E-03  | 7.39E-10  | 1.19E-20  | 1                |
| 313197  | 2007 | RUCAB  | -29.57 | -17.58 | 7.67 | 6.71E-01  | 3.29E-01  | 1.13E-05  | 4.78E-13  | 1                |
| 123923  | 2005 | RUCAB  | -14.88 | -16.71 | 7.72 | 6.06E-01  | 3.93E-01  | 4.66E-04  | 5.20E-09  | 1                |
| 282283  | 2005 | RUCAB  | -37.61 | -19.51 | 7.78 | 9.82E-01  | 1.81E-02  | 3.17E-08  | 4.73E-17  | 1                |
| 3N23611 | 2012 | BOTOA  | -43.31 | -19.72 | 7.79 | 9.39E-01  | 6.06E-02  | 3.12E-06  | 7.00E-14  | 1                |

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|         |      |       |        |        |      |          |          |          |          |   |
|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 623949  | 2008 | RUCAB | -32.87 | -19.98 | 7.84 | 9.96E-01 | 3.87E-03 | 1.16E-08 | 8.50E-17 | 1 |
| 1N58704 | 2011 | RUCAB | -35.74 | -19.84 | 7.85 | 9.92E-01 | 7.55E-03 | 1.61E-08 | 4.64E-17 | 1 |
| 3N24586 | 2012 | BOTOA | -27.02 | -20.73 | 7.89 | 9.99E-01 | 1.46E-03 | 5.10E-07 | 2.45E-12 | 1 |
| 144547  | 2005 | RUCAB | -49.66 | -19.86 | 7.92 | 9.60E-01 | 4.01E-02 | 8.69E-09 | 2.19E-19 | 1 |
| 3N23815 | 2012 | BOTOA | -44.24 | -20.66 | 7.93 | 9.83E-01 | 1.67E-02 | 4.48E-07 | 6.32E-15 | 1 |
| 144535  | 2005 | RUCAB | -16.26 | -18.13 | 7.95 | 9.61E-01 | 3.90E-02 | 1.69E-05 | 1.05E-10 | 1 |
| 824585  | 2010 | RUCAB | -28.83 | -18.45 | 7.96 | 9.18E-01 | 8.19E-02 | 2.95E-06 | 2.03E-13 | 1 |
| 1N58898 | 2011 | RUCAB | -41.26 | -18.22 | 7.98 | 5.96E-01 | 4.04E-01 | 2.15E-06 | 2.18E-15 | 1 |
| 927577  | 2010 | RUCAB | -34.67 | -18.16 | 8.03 | 7.26E-01 | 2.74E-01 | 5.58E-06 | 6.39E-14 | 1 |
| 123994  | 2005 | RUCAB | -21.74 | -19.36 | 8.14 | 9.94E-01 | 6.03E-03 | 5.04E-07 | 4.12E-13 | 1 |
| 623555  | 2008 | RUCAB | -29.95 | -20.28 | 8.16 | 9.98E-01 | 2.05E-03 | 1.77E-08 | 5.96E-16 | 1 |
| 824426  | 2009 | RUCAB | -50.96 | -20.39 | 8.21 | 9.79E-01 | 2.05E-02 | 4.51E-09 | 1.04E-19 | 1 |
| 1N59171 | 2010 | BOTOA | -33.99 | -20    | 8.22 | 9.81E-01 | 1.89E-02 | 5.97E-06 | 4.32E-12 | 1 |
| 123992  | 2005 | RUCAB | -20.62 | -18.22 | 8.22 | 9.28E-01 | 7.20E-02 | 2.68E-05 | 5.90E-11 | 1 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 282724  | 2005 | RUCAB | -39.91 | -20.47 | 8.31 | 9.95E-01 | 5.26E-03 | 9.68E-09 | 1.24E-17 | 1 |
| N357588 | 2008 | BOTOA | -34.88 | -18.78 | 8.32 | 8.33E-01 | 1.67E-01 | 1.30E-04 | 1.07E-10 | 1 |
| 144556  | 2005 | RUCAB | -44.04 | -20.45 | 8.34 | 9.91E-01 | 9.31E-03 | 9.13E-09 | 2.96E-18 | 1 |
| 1N58750 | 2011 | RUCAB | -49.93 | -18.96 | 8.38 | 6.31E-01 | 3.69E-01 | 5.92E-07 | 4.73E-17 | 1 |
| 824512  | 2010 | RUCAB | -35.16 | -18.29 | 8.39 | 6.83E-01 | 3.17E-01 | 1.33E-05 | 2.45E-13 | 1 |
| 746368  | 2009 | RUCAB | -19.15 | -19.34 | 8.4  | 9.94E-01 | 6.38E-03 | 1.68E-06 | 5.66E-12 | 1 |
| 746287  | 2010 | RUCAB | -44.75 | -18.79 | 8.46 | 6.62E-01 | 3.38E-01 | 1.95E-06 | 1.19E-15 | 1 |
| 3N23999 | 2013 | BOTOA | -29.9  | -18.75 | 8.5  | 8.80E-01 | 1.19E-01 | 2.60E-04 | 1.38E-09 | 1 |
| 1N59036 | 2010 | RUCAB | -50.29 | -19.15 | 8.54 | 6.75E-01 | 3.25E-01 | 6.19E-07 | 5.53E-17 | 1 |
| 282725  | 2005 | RUCAB | -27.69 | -21.06 | 8.55 | 1.00E+00 | 4.33E-04 | 7.23E-09 | 8.44E-16 | 1 |
| 144563  | 2005 | RUCAB | -25.55 | -19.28 | 8.55 | 9.81E-01 | 1.86E-02 | 2.48E-06 | 1.23E-12 | 1 |
| 282734  | 2005 | RUCAB | -26.2  | -20.01 | 8.59 | 9.96E-01 | 4.10E-03 | 2.69E-07 | 8.61E-14 | 1 |
| 1N58325 | 2010 | RUCAB | -36.17 | -21.47 | 8.6  | 9.99E-01 | 5.00E-04 | 1.45E-09 | 8.19E-18 | 1 |
| N746633 | 2008 | BOTOA | -32.16 | -20.82 | 8.63 | 9.94E-01 | 5.91E-03 | 2.34E-06 | 3.57E-12 | 1 |

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| 1N58863 | 2011 | RUCAB | -53.71 | -20.14 | 8.64 | 9.20E-01 | 8.01E-02 | 4.19E-08 | 9.36E-19 | 1 |
| 746514  | 2009 | RUCAB | -42.44 | -18.96 | 8.69 | 7.41E-01 | 2.59E-01 | 3.46E-06 | 6.93E-15 | 1 |
| 746518  | 2009 | RUCAB | -32.73 | -18.17 | 8.71 | 5.97E-01 | 4.03E-01 | 6.64E-05 | 5.61E-12 | 1 |
| 1N58354 | 2011 | RUCAB | -38.18 | -19.68 | 8.74 | 9.58E-01 | 4.19E-02 | 6.77E-07 | 5.00E-15 | 1 |
| 1N58267 | 2011 | RUCAB | -32.18 | -20.61 | 8.79 | 9.97E-01 | 2.75E-03 | 5.97E-08 | 2.76E-15 | 1 |
| 282364  | 2005 | RUCAB | -24.61 | -19.64 | 8.79 | 9.90E-01 | 9.98E-03 | 2.07E-06 | 1.97E-12 | 1 |
| 1N58947 | 2011 | RUCAB | -36.6  | -18.48 | 8.8  | 6.28E-01 | 3.72E-01 | 2.91E-05 | 6.72E-13 | 1 |
| 623717  | 2010 | RUCAB | -59.34 | -20.36 | 8.86 | 8.81E-01 | 1.19E-01 | 3.33E-08 | 1.46E-19 | 1 |
| 1N58546 | 2011 | RUCAB | -47.4  | -19.35 | 8.88 | 7.52E-01 | 2.48E-01 | 1.56E-06 | 6.86E-16 | 1 |
| 282358  | 2005 | RUCAB | -32.23 | -20.8  | 8.93 | 9.98E-01 | 2.14E-03 | 5.51E-08 | 3.05E-15 | 1 |
| N927263 | 2011 | BOTOA | -19.38 | -20.17 | 8.95 | 9.95E-01 | 4.89E-03 | 3.49E-05 | 6.62E-09 | 1 |
| N746697 | 2011 | BOTOA | -33.31 | -19.86 | 9.03 | 9.45E-01 | 5.52E-02 | 6.36E-05 | 1.21E-10 | 1 |
| 3N23892 | 2012 | BOTOA | -41.51 | -20.01 | 9.04 | 8.81E-01 | 1.19E-01 | 3.49E-05 | 3.89E-12 | 1 |
| 746331  | 2010 | RUCAB | -40.16 | -19.05 | 9.05 | 7.47E-01 | 2.53E-01 | 1.17E-05 | 1.01E-13 | 1 |

