

Supplementary Table 1. Site information for all sites used in model. Site names indicate general area where birds were captured. In some cases, to protect the location of breeding pairs of threatened species, the exact site name is not included, but regional information is provided instead.

| Ecoregion <sup>a</sup> | Habitat <sup>b</sup> | Cont <sup>c</sup> | Site                                      | N    | Latitude  | Longitude  | State | Years     |
|------------------------|----------------------|-------------------|---|------|-----------|------------|-------|-----------|
| App                    | F                    | No                | Bashakill Wildlife Management Area        | 16   | 41.51933  | -74.53483  | NY    | 2007      |
| App                    | F                    | Yes               | Clinch River                              | 21   | 35.907462 | -84.394839 | TN    | 2011      |
| App                    | F                    | No                | Crooked Creek Lake                        | 12   | 40.699762 | -79.502024 | PA    | 2007      |
| App                    | F                    | Yes               | East Poplar Creek                         | 59   | 36.010356 | -84.269645 | TN    | 2008-2011 |
| App                    | F                    | Yes               | Holder Slough                             | 14   | 35.39025  | -84.97265  | TN    | 2010      |
| App                    | F                    | Yes               | Holston River                             | 13   | 36.69752  | -82.31135  | TN    | 2007      |
| App                    | F                    | Yes               | Ledford Island                            | 9    | 35.338706 | -84.841859 | TN    | 2010      |
| App                    | F                    | No                | Mahoning Creek Lake                       | 17   | 40.917016 | -79.266935 | PA    | 2007      |
| App                    | F                    | No                | Middle River                              | 172  | 38.173768 | -79.10527  | VA    | 2006-2010 |
| App                    | F                    | Yes               | North Fork Holston River - contaminated   | 185  | 36.747434 | -79.306562 | VA    | 2005-2008 |
| App                    | F                    | No                | North Fork Holston River - uncontaminated | 182  | 36.919033 | -81.670304 | VA    | 2005-2008 |
| App                    | F                    | No                | North River                               | 27   | 38.380529 | -78.981644 | VA    | 2006-2008 |
| App                    | F                    | No                | Powdermill Nature Reserve - bog           | 22   | 40.159692 | -79.274625 | PA    | 2006      |
| App                    | F                    | Yes               | Price Creek                               | 8    | 35.35503  | -84.86363  | TN    | 2010      |
| App                    | F                    | Yes               | Roger's Creek Mouth                       | 5    | 35.34181  | -84.83636  | TN    | 2010      |
| App                    | F                    | No                | Shawangunk Mountains                      | 57   | 41.6812   | -74.3482   | NY    | 2005-2007 |
| App                    | F                    | Yes               | South Fork Shenandoah River               | 377  | 38.54444  | -78.586869 | VA    | 2005-2009 |
| App                    | F                    | Yes               | South River - contaminated                | 2292 | 38.182742 | -78.852671 | VA    | 2005-2010 |
| App                    | F                    | No                | South River - uncontaminated              | 1193 | 38.158684 | -79.059489 | VA    | 2005-2010 |
| App                    | U                    | No                | Bald Knob Ridge                           | 2    | 35.715278 | -82.274167 | NC    | 2007      |
| App                    | U                    | No                | Clinch Mountain                           | 18   | 36.433333 | -82.966667 | VA    | 2006      |
| App                    | U                    | No                | Collin's Gap                              | 9    | 35.5775   | -83.480278 | NC    | 2007      |
| App                    | U                    | No                | Eagle Creek                               | 2    | 35.484444 | 83.774444  | NC    | 2007      |