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| 746351  | 2008 | RUCAB | -26.75 | -19.99 | 9.08 | 9.92E-01 | 8.34E-03 | 1.80E-06 | 1.24E-12 | 1 |
| 282317  | 2005 | RUCAB | -33.62 | -19.83 | 9.13 | 9.72E-01 | 2.84E-02 | 2.42E-06 | 1.78E-13 | 1 |
| 1N58415 | 2011 | RUCAB | -49.3  | -19.58 | 9.15 | 7.45E-01 | 2.55E-01 | 1.85E-06 | 6.48E-16 | 1 |
| 486926  | 2009 | RUCAB | -32.67 | -19.54 | 9.15 | 9.51E-01 | 4.90E-02 | 6.88E-06 | 8.19E-13 | 1 |
| 746462  | 2009 | RUCAB | -32.93 | -19.74 | 9.16 | 9.67E-01 | 3.31E-02 | 3.76E-06 | 3.85E-13 | 1 |
| 1N59010 | 2011 | RUCAB | -28.42 | -19.9  | 9.2  | 9.86E-01 | 1.44E-02 | 3.44E-06 | 1.73E-12 | 1 |
| 746369  | 2009 | RUCAB | -33.88 | -19.35 | 9.22 | 9.09E-01 | 9.08E-02 | 1.48E-05 | 1.42E-12 | 1 |
| 3N23999 | 2012 | BOTOA | -23.95 | -18.9  | 9.22 | 8.99E-01 | 1.00E-01 | 1.29E-03 | 9.27E-08 | 1 |
| 746434  | 2009 | RUCAB | -36.78 | -20.29 | 9.26 | 9.83E-01 | 1.73E-02 | 7.65E-07 | 2.00E-14 | 1 |
| 144551  | 2005 | RUCAB | -37.13 | -19.12 | 9.29 | 7.87E-01 | 2.13E-01 | 2.93E-05 | 1.13E-12 | 1 |
| N746633 | 2010 | BOTOA | -52.86 | -20.06 | 9.36 | 5.52E-01 | 4.48E-01 | 3.35E-05 | 1.00E-13 | 1 |
| 3N23987 | 2012 | BOTOA | -25.71 | -19.4  | 9.4  | 9.31E-01 | 6.83E-02 | 5.89E-04 | 2.35E-08 | 1 |
| 1N58703 | 2011 | RUCAB | -13.47 | -20.31 | 9.41 | 9.99E-01 | 1.25E-03 | 4.81E-06 | 5.78E-10 | 1 |
| 746353  | 2008 | RUCAB | -47.75 | -19.85 | 9.42 | 8.23E-01 | 1.77E-01 | 2.62E-06 | 2.40E-15 | 1 |

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| 1N58821 | 2010 | RUCAB | -27.86 | -19.68 | 9.43 | 9.71E-01 | 2.89E-02 | 1.71E-05 | 1.78E-11 | 1 |
| N746683 | 2011 | BOTOA | -34.51 | -19.74 | 9.44 | 8.79E-01 | 1.20E-01 | 2.18E-04 | 4.04E-10 | 1 |
| 824424  | 2009 | RUCAB | -43.48 | -19.34 | 9.46 | 6.99E-01 | 3.01E-01 | 1.71E-05 | 9.17E-14 | 1 |
| 635011  | 2007 | RUCAB | -63.21 | -21.47 | 9.48 | 9.64E-01 | 3.59E-02 | 8.74E-09 | 2.15E-20 | 1 |
| 623668  | 2008 | RUCAB | -36.74 | -18.82 | 9.48 | 6.09E-01 | 3.91E-01 | 1.26E-04 | 9.06E-12 | 1 |
| 282357  | 2005 | RUCAB | -42.59 | -19.28 | 9.5  | 6.82E-01 | 3.18E-01 | 2.48E-05 | 2.01E-13 | 1 |
| 824563  | 2010 | RUCAB | -35.8  | -19.37 | 9.56 | 8.46E-01 | 1.54E-01 | 4.24E-05 | 4.01E-12 | 1 |
| 1N58379 | 2011 | RUCAB | -40.18 | -19.73 | 9.63 | 8.71E-01 | 1.29E-01 | 1.40E-05 | 2.84E-13 | 1 |
| 123106  | 2005 | RUCAB | -30.12 | -18.85 | 9.7  | 7.36E-01 | 2.63E-01 | 4.64E-04 | 5.13E-10 | 1 |
| 746304  | 2009 | RUCAB | -46.15 | -19.47 | 9.73 | 6.19E-01 | 3.81E-01 | 2.40E-05 | 8.14E-14 | 1 |
| 1N58429 | 2011 | RUCAB | -52.34 | -20.09 | 9.8  | 7.44E-01 | 2.56E-01 | 3.60E-06 | 1.26E-15 | 1 |
| 623969  | 2010 | RUCAB | -40.26 | -20.56 | 9.82 | 9.72E-01 | 2.80E-02 | 2.21E-06 | 4.58E-14 | 1 |
| 1N58769 | 2011 | RUCAB | -35.5  | -19.8  | 9.85 | 9.13E-01 | 8.66E-02 | 3.53E-05 | 5.50E-12 | 1 |
| 623969  | 2009 | RUCAB | -36.91 | -20.06 | 9.92 | 9.36E-01 | 6.35E-02 | 1.89E-05 | 1.86E-12 | 1 |

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|---------|------|-------|--------|--------|-------|----------|----------|----------|----------|---|
| 623553  | 2008 | RUCAB | -38.62 | -22.49 | 9.93  | 1.00E+00 | 3.41E-04 | 7.55E-09 | 1.62E-16 | 1 |
| 824400  | 2009 | RUCAB | -44.71 | -20.45 | 9.93  | 9.33E-01 | 6.71E-02 | 3.58E-06 | 2.02E-14 | 1 |
| 1N58819 | 2011 | RUCAB | -53.09 | -20.19 | 9.95  | 7.34E-01 | 2.66E-01 | 4.38E-06 | 1.52E-15 | 1 |
| 623774  | 2008 | RUCAB | -49.03 | -19.61 | 9.99  | 5.34E-01 | 4.66E-01 | 3.03E-05 | 5.89E-14 | 1 |
| 1N58576 | 2011 | RUCAB | -24.95 | -20.23 | 10.01 | 9.88E-01 | 1.22E-02 | 3.18E-05 | 2.29E-10 | 1 |
| 746223  | 2009 | RUCAB | -36    | -19.17 | 10.06 | 6.48E-01 | 3.52E-01 | 4.13E-04 | 1.04E-10 | 1 |
| 1N59204 | 2011 | RUCAB | -43.32 | -21.08 | 10.15 | 9.81E-01 | 1.88E-02 | 1.24E-06 | 1.36E-14 | 1 |
| 824644  | 2010 | RUCAB | -30.21 | -19.62 | 10.16 | 9.00E-01 | 9.99E-02 | 2.73E-04 | 5.30E-10 | 1 |
| 1N59031 | 2011 | RUCAB | -14.33 | -19.97 | 10.33 | 9.90E-01 | 9.21E-03 | 4.56E-04 | 2.77E-07 | 1 |
| 484971  | 2008 | RUCAB | -68.88 | -21.77 | 10.48 | 8.87E-01 | 1.13E-01 | 1.01E-07 | 2.13E-19 | 1 |
| 824581  | 2010 | RUCAB | -37.31 | -19.63 | 10.72 | 6.64E-01 | 3.35E-01 | 1.11E-03 | 5.33E-10 | 1 |
| 1N58221 | 2011 | RUCAB | -43.44 | -20.05 | 10.74 | 7.07E-01 | 2.93E-01 | 2.33E-04 | 1.16E-11 | 1 |
| 1N59140 | 2012 | BOTOA | -29.48 | -21.55 | 11.23 | 9.75E-01 | 2.49E-02 | 2.84E-04 | 8.14E-09 | 1 |
| 3N23875 | 2013 | BOTOA | -33.82 | -20.15 | 11.3  | 6.39E-01 | 3.55E-01 | 6.38E-03 | 6.54E-08 | 1 |

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|---------|------|-------|--------|--------|-------|----------|----------|----------|----------|---|
| N927260 | 2011 | BOTOA | -76.76 | -23.47 | 11.32 | 6.51E-01 | 3.49E-01 | 7.16E-07 | 1.24E-18 | 1 |
| N623601 | 2011 | BOTOA | -36.89 | -23.29 | 11.58 | 9.95E-01 | 5.06E-03 | 8.09E-06 | 1.52E-11 | 1 |
| N927246 | 2011 | BOTOA | -29.26 | -22.56 | 11.61 | 9.93E-01 | 6.74E-03 | 6.27E-05 | 2.02E-09 | 1 |
| 123993  | 2005 | RUCAB | -42.64 | -21.55 | 11.67 | 9.62E-01 | 3.80E-02 | 9.17E-05 | 2.05E-11 | 1 |
| 1N59140 | 2011 | BOTOA | -43.28 | -22.51 | 12.37 | 8.96E-01 | 1.04E-01 | 3.17E-04 | 1.64E-10 | 1 |
| 1N58939 | 2010 | RUCAB | -47.59 | -15.87 | 6.86  | 1.32E-02 | 9.87E-01 | 8.98E-07 | 2.82E-17 | 2 |
| 3N23815 | 2013 | BOTOA | -43.31 | -13.94 | 7.22  | 1.38E-03 | 9.97E-01 | 1.72E-03 | 1.21E-10 | 2 |
| 3N23953 | 2013 | BOTOA | -32.38 | -13.86 | 7.22  | 5.06E-03 | 9.85E-01 | 9.78E-03 | 2.96E-08 | 2 |
| 1N59182 | 2013 | BOTOA | -36.56 | -14.08 | 7.36  | 3.63E-03 | 9.91E-01 | 5.28E-03 | 4.05E-09 | 2 |
| 1N58829 | 2011 | RUCAB | -48.36 | -16.18 | 7.44  | 1.19E-02 | 9.88E-01 | 2.62E-06 | 1.72E-16 | 2 |
| 3N23968 | 2013 | BOTOA | -38.66 | -15.01 | 7.48  | 1.18E-02 | 9.86E-01 | 2.24E-03 | 7.15E-10 | 2 |
| N927343 | 2011 | BOTOA | -37.97 | -13.54 | 7.5   | 1.00E-03 | 9.91E-01 | 7.63E-03 | 4.75E-09 | 2 |
| 144632  | 2005 | RUCAB | -23.56 | -16.33 | 7.55  | 2.22E-01 | 7.78E-01 | 1.86E-04 | 8.31E-11 | 2 |
| 1N58414 | 2011 | RUCAB | -53.48 | -15.26 | 7.62  | 6.50E-04 | 9.99E-01 | 4.13E-06 | 9.22E-17 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 144554  | 2005 | RUCAB | -31.39 | -14.3  | 7.62 | 1.03E-03 | 9.98E-01 | 5.02E-04 | 3.68E-11 | 2 |
| 824564  | 2009 | RUCAB | -52.37 | -16.54 | 7.66 | 1.27E-02 | 9.87E-01 | 1.62E-06 | 3.49E-17 | 2 |
| 1N59107 | 2013 | BOTOA | -31.74 | -12.4  | 7.7  | 2.39E-04 | 9.42E-01 | 5.78E-02 | 4.95E-07 | 2 |
| 746578  | 2009 | RUCAB | -40.96 | -15.89 | 7.71 | 1.07E-02 | 9.89E-01 | 2.55E-05 | 4.22E-14 | 2 |
| 1N58439 | 2011 | RUCAB | -26.41 | -15.13 | 7.71 | 1.08E-02 | 9.88E-01 | 6.81E-04 | 2.45E-10 | 2 |
| 282359  | 2005 | RUCAB | -39.62 | -16.78 | 7.72 | 8.62E-02 | 9.14E-01 | 1.31E-05 | 2.49E-14 | 2 |
| 484146  | 2008 | RUCAB | -44.78 | -17.06 | 7.74 | 8.57E-02 | 9.14E-01 | 4.26E-06 | 1.24E-15 | 2 |
| N927246 | 2010 | BOTOA | -64.07 | -18.87 | 7.75 | 1.93E-01 | 8.07E-01 | 2.96E-06 | 6.77E-17 | 2 |
| 623532  | 2008 | RUCAB | -28.91 | -15.8  | 7.81 | 3.18E-02 | 9.68E-01 | 2.93E-04 | 4.12E-11 | 2 |
| 1N58319 | 2011 | RUCAB | -40.84 | -14.99 | 7.81 | 1.26E-03 | 9.99E-01 | 8.06E-05 | 2.40E-13 | 2 |
| 144574  | 2005 | RUCAB | -21.17 | -15.35 | 7.88 | 2.66E-02 | 9.71E-01 | 2.11E-03 | 6.07E-09 | 2 |
| N484188 | 2008 | BOTOA | -48.23 | -16.13 | 7.92 | 1.38E-02 | 9.86E-01 | 4.01E-04 | 5.15E-12 | 2 |
| 1N58653 | 2010 | BOTOA | -41.98 | -16.74 | 7.93 | 8.30E-02 | 9.16E-01 | 6.34E-04 | 5.86E-11 | 2 |
| 623669  | 2010 | RUCAB | -51.38 | -16.03 | 7.97 | 3.10E-03 | 9.97E-01 | 7.06E-06 | 4.80E-16 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 824442  | 2009 | RUCAB | -42.18 | -17.13 | 8.01 | 9.71E-02 | 9.03E-01 | 1.25E-05 | 1.49E-14 | 2 |
| 845259  | 2007 | RUCAB | -22.16 | -13.88 | 8.01 | 7.33E-04 | 9.89E-01 | 1.03E-02 | 4.79E-08 | 2 |
| 746201  | 2009 | RUCAB | -33.4  | -15.26 | 8.02 | 4.35E-03 | 9.95E-01 | 3.95E-04 | 2.15E-11 | 2 |
| 123973  | 2007 | RUCAB | -34.94 | -14.58 | 8.03 | 7.67E-04 | 9.99E-01 | 5.94E-04 | 2.50E-11 | 2 |
| 144655  | 2005 | RUCAB | -33.68 | -16.88 | 8.05 | 1.38E-01 | 8.62E-01 | 7.48E-05 | 2.08E-12 | 2 |
| 623550  | 2008 | RUCAB | -34.53 | -16.35 | 8.05 | 4.17E-02 | 9.58E-01 | 1.19E-04 | 3.02E-12 | 2 |
| 696970  | 2009 | RUCAB | -42.12 | -15.71 | 8.05 | 4.11E-03 | 9.96E-01 | 6.00E-05 | 1.37E-13 | 2 |
| 1N59081 | 2011 | BOTOA | -32.75 | -13.15 | 8.07 | 4.99E-04 | 9.52E-01 | 4.71E-02 | 3.17E-07 | 2 |
| 282393  | 2007 | RUCAB | -35.95 | -14.09 | 8.12 | 2.01E-04 | 9.99E-01 | 1.00E-03 | 4.28E-11 | 2 |
| 3N24586 | 2011 | BOTOA | -45.63 | -17.06 | 8.13 | 7.12E-02 | 9.28E-01 | 3.76E-04 | 1.08E-11 | 2 |
| 1N58392 | 2010 | RUCAB | -39.19 | -16.57 | 8.13 | 3.59E-02 | 9.64E-01 | 5.26E-05 | 2.80E-13 | 2 |
| 746065  | 2009 | RUCAB | -33.49 | -16.38 | 8.13 | 4.56E-02 | 9.54E-01 | 1.70E-04 | 7.16E-12 | 2 |
| 746303  | 2008 | RUCAB | -51.41 | -17.19 | 8.16 | 3.29E-02 | 9.67E-01 | 3.68E-06 | 2.28E-16 | 2 |
| 696974  | 2008 | RUCAB | -31.45 | -16.09 | 8.2  | 2.82E-02 | 9.71E-01 | 3.91E-04 | 4.32E-11 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 144546  | 2005 | RUCAB | -38.72 | -17.86 | 8.21 | 3.99E-01 | 6.01E-01 | 1.28E-05 | 5.66E-14 | 2 |
| 1N58744 | 2011 | RUCAB | -45.19 | -14.85 | 8.22 | 3.30E-04 | 1.00E+00 | 1.24E-04 | 1.89E-13 | 2 |
| 510835  | 2007 | RUCAB | -39.63 | -17.03 | 8.24 | 8.05E-02 | 9.19E-01 | 3.97E-05 | 1.88E-13 | 2 |
| N927263 | 2010 | BOTOA | -43.12 | -15.3  | 8.24 | 4.44E-03 | 9.93E-01 | 2.53E-03 | 3.10E-10 | 2 |
| 1N58339 | 2011 | RUCAB | -42.94 | -17.38 | 8.27 | 1.12E-01 | 8.88E-01 | 1.66E-05 | 2.28E-14 | 2 |
| 1N59083 | 2012 | BOTOA | -29.31 | -16.62 | 8.28 | 2.05E-01 | 7.88E-01 | 6.78E-03 | 6.64E-08 | 2 |
| N506921 | 2008 | BOTOA | -38.19 | -16.1  | 8.28 | 3.16E-02 | 9.65E-01 | 3.08E-03 | 1.68E-09 | 2 |
| 1N59081 | 2012 | BOTOA | -41.84 | -15.68 | 8.29 | 9.52E-03 | 9.88E-01 | 2.47E-03 | 4.41E-10 | 2 |
| 746036  | 2008 | RUCAB | -36.99 | -13.8  | 8.29 | 7.44E-05 | 9.98E-01 | 1.71E-03 | 7.91E-11 | 2 |
| 3N23968 | 2012 | BOTOA | -32.12 | -16.37 | 8.3  | 1.01E-01 | 8.92E-01 | 6.13E-03 | 2.51E-08 | 2 |
| 1N59089 | 2013 | BOTOA | -41.58 | -15.19 | 8.32 | 4.09E-03 | 9.92E-01 | 3.87E-03 | 8.87E-10 | 2 |
| N927228 | 2013 | BOTOA | -36.53 | -15.78 | 8.35 | 2.10E-02 | 9.73E-01 | 5.59E-03 | 6.25E-09 | 2 |
| N927294 | 2011 | BOTOA | -43.12 | -14.97 | 8.35 | 2.21E-03 | 9.94E-01 | 3.74E-03 | 5.53E-10 | 2 |
| 746590  | 2010 | RUCAB | -51.29 | -18.33 | 8.4  | 2.54E-01 | 7.46E-01 | 1.81E-06 | 1.20E-16 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 746058  | 2008 | RUCAB | -63.31 | -15.61 | 8.42 | 1.66E-04 | 1.00E+00 | 4.16E-06 | 1.24E-17 | 2 |
| 746005  | 2010 | RUCAB | -39.88 | -16.09 | 8.44 | 7.83E-03 | 9.92E-01 | 1.69E-04 | 1.56E-12 | 2 |
| 1N58897 | 2011 | RUCAB | -53.6  | -17.05 | 8.45 | 1.32E-02 | 9.87E-01 | 6.18E-06 | 3.30E-16 | 2 |
| 746442  | 2010 | RUCAB | -37.04 | -17.03 | 8.45 | 8.43E-02 | 9.16E-01 | 1.07E-04 | 1.89E-12 | 2 |
| 282541  | 2007 | RUCAB | -34.22 | -13.63 | 8.46 | 5.70E-05 | 9.95E-01 | 5.07E-03 | 9.18E-10 | 2 |
| 1N59063 | 2010 | RUCAB | -52.88 | -18    | 8.48 | 1.08E-01 | 8.92E-01 | 2.76E-06 | 1.39E-16 | 2 |
| 623760  | 2009 | RUCAB | -42.68 | -16.43 | 8.48 | 1.15E-02 | 9.88E-01 | 8.25E-05 | 2.71E-13 | 2 |
| 746052  | 2009 | RUCAB | -37.69 | -15.78 | 8.48 | 4.81E-03 | 9.95E-01 | 3.71E-04 | 9.00E-12 | 2 |
| 746442  | 2009 | RUCAB | -25.57 | -15.69 | 8.48 | 1.64E-02 | 9.80E-01 | 3.36E-03 | 5.83E-09 | 2 |
| 282787  | 2008 | RUCAB | -41.29 | -17.01 | 8.49 | 4.80E-02 | 9.52E-01 | 5.98E-05 | 2.60E-13 | 2 |
| 313384  | 2008 | RUCAB | -36.95 | -15.5  | 8.49 | 2.75E-03 | 9.97E-01 | 5.68E-04 | 2.03E-11 | 2 |
| 1N58556 | 2011 | RUCAB | -37.58 | -16.25 | 8.5  | 1.37E-02 | 9.86E-01 | 2.52E-04 | 5.49E-12 | 2 |
| 282779  | 2008 | RUCAB | -34.75 | -14.88 | 8.51 | 8.58E-04 | 9.98E-01 | 1.59E-03 | 1.63E-10 | 2 |
| 282744  | 2009 | RUCAB | -45.84 | -14.38 | 8.52 | 7.27E-05 | 1.00E+00 | 3.77E-04 | 9.85E-13 | 2 |