| App                    | U                    | No                | Fernow Experimental Forest                | 13   | 39.10821  | -79.650587 | WV    | 2007      |
| App                    | U                    | No                | Fork Ridge                                | 8    | 35.591944 | -83.469444 | NC    | 2007      |
| App                    | U                    | No                | Great Smokey Mountains                    | 20   | 35.6372   | -83.687    | TN    | 2006-2007 |
| App                    | U                    | No                | Newfound Gap                              | 8    | 35.612778 | -83.441111 | TN    | 2007      |
| App                    | U                    | No                | Oconoluftee                               | 6    | 35.509444 | -83.305    | TN    | 2007      |
| App                    | U                    | No                | Powdermill Nature Reserve - upland        | 29   | 40.139614 | -79.277465 | PA    | 2006      |
| App                    | U                    | No                | Purchase                                  | 9    | 35.584824 | -83.062362 | NC    | 2006      |
| App                    | U                    | No                | Tott's Gap                                | 22   | 40.926032 | -75.173381 | PA    | 2005      |

|       |   |     |   |    |           |            |    |           |
|-------|---|-----|---|----|-----------|------------|----|-----------|
| Coast | E | Yes | Absecon Creek                             | 15 | 39.42225  | -74.5131   | NJ | 2011      |
| Coast | E | No  | Accabonac Harbor Nature Preserve (TNC)    | 13 | 41.0256   | -72.1471   | NY | 2011      |
| Coast | E | No  | E.B. Forsythe National Wildlife Refuge    | 39 | 39.46377  | -74.447251 | NJ | 2011      |
| Coast | E | Yes | Hempstead Marshes                         | 81 | 40.623959 | -73.624544 | NY | 2008-2011 |
| Coast | E | No  | Monomoy National Wildlife Refuge          | 11 | 41.63509  | -69.96667  | MA | 2011      |
| Coast | E | No  | Pine Neck Sanctuary (TNC)                 | 19 | 40.840797 | -72.563328 | NY | 2010-2011 |
| Coast | E | No  | Scallop Pond Preserve (TNC)               | 6  | 40.93567  | -72.42922  | NY | 2010      |
| Coast | E | No  | Wertheim National Wildlife Refuge         | 31 | 40.76791  | -72.89653  | NY | 2007      |
| High  | F | No  | Arbutus Lake - Huntington Wildlife Forest | 29 | 43.9862   | -74.236    | NY | 2006-2007 |
| High  | F | No  | Attean Pond                               | 15 | 45.58979  | -70.25395  | ME | 2008      |
| High  | F | No  | Aziscohos Lake                            | 12 | 45.012448 | -71.099026 | ME | 2003-2011 |
| High  | F | No  | Bloomington Bog                           | 86 | 44.38206  | -74.14047  | NY | 2009-2011 |
| High  | F | No  | Bog Brook Unique Area                     | 15 | 41.44287  | -73.58176  | NY | 2007      |
| High  | F | No  | Brassua Lake                              | 6  | 45.62216  | -69.83626  | ME | 2008      |
| High  | F | No  | Cupsuptic River                           | 10 | 45.0182   | -70.8568   | ME | 2001      |
| High  | F | No  | Eastern Nova Scotia #1                    | 4  | 45.523989 | -61.667814 | NS | 2009      |
| High  | F | No  | Eastern Nova Scotia #2                    | 1  | 45.435403 | -61.399802 | NS | 2009      |
| High  | F | No  | Elk Lake                                  | 15 | 44.030344 | -73.829062 | NY | 2006      |
| High  | F | No  | Ferd's Bog                                | 11 | 43.7744   | -74.7615   | NY | 2006      |
| High  | F | Yes | Flagstaff Lake - contaminated             | 3  | 45.9154   | -70.26796  | ME | 2004      |
| High  | F | No  | Flagstaff Lake - uncontaminated           | 6  | 45.9154   | -70.26796  | ME | 1999-2001 |
| High  | F | No  | Fletcher Pond                             | 11 | 45.68387  | -69.94449  | ME | 2008      |
| High  | F | No  | Great Swamp Wildlife Management Area      | 14 | 41.49559  | -73.60366  | NY | 2007      |
| High  | F | No  | Housatonic River                          | 15 | 42.400076 | -73.241214 | MA | 2007      |
| High  | F | No  | Lake Capra                                | 10 | 42.2409   | -74.1188   | NY | 2006      |
| High  | F | No  | Lake George – Dome Island                 | 10 | 43.426181 | -73.712341 | NY | 2006      |
| High  | F | No  | Little Abbott Brook                       | 7  | 44.9414   | -71.0313   | ME | 2001-2004 |