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|         |      |       |        |        |      |          |          |          |          |   |
|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 1N58799 | 2011 | RUCAB | -50.38 | -18.24 | 8.54 | 2.07E-01 | 7.93E-01 | 3.54E-06 | 4.37E-16 | 2 |
| 282589  | 2007 | RUCAB | -41.2  | -15.67 | 8.55 | 2.27E-03 | 9.97E-01 | 2.68E-04 | 2.27E-12 | 2 |
| 746052  | 2008 | RUCAB | -24.51 | -16.14 | 8.57 | 4.49E-02 | 9.52E-01 | 3.22E-03 | 8.11E-09 | 2 |
| 144552  | 2005 | RUCAB | -35.56 | -16.02 | 8.6  | 9.17E-03 | 9.90E-01 | 5.83E-04 | 3.42E-11 | 2 |
| 313384  | 2010 | RUCAB | -51.04 | -16.38 | 8.63 | 3.17E-03 | 9.97E-01 | 2.96E-05 | 7.14E-15 | 2 |
| 746201  | 2008 | RUCAB | -49.2  | -17.72 | 8.66 | 7.38E-02 | 9.26E-01 | 1.14E-05 | 3.29E-15 | 2 |
| N484197 | 2013 | BOTOA | -37.73 | -18.12 | 8.67 | 4.18E-01 | 5.81E-01 | 7.54E-04 | 3.80E-10 | 2 |
| N484044 | 2008 | BOTOA | -52.51 | -16.66 | 8.67 | 8.08E-03 | 9.92E-01 | 3.83E-04 | 1.87E-12 | 2 |
| 824421  | 2009 | RUCAB | -47.11 | -16.18 | 8.67 | 3.07E-03 | 9.97E-01 | 7.93E-05 | 8.83E-14 | 2 |
| 1N59084 | 2011 | BOTOA | -43.5  | -15.44 | 8.69 | 3.16E-03 | 9.93E-01 | 3.92E-03 | 5.97E-10 | 2 |
| 623814  | 2009 | RUCAB | -39.81 | -17.19 | 8.7  | 6.54E-02 | 9.35E-01 | 1.10E-04 | 1.13E-12 | 2 |
| 824328  | 2009 | RUCAB | -51.28 | -15.96 | 8.71 | 1.08E-03 | 9.99E-01 | 5.22E-05 | 1.59E-14 | 2 |
| 1N59182 | 2012 | BOTOA | -48.95 | -15.35 | 8.71 | 1.29E-03 | 9.97E-01 | 1.86E-03 | 4.58E-11 | 2 |
| 282744  | 2008 | RUCAB | -42.35 | -15.19 | 8.71 | 5.47E-04 | 9.99E-01 | 5.24E-04 | 4.90E-12 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| N484159 | 2010 | BOTOA | -37.32 | -15    | 8.71 | 3.23E-03 | 9.82E-01 | 1.44E-02 | 2.08E-08 | 2 |
| 357561  | 2008 | RUCAB | -40.12 | -16.38 | 8.72 | 1.04E-02 | 9.89E-01 | 2.53E-04 | 3.30E-12 | 2 |
| N927294 | 2010 | BOTOA | -33.75 | -14.34 | 8.72 | 1.60E-03 | 9.58E-01 | 4.03E-02 | 2.40E-07 | 2 |
| 746495  | 2010 | RUCAB | -32.38 | -17.66 | 8.74 | 3.19E-01 | 6.81E-01 | 2.10E-04 | 2.59E-11 | 2 |
| 746519  | 2009 | RUCAB | -47.01 | -14.47 | 8.76 | 5.77E-05 | 9.99E-01 | 5.23E-04 | 1.40E-12 | 2 |
| 123995  | 2005 | RUCAB | -25.43 | -16.82 | 8.77 | 1.33E-01 | 8.64E-01 | 2.18E-03 | 4.50E-09 | 2 |
| 357453  | 2009 | RUCAB | -40.98 | -15.1  | 8.8  | 4.70E-04 | 9.99E-01 | 9.16E-04 | 1.71E-11 | 2 |
| 510824  | 2007 | RUCAB | -43.27 | -15.34 | 8.81 | 6.09E-04 | 9.99E-01 | 5.00E-04 | 3.88E-12 | 2 |
| 746039  | 2008 | RUCAB | -26.86 | -16.05 | 8.82 | 2.08E-02 | 9.75E-01 | 4.55E-03 | 8.46E-09 | 2 |
| N506998 | 2011 | BOTOA | -30.68 | -17.48 | 8.84 | 3.29E-01 | 6.65E-01 | 5.19E-03 | 4.03E-08 | 2 |
| 1N59091 | 2013 | BOTOA | -45.27 | -17.76 | 8.86 | 1.02E-01 | 8.97E-01 | 6.10E-04 | 3.04E-11 | 2 |
| 282500  | 2005 | RUCAB | -39.67 | -15.66 | 8.87 | 1.79E-03 | 9.97E-01 | 8.09E-04 | 2.19E-11 | 2 |
| 824422  | 2009 | RUCAB | -45.62 | -15.54 | 8.88 | 6.65E-04 | 9.99E-01 | 3.28E-04 | 1.19E-12 | 2 |
| N927260 | 2010 | BOTOA | -55.55 | -17.34 | 8.89 | 1.34E-02 | 9.86E-01 | 1.93E-04 | 3.32E-13 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 1N59083 | 2013 | BOTOA | -31.44 | -17.5  | 8.91 | 2.98E-01 | 6.97E-01 | 5.23E-03 | 3.31E-08 | 2 |
| 746304  | 2008 | RUCAB | -41.91 | -18.47 | 8.95 | 4.21E-01 | 5.79E-01 | 2.65E-05 | 1.28E-13 | 2 |
| N484159 | 2011 | BOTOA | -47.87 | -18.35 | 8.95 | 1.67E-01 | 8.32E-01 | 2.76E-04 | 5.17E-12 | 2 |
| 313110  | 2007 | RUCAB | -45.26 | -15.63 | 8.96 | 7.71E-04 | 9.99E-01 | 3.94E-04 | 1.82E-12 | 2 |
| N484044 | 2010 | BOTOA | -53.83 | -16.41 | 8.97 | 3.10E-03 | 9.96E-01 | 5.65E-04 | 2.43E-12 | 2 |
| 1N59040 | 2011 | RUCAB | -41.45 | -18.59 | 8.98 | 4.93E-01 | 5.07E-01 | 2.43E-05 | 1.40E-13 | 2 |
| 1N58526 | 2011 | RUCAB | -53.15 | -18.39 | 9.01 | 1.29E-01 | 8.71E-01 | 6.99E-06 | 7.71E-16 | 2 |
| 144613  | 2005 | RUCAB | -40.89 | -13.93 | 9.01 | 2.58E-05 | 9.95E-01 | 4.89E-03 | 2.23E-10 | 2 |
| 1N58323 | 2010 | RUCAB | -39.97 | -18.01 | 9.02 | 2.29E-01 | 7.71E-01 | 9.25E-05 | 1.21E-12 | 2 |
| 1N59091 | 2011 | BOTOA | -50.01 | -17.16 | 9.02 | 1.75E-02 | 9.82E-01 | 6.18E-04 | 8.28E-12 | 2 |
| N746633 | 2011 | BOTOA | -43.6  | -18.44 | 9.04 | 2.71E-01 | 7.29E-01 | 4.94E-04 | 4.19E-11 | 2 |
| 1N59107 | 2012 | BOTOA | -37.92 | -15.51 | 9.04 | 4.87E-03 | 9.81E-01 | 1.40E-02 | 1.89E-08 | 2 |
| 1N58771 | 2011 | RUCAB | -63.11 | -19.57 | 9.05 | 3.83E-01 | 6.17E-01 | 3.08E-07 | 7.14E-19 | 2 |
| 696986  | 2010 | RUCAB | -62.99 | -18.87 | 9.06 | 1.13E-01 | 8.87E-01 | 9.07E-07 | 2.93E-18 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 746300  | 2008 | RUCAB | -50.55 | -17.19 | 9.07 | 1.22E-02 | 9.88E-01 | 4.60E-05 | 2.26E-14 | 2 |
| 1N58870 | 2011 | RUCAB | -46.99 | -18.51 | 9.08 | 2.70E-01 | 7.30E-01 | 1.85E-05 | 1.92E-14 | 2 |
| 510809  | 2007 | RUCAB | -42.94 | -17.25 | 9.1  | 3.26E-02 | 9.67E-01 | 1.75E-04 | 1.27E-12 | 2 |
| 510845  | 2007 | RUCAB | -50.58 | -16.49 | 9.16 | 2.24E-03 | 9.98E-01 | 1.14E-04 | 8.66E-14 | 2 |
| 313026  | 2008 | RUCAB | -37.66 | -17.28 | 9.17 | 5.85E-02 | 9.41E-01 | 5.02E-04 | 2.62E-11 | 2 |
| 824469  | 2009 | RUCAB | -55.97 | -16.81 | 9.18 | 2.37E-03 | 9.98E-01 | 3.42E-05 | 3.63E-15 | 2 |
| 484305  | 2008 | RUCAB | -33.12 | -18.12 | 9.19 | 4.12E-01 | 5.88E-01 | 3.29E-04 | 6.28E-11 | 2 |
| N746697 | 2008 | BOTOA | -41.37 | -18.79 | 9.2  | 4.31E-01 | 5.69E-01 | 5.21E-04 | 9.85E-11 | 2 |
| 1N58859 | 2010 | RUCAB | -49.18 | -18.94 | 9.21 | 3.92E-01 | 6.08E-01 | 9.71E-06 | 5.11E-15 | 2 |
| 746462  | 2010 | RUCAB | -29.25 | -17.63 | 9.22 | 2.60E-01 | 7.38E-01 | 1.41E-03 | 1.33E-09 | 2 |
| 357486  | 2008 | RUCAB | -38.02 | -16.88 | 9.25 | 2.13E-02 | 9.78E-01 | 8.82E-04 | 5.54E-11 | 2 |
| 313169  | 2008 | RUCAB | -38    | -16.44 | 9.25 | 7.98E-03 | 9.91E-01 | 1.37E-03 | 1.03E-10 | 2 |
| 313466  | 2008 | RUCAB | -33.08 | -17.46 | 9.26 | 1.26E-01 | 8.73E-01 | 1.11E-03 | 3.18E-10 | 2 |
| 824398  | 2009 | RUCAB | -44.92 | -15.97 | 9.26 | 1.20E-03 | 9.98E-01 | 6.56E-04 | 5.37E-12 | 2 |

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| 1N59062 | 2011 | RUCAB | -57.21 | -19.57 | 9.27 | 4.89E-01 | 5.11E-01 | 1.27E-06 | 3.55E-17 | 2 |
| N506998 | 2008 | BOTOA | -42.77 | -16.81 | 9.29 | 1.80E-02 | 9.78E-01 | 3.52E-03 | 7.78E-10 | 2 |
| N927343 | 2013 | BOTOA | -34.8  | -18.05 | 9.3  | 3.08E-01 | 6.89E-01 | 3.45E-03 | 8.27E-09 | 2 |
| 746208  | 2008 | RUCAB | -54.39 | -17.55 | 9.36 | 1.22E-02 | 9.88E-01 | 3.51E-05 | 6.89E-15 | 2 |
| N357403 | 2008 | BOTOA | -39.96 | -17.36 | 9.36 | 5.96E-02 | 9.37E-01 | 3.80E-03 | 2.00E-09 | 2 |
| 313302  | 2010 | RUCAB | -55.14 | -19.37 | 9.37 | 4.08E-01 | 5.92E-01 | 3.33E-06 | 2.52E-16 | 2 |
| 484368  | 2008 | RUCAB | -46.86 | -16.54 | 9.39 | 2.95E-03 | 9.97E-01 | 3.78E-04 | 1.62E-12 | 2 |
| 746053  | 2008 | RUCAB | -47.92 | -15.36 | 9.41 | 1.75E-04 | 9.99E-01 | 1.02E-03 | 4.98E-12 | 2 |
| 824471  | 2009 | RUCAB | -47.47 | -16.97 | 9.42 | 6.97E-03 | 9.93E-01 | 2.42E-04 | 7.52E-13 | 2 |
| 1N58755 | 2011 | RUCAB | -39.66 | -15.88 | 9.42 | 1.50E-03 | 9.96E-01 | 2.72E-03 | 1.98E-10 | 2 |
| 824304  | 2010 | RUCAB | -53.83 | -18.96 | 9.43 | 2.28E-01 | 7.72E-01 | 9.44E-06 | 1.49E-15 | 2 |
| 144698  | 2007 | RUCAB | -43.88 | -18.47 | 9.43 | 2.42E-01 | 7.58E-01 | 8.51E-05 | 5.26E-13 | 2 |
| 1N58701 | 2010 | RUCAB | -47.91 | -17.96 | 9.44 | 5.78E-02 | 9.42E-01 | 8.70E-05 | 1.64E-13 | 2 |
| 357486  | 2009 | RUCAB | -39.17 | -17.68 | 9.5  | 7.89E-02 | 9.21E-01 | 6.03E-04 | 3.02E-11 | 2 |