| High  | F | No  | Madawaska Flow                            | 95 | 44.51316  | -74.40343  | NY | 2009-2011 |
| High  | F | No  | Massawepie Mire                           | 96 | 44.23908  | -74.662897 | NY | 2007-2011 |
| High  | F | No  | North Woods New Hampshire #1              | 2  | 44.81584  | -71.16476  | NH | 2011      |
| High  | F | No  | North Woods New Hampshire #2              | 2  | 44.823017 | -71.120275 | NH | 2011      |
| High  | F | No  | North Woods New Hampshire #3              | 3  | 44.861294 | -71.211067 | NH | 2010-2011 |
| High  | F | No  | North Woods New Hampshire #4              | 4  | 44.878655 | -71.215871 | NH | 2009-2011 |
| High  | F | No  | North Woods New Hampshire #5              | 5  | 44.874933 | -71.202566 | NH | 2010      |

|      |   |     |   |     |           |            |    |           |
|------|---|-----|---|-----|-----------|------------|----|-----------|
| High | F | No  | North Woods New Hampshire #6              | 2   | 44.984495 | -71.127758 | NH | 2011      |
| High | F | No  | North Woods New Hampshire #7              | 2   | 44.726492 | -71.10442  | NH | 2011      |
| High | F | No  | North Woods New Hampshire #8              | 2   | 44.99245  | -71.11604  | NH | 2011      |
| High | F | No  | North Woods New Hampshire #9              | 1   | 45.22371  | -71.3506   | NH | 2009      |
| High | F | No  | North Woods New Hampshire #10             | 1   | 44.96546  | -71.25977  | NH | 2011      |
| High | F | No  | North Woods New Hampshire #11             | 7   | 45.00588  | -71.34406  | NH | 2011      |
| High | F | No  | North Woods New Hampshire #12             | 17  | 44.905397 | -71.233076 | NH | 2010-2011 |
| High | F | No  | North Woods New Hampshire #13             | 4   | 44.723579 | -71.127519 | NH | 2010-2011 |
| High | F | No  | North Woods New Hampshire #14             | 2   | 44.98094  | -71.072819 | NH | 2011      |
| High | F | No  | North Woods New Hampshire #15             | 1   | 44.905664 | -71.233415 | NH | 2011      |
| High | F | No  | North Woods New Hampshire #16             | 1   | 44.725341 | -71.12895  | NH | 2011      |
| High | F | No  | North Woods New Hampshire #17             | 12  | 45.18932  | -71.172335 | NH | 2011      |
| High | F | No  | North Woods New Hampshire #18             | 2   | 44.860216 | -71.211117 | NH | 2009-2011 |
| High | F | No  | North Woods New Hampshire #19             | 2   | 44.952945 | -71.259992 | NH | 2011      |
| High | F | No  | Rangeley Lake                             | 3   | 44.965682 | -70.64271  | ME | 1999-2000 |
| High | F | No  | Richardson area                           | 13  | 44.775051 | -70.921189 | ME | 2004      |
| High | F | No  | Richardson Lake                           | 66  | 44.915612 | -70.90176  | ME | 2012      |
| High | F | No  | Seboomook Lake                            | 15  | 45.90217  | -69.80174  | ME | 2006-2007 |
| High | F | No  | Silvio O. Conte National Wildlife Refuge  | 9   | 44.830484 | -71.724327 | VT | 2009-2010 |
| High | F | No  | Spring Pond Bog                           | 109 | 44.373171 | -74.50306  | NY | 2006-2011 |
| High | F | No  | Sunday Pond                               | 21  | 43.8564   | -75.1085   | NY | 2006      |
| High | F | No  | West Mountain Wildlife Management Area #1 | 14  | 44.68562  | -71.72358  | VT | 2008-2011 |
| High | F | No  | West Mountain Wildlife Management Area #2 | 1   | 44.654267 | -71.675927 | VT | 2010      |
| High | F | No  | West Mountain Wildlife Management Area #3 | 10  | 44.694233 | -71.671412 | VT | 2008-2011 |
| High | F | No  | Western Nova Scotia #1                    | 3   | 44.47402  | -65.229378 | NS | 2009      |
| High | F | No  | Western Nova Scotia #2                    | 3   | 44.523907 | -65.322719 | NS | 2009      |
| High | U | No  | Adirondack Mts. - Whiteface Mountain      | 257 | 44.3659   | -73.9026   | NY | 2000-2010 |
| High | U | No  | Allegany State Park                       | 51  | 42.029577 | -78.80866  | NY | 2005-2006 |
| High | U | Yes | Bigelow Mts. - Avery Peak                 | 6   | 45.1483   | -70.2598   | ME | 1999-2003 |
| High | U | No  | Black Rock Forest                         | 48  | 41.4083   | -74.0215   | NY | 2005-2007 |
| High | U | No  | Cary Institute for Ecosystem Studies      | 30  | 41.7851   | -73.694    | NY | 2005      |
| High | U | No  | Catskill Mts. - Devil's Tombstone         | 70  | 42.15621  | -74.20444  | NY | 2005-2007 |