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| 3N23665 | 2011 | BOTOA | -36.53 | -17.36 | 9.52 | 7.60E-02 | 9.16E-01 | 7.84E-03 | 1.53E-08 | 2 |
| N506921 | 2013 | BOTOA | -42.19 | -15.42 | 9.52 | 1.35E-03 | 9.84E-01 | 1.47E-02 | 7.16E-09 | 2 |
| N357567 | 2008 | BOTOA | -66.67 | -18    | 9.56 | 4.41E-03 | 9.96E-01 | 5.25E-05 | 2.97E-15 | 2 |
| 623824  | 2009 | RUCAB | -43.36 | -17.76 | 9.57 | 5.40E-02 | 9.46E-01 | 3.29E-04 | 4.23E-12 | 2 |
| 696967  | 2009 | RUCAB | -47.04 | -17.2  | 9.59 | 9.99E-03 | 9.90E-01 | 3.25E-04 | 1.49E-12 | 2 |
| 484137  | 2008 | RUCAB | -44.71 | -16.51 | 9.59 | 2.78E-03 | 9.96E-01 | 9.52E-04 | 1.29E-11 | 2 |
| 1N59140 | 2013 | BOTOA | -32.97 | -17.15 | 9.6  | 7.62E-02 | 9.06E-01 | 1.75E-02 | 1.31E-07 | 2 |
| N927228 | 2012 | BOTOA | -36.17 | -15.78 | 9.62 | 4.84E-03 | 9.63E-01 | 3.20E-02 | 1.20E-07 | 2 |
| 1N58921 | 2011 | RUCAB | -56.59 | -19.4  | 9.63 | 3.11E-01 | 6.89E-01 | 5.72E-06 | 4.27E-16 | 2 |
| 746195  | 2010 | RUCAB | -44.84 | -19.06 | 9.64 | 4.56E-01 | 5.44E-01 | 5.06E-05 | 2.67E-13 | 2 |
| 144602  | 2005 | RUCAB | -32.73 | -18.47 | 9.64 | 4.82E-01 | 5.17E-01 | 7.09E-04 | 3.25E-10 | 2 |
| N259811 | 2010 | BOTOA | -57.34 | -16.85 | 9.64 | 1.89E-03 | 9.98E-01 | 5.82E-04 | 1.18E-12 | 2 |
| 1N58776 | 2011 | RUCAB | -56.94 | -19.57 | 9.65 | 3.83E-01 | 6.17E-01 | 4.31E-06 | 2.77E-16 | 2 |
| 357488  | 2009 | RUCAB | -56.13 | -16.82 | 9.66 | 1.32E-03 | 9.99E-01 | 1.14E-04 | 2.90E-14 | 2 |

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|---------|------|-------|--------|--------|------|----------|----------|----------|----------|---|
| 510825  | 2007 | RUCAB | -43.34 | -15.75 | 9.68 | 5.23E-04 | 9.96E-01 | 3.16E-03 | 1.11E-10 | 2 |
| 3N23892 | 2013 | BOTOA | -44.28 | -17.17 | 9.7  | 1.69E-02 | 9.79E-01 | 3.70E-03 | 6.27E-10 | 2 |
| N357588 | 2010 | BOTOA | -51.39 | -18.29 | 9.71 | 4.42E-02 | 9.55E-01 | 5.31E-04 | 5.82E-12 | 2 |
| 144683  | 2005 | RUCAB | -32.04 | -18.33 | 9.72 | 4.00E-01 | 5.99E-01 | 1.30E-03 | 9.39E-10 | 2 |
| 746368  | 2010 | RUCAB | -45.68 | -16.77 | 9.72 | 3.80E-03 | 9.95E-01 | 8.75E-04 | 9.84E-12 | 2 |
| 928044  | 2007 | RUCAB | -47.01 | -14.91 | 9.73 | 4.73E-05 | 9.96E-01 | 4.21E-03 | 6.26E-11 | 2 |
| N357567 | 2010 | BOTOA | -41.54 | -18.68 | 9.78 | 2.35E-01 | 7.63E-01 | 1.61E-03 | 4.86E-10 | 2 |
| 1N58515 | 2011 | RUCAB | -56.82 | -17.89 | 9.81 | 1.13E-02 | 9.89E-01 | 5.31E-05 | 9.35E-15 | 2 |
| 1N58304 | 2010 | RUCAB | -33.27 | -18.11 | 9.84 | 2.32E-01 | 7.66E-01 | 2.26E-03 | 1.46E-09 | 2 |
| 144699  | 2007 | RUCAB | -44.78 | -17.13 | 9.84 | 8.22E-03 | 9.91E-01 | 9.87E-04 | 1.67E-11 | 2 |
| 746246  | 2008 | RUCAB | -48.98 | -18.58 | 9.85 | 1.17E-01 | 8.83E-01 | 1.08E-04 | 2.43E-13 | 2 |
| 123984  | 2007 | RUCAB | -40.1  | -18.26 | 9.86 | 1.55E-01 | 8.44E-01 | 6.85E-04 | 3.98E-11 | 2 |
| 484823  | 2007 | RUCAB | -39.06 | -17.69 | 9.86 | 5.39E-02 | 9.45E-01 | 1.59E-03 | 1.65E-10 | 2 |
| 313109  | 2008 | RUCAB | -36.49 | -17.46 | 9.86 | 4.39E-02 | 9.53E-01 | 3.13E-03 | 8.78E-10 | 2 |

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|         |      |       |        |        |       |          |          |          |          |   |
|---------|------|-------|--------|--------|-------|----------|----------|----------|----------|---|
| N623601 | 2008 | BOTOA | -49.02 | -18.34 | 9.87  | 5.40E-02 | 9.45E-01 | 9.05E-04 | 2.52E-11 | 2 |
| 623787  | 2009 | RUCAB | -44.97 | -18.2  | 9.88  | 8.03E-02 | 9.19E-01 | 3.53E-04 | 3.98E-12 | 2 |
| 824304  | 2009 | RUCAB | -41.51 | -15.92 | 9.88  | 7.46E-04 | 9.93E-01 | 6.20E-03 | 5.69E-10 | 2 |
| 484001  | 2007 | RUCAB | -60.32 | -14.64 | 9.88  | 4.37E-06 | 9.99E-01 | 7.76E-04 | 1.64E-13 | 2 |
| 746349  | 2008 | RUCAB | -37.63 | -17.61 | 9.89  | 5.15E-02 | 9.46E-01 | 2.38E-03 | 4.48E-10 | 2 |
| 282197  | 2005 | RUCAB | -46.81 | -19.14 | 9.9   | 3.65E-01 | 6.34E-01 | 7.57E-05 | 3.23E-13 | 2 |
| 1N58756 | 2011 | RUCAB | -47.39 | -14.96 | 9.9   | 4.10E-05 | 9.94E-01 | 5.82E-03 | 1.03E-10 | 2 |
| 144513  | 2005 | RUCAB | -30.76 | -18.13 | 9.94  | 2.73E-01 | 7.23E-01 | 4.22E-03 | 7.88E-09 | 2 |
| 282316  | 2005 | RUCAB | -46.24 | -17.84 | 9.94  | 2.99E-02 | 9.70E-01 | 4.91E-04 | 4.59E-12 | 2 |
| 746519  | 2010 | RUCAB | -38.56 | -18.33 | 9.95  | 1.88E-01 | 8.11E-01 | 1.02E-03 | 1.17E-10 | 2 |
| 282355  | 2005 | RUCAB | -39.88 | -16.4  | 9.99  | 2.34E-03 | 9.91E-01 | 6.92E-03 | 1.15E-09 | 2 |
| 313220  | 2009 | RUCAB | -48.08 | -15.53 | 10    | 1.22E-04 | 9.96E-01 | 3.88E-03 | 5.27E-11 | 2 |
| 510858  | 2008 | RUCAB | -47.97 | -17.27 | 10.03 | 6.12E-03 | 9.93E-01 | 8.07E-04 | 6.13E-12 | 2 |
| 1N58653 | 2011 | BOTOA | -47.87 | -17.77 | 10.05 | 1.96E-02 | 9.78E-01 | 2.17E-03 | 1.23E-10 | 2 |

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|         |      |       |        |        |       |          |          |          |          |   |
|---------|------|-------|--------|--------|-------|----------|----------|----------|----------|---|
| 1N59084 | 2012 | BOTOA | -30.25 | -18.06 | 10.12 | 2.34E-01 | 7.44E-01 | 2.24E-02 | 5.12E-07 | 2 |
| N484197 | 2012 | BOTOA | -26.46 | -15.84 | 10.12 | 8.65E-03 | 7.74E-01 | 2.17E-01 | 3.39E-05 | 2 |
| 623787  | 2010 | RUCAB | -47.78 | -17.81 | 10.15 | 1.82E-02 | 9.81E-01 | 6.72E-04 | 5.57E-12 | 2 |
| 144523  | 2005 | RUCAB | -46.43 | -17.85 | 10.2  | 2.19E-02 | 9.77E-01 | 9.29E-04 | 1.34E-11 | 2 |
| 746175  | 2008 | RUCAB | -60.57 | -17.2  | 10.26 | 8.80E-04 | 9.99E-01 | 1.72E-04 | 2.56E-14 | 2 |
| 313204  | 2007 | RUCAB | -54.9  | -18.53 | 10.33 | 3.14E-02 | 9.68E-01 | 1.52E-04 | 1.12E-13 | 2 |
| N357567 | 2011 | BOTOA | -27.11 | -16.97 | 10.37 | 4.46E-02 | 8.28E-01 | 1.27E-01 | 1.43E-05 | 2 |
| 746309  | 2008 | RUCAB | -32.93 | -17.94 | 10.4  | 9.57E-02 | 8.90E-01 | 1.40E-02 | 3.22E-08 | 2 |
| 313011  | 2007 | RUCAB | -38.74 | -18.37 | 10.46 | 1.16E-01 | 8.80E-01 | 3.85E-03 | 1.11E-09 | 2 |
| 1N58745 | 2011 | RUCAB | -44.93 | -18.09 | 10.83 | 2.07E-02 | 9.74E-01 | 4.89E-03 | 3.70E-10 | 2 |
| 3N23971 | 2013 | BOTOA | -39.13 | -16.68 | 10.96 | 3.09E-03 | 9.36E-01 | 6.10E-02 | 2.03E-07 | 2 |
| N357403 | 2011 | BOTOA | -34.4  | -19.37 | 11.03 | 3.69E-01 | 6.19E-01 | 1.26E-02 | 1.05E-07 | 2 |
| 3N23665 | 2013 | BOTOA | -30.17 | -17.05 | 11.24 | 1.13E-02 | 7.67E-01 | 2.22E-01 | 1.80E-05 | 2 |
| N357403 | 2010 | BOTOA | -56.9  | -14.53 | 11.36 | 4.59E-06 | 9.66E-01 | 3.36E-02 | 6.65E-10 | 2 |

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|         |      |       |        |        |       |          |          |          |          |   |
|---------|------|-------|--------|--------|-------|----------|----------|----------|----------|---|
| 3N23611 | 2013 | BOTOA | -36.42 | -16.76 | 11.45 | 2.57E-03 | 8.45E-01 | 1.52E-01 | 1.90E-06 | 2 |
| N746633 | 2013 | BOTOA | -33.16 | -16.7  | 11.45 | 3.21E-03 | 7.60E-01 | 2.37E-01 | 9.17E-06 | 2 |
| 927027  | 2010 | RUCAB | -39.34 | -16.5  | 11.47 | 3.88E-04 | 7.57E-01 | 2.43E-01 | 8.37E-07 | 2 |
| 3N23971 | 2012 | BOTOA | -45.92 | -16.87 | 11.78 | 6.67E-04 | 9.43E-01 | 5.59E-02 | 3.49E-08 | 2 |
| N259811 | 2012 | BOTOA | -46.69 | -19.01 | 12.05 | 1.82E-02 | 9.67E-01 | 1.50E-02 | 4.96E-09 | 2 |
| 1N59171 | 2012 | BOTOA | -56.56 | -18.16 | 12.42 | 7.47E-04 | 9.89E-01 | 1.02E-02 | 2.02E-10 | 2 |
| 1N59091 | 2012 | BOTOA | -42.32 | -17.93 | 12.62 | 2.30E-03 | 8.71E-01 | 1.27E-01 | 4.13E-07 | 2 |
| 144507  | 2005 | RUCAB | -28.34 | -16.81 | 11.67 | 7.98E-04 | 2.65E-01 | 7.34E-01 | 1.55E-04 | 3 |

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## Appendix 2

Table A2. Top models set of model averaging regarding the relationship between age and sex of house martins on the probability to winter in either identified area (north vs south). Sample size is 163 observations. The cut-off criterion was < 6.0 AIC. Model 32 is the global model.

| Model | (Intercept) | Age | Sex | Origin | Scaled body mass index | Age*Sex | df | logLik  | AICc  | delta | weight |
|-------|-------------|-----|-----|--------|------------------------|---------|----|---------|-------|-------|--------|
| 22    | -0.2059     | +   | +   |        |                        | +       | 7  | -96.391 | 207.5 | 0     | 0.261  |
| 24    | -0.2358     | +   | +   | +      |                        | +       | 8  | -95.559 | 208.1 | 0.55  | 0.198  |
| 4     | -0.002863   | +   |     | +      |                        |         | 6  | -98.470 | 210   | 1.97  | 0.097  |
| 30    | -0.2099     | +   | +   |        | -0.03462               | +       | 8  | -96.387 | 209.7 | 2.21  | 0.087  |
| 2     | 0.03487     | +   |     |        |                        |         | 5  | -99.909 | 210.2 | 3     | 0.068  |
| 32    | -0.2391     | +   | +   | +      | -0.02721               | +       | 9  | -95.556 | 210.3 | 2.78  | 0.065  |
| 8     | 0.1659      | +   | +   | +      |                        |         | 7  | -98.041 | 210.8 | 3.3   | 0.05   |
| 6     | 0.2395      | +   | +   |        |                        |         | 6  | -99.201 | 211   | 3.44  | 0.047  |
| 12    | -0.01258    | +   |     | +      | -0.122                 |         | 7  | -98.419 | 211.6 | 4.06  | 0.034  |
| 10    | 0.02036     | +   |     |        | -0.1549                |         | 6  | -99.824 | 212   | 4.68  | 0.025  |

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|    |        |   |   |   |          |   |         |       |      |       |
|----|--------|---|---|---|----------|---|---------|-------|------|-------|
| 16 | 0.1549 | + | + | + | -0.06829 | 8 | -98.026 | 213   | 5.48 | 0.017 |
| 14 | 0.2257 | + | + |   | -0.08119 | 7 | -99.180 | 213.1 | 5.58 | 0.016 |

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Table B2. Top models set of the model averaging regarding the effects of spending the winter in either identified area (north vs south) on laying date in the house martin. Sample size is 112 observations. The cut-off criterion was < 6.0 AIC. Model 64 is the global model.

| Model | (Intercept) | Sex | Scaled body mass index | Age | Winter area | Sex* Winter area | Age* Winter area | df | logLik   | AICc  | delta | weight |
|-------|-------------|-----|------------------------|-----|-------------|------------------|------------------|----|----------|-------|-------|--------|
| 20    | 4.748       |     |                        | +   | +           |                  | +                | 6  | -465.406 | 943.6 | 0     | 0.112  |
| 28    | 4.748       |     | 0.034                  | +   | +           |                  | +                | 7  | -464.583 | 944.2 | 0.63  | 0.082  |
| 24    | 4.751       | +   |                        | +   | +           |                  | +                | 7  | -464.598 | 944.3 | 0.66  | 0.081  |
| 3     | 4.736       |     |                        |     | +           |                  |                  | 4  | -467.97  | 944.3 | 0.7   | 0.079  |
| 15    | 4.755       | +   | 0.041                  |     | +           |                  |                  | 6  | -465.856 | 944.5 | 0.9   | 0.072  |
| 11    | 4.735       |     | 0.037                  |     | +           |                  |                  | 5  | -466.99  | 944.5 | 0.93  | 0.071  |
| 32    | 4.753       | +   | 0.037                  | +   | +           |                  | +                | 8  | -463.602 | 944.6 | 0.99  | 0.069  |
| 7     | 4.754       | +   |                        |     | +           |                  |                  | 5  | -467.049 | 944.7 | 1.05  | 0.066  |
| 47    | 4.768       | +   | 0.041                  |     | +           | +                |                  | 7  | -465.219 | 945.5 | 1.9   | 0.043  |
| 56    | 4.761       | +   |                        | +   | +           | +                | +                | 8  | -464.136 | 945.7 | 2.06  | 0.04   |
| 16    | 4.721       | +   | 0.04                   | +   | +           |                  |                  | 7  | -465.308 | 945.7 | 2.08  | 0.04   |
| 8     | 4.718       | +   |                        | +   | +           |                  |                  | 6  | -466.45  | 945.7 | 2.09  | 0.04   |

|    |       |   |       |  |   |   |  |   |   |          |       |      |       |
|----|-------|---|-------|--|---|---|--|---|---|----------|-------|------|-------|
| 39 | 4.766 | + |       |  | + | + |  |   | 6 | -466.453 | 945.7 | 2.09 | 0.039 |
| 4  | 4.708 |   |       |  | + | + |  |   | 5 | -467.656 | 945.9 | 2.27 | 0.036 |
| 64 | 4.762 | + | 0.038 |  | + | + |  | + | 9 | -463.089 | 945.9 | 2.33 | 0.035 |
| 12 | 4.71  |   | 0.036 |  | + | + |  |   | 6 | -466.725 | 946.3 | 2.64 | 0.03  |
| 48 | 4.733 | + | 0.04  |  | + | + |  | + | 8 | -464.672 | 946.7 | 3.13 | 0.024 |
| 40 | 4.729 | + |       |  | + | + |  | + | 7 | -465.862 | 946.8 | 3.19 | 0.023 |

### Appendix 3

Table A3. Summary results after model averaging of the effects of spending the winter in either identified area (North vs South) on clutch size and number of fledglings produced during the breeding season for house martins. Sample size is 112 individuals. RI – Relative importance.

| Parameter                | Estimate | SE    | 95% CI         | RI   |
|--------------------------|----------|-------|----------------|------|
| <u>Clutch size:</u>      |          |       |                |      |
| (Intercept)              | 1.504    | 0.064 | (1.38, 1.629)  |      |
| Winter area              | 0.004    | 0.093 | (-0.18, 0.187) | 0.23 |
| Sex                      | 0.044    | 0.09  | (-0.13, 0.220) | 0.25 |
| Scaled body mass index   | -0.086   | 0.09  | (-0.26, 0.093) | 0.33 |
| Laying date              | -0.09    | 0.091 | (-0.27, 0.091) | 0.34 |
| Age                      | 0.01     | 0.092 | (-0.17, 0.189) | 0.23 |
| <u>Nº of fledglings:</u> |          |       |                |      |
| (Intercept)              | 1.223    | 0.085 | (1.06, 1.39)   |      |
| Winter area              | -0.056   | 0.116 | (-0.28, 0.17)  | 0.29 |
| Sex                      | 0.080    | 0.105 | (-0.13, 0.28)  | 0.3  |
| Scaled body mass index   | 0.018    | 0.103 | (-0.18, 0.22)  | 0.23 |
| Laying date              | -0.061   | 0.104 | (-0.26, 0.14)  | 0.26 |
| Age                      | 0.079    | 0.109 | (-0.13, 0.29)  | 0.3  |
| Sex* Winter area         | -0.128   | 0.214 | (-0.55, 0.29)  | 0.01 |
| Age* Winter area         | -0.158   | 0.223 | (-0.60, 0.28)  | 0.01 |