| High | U | No  | Catskill Mts. - Hunter Mountain           | 11  | 42.1874   | -74.2502   | NY | 2005      |
| High | U | No  | Catskill Mts. - Mill Brook                | 11  | 42.07684  | -74.65006  | NY | 2005      |

|       |   |    |   |     |           |            |    |           |
|-------|---|----|---|-----|-----------|------------|----|-----------|
| High  | U | No | Catskill Mts. - Neversink Reservoir                       | 30  | 41.99313  | -74.49139  | NY | 2006-2007 |
| High  | U | No | Catskill Mts. - Plateau Mountain                          | 42  | 42.1379   | -74.1743   | NY | 2005-2006 |
| High  | U | No | East Kennebago Lake                                       | 5   | 44.95962  | -70.700146 | ME | 2004      |
| High  | U | No | Green Mts. - Stratton Mountain                            | 2   | 43.113442 | -72.908128 | VT | 2003      |
| High  | U | No | Green Mts. - Underhill State Park                         | 10  | 44.53573  | -72.923822 | VT | 2007      |
| High  | U | No | Maine Boundary Mountain                                   | 14  | 45.40556  | -70.54698  | ME | 2006      |
| High  | U | No | Sugarloaf Mountain  | 7   | 45.0245   | -70.3153   | ME | 2004      |
| High  | U | No | Tug Hill - East Branch Fish Creek                         | 32  | 43.656123 | -75.60852  | NY | 2005-2006 |
| High  | U | No | White Mts. - Mount Jefferson                              | 29  | 44.29118  | -71.34716  | NH | 2007      |
| High  | U | No | White Mts. - Mount Mansfield                              | 9   | 44.30383  | -72.48317  | VT | 2000      |
| High  | U | No | White Mts. - Mount Washington                             | 1   | 44.271026 | -71.305528 | NH | 2000      |
| Woods | E | No | Acadia National Park - Adam's Point                       | 3   | 44.25373  | -68.341319 | ME | 2009      |
| Woods | E | No | Acadia National Park - Tremont                            | 7   | 44.24779  | -68.35843  | ME | 2009      |
| Woods | E | No | Fairhill Marsh  | 31  | 43.038552 | -70.723002 | NH | 2008      |
| Woods | E | No | Great Bay National Estuarine Research Reserve             | 38  | 43.041271 | -70.923975 | NH | 2008      |
| Woods | E | No | Hammock River   | 9   | 41.2669   | -72.5076   | CT | 2004      |
| Woods | E | No | Hampton Salt Marsh Conservation Area                      | 36  | 42.926286 | -70.815716 | NH | 2008      |
| Woods | E | No | John H. Chafee National Wildlife Refuge                   | 62  | 41.44306  | -71.470751 | RI | 2004-2008 |
| Woods | E | No | Kitteredge Brook Forest                                   | 3   | 44.37341  | -68.32965  | ME | 2009      |
| Woods | E | No | Libby River   | 15  | 43.578003 | -70.301247 | ME | 2005      |
| Woods | E | No | Merrymack River   | 9   | 42.80867  | -70.8337   | MA | 2010      |
| Woods | E | No | Nonesuch River  | 2   | 43.56726  | -70.33236  | ME | 2005      |
| Woods | E | No | Parker River National Wildlife Refuge                     | 311 | 42.76131  | -70.79915  | MA | 2004-2011 |
| Woods | E | No | Plum Island - Essex County Land                           | 17  | 42.79739  | -70.81338  | MA | 2006      |
| Woods | E | No | Popham Beach State Park                                   | 13  | 43.7395   | -69.8041   | ME | 2001      |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Furbish Marsh #1 | 293 | 43.322215 | -70.58056  | ME | 2004-2011 |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Furbish Marsh #2 | 15  | 43.2837   | -70.582    | ME | 2001      |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Goosefare Brook  | 21  | 43.489637 | -70.390342 | ME | 2004      |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Granite Point    | 5   | 43.412924 | -70.39067  | ME | 2004      |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Little River     | 40  | 43.344043 | -70.53943  | ME | 2004-2010 |
| Woods | E | No | Rachel Carson National Wildlife Refuge - Spurwink Marsh   | 89  | 43.589006 | -70.247849 | ME | 2004-2011 |
| Woods | E | No | Sachuest National Wildlife Refuge                         | 14  | 41.477087 | -71.244359 | RI | 2004-2008 |
| Woods | E | No | Scarborough Marsh   | 160 | 43.590195 | -70.334493 | ME | 2000-2009 |
| Woods | E | No | Stewart B. McKinney National Wildlife Refuge              | 33  | 41.203808 | -72.921475 | CT | 2004      |

|       |   |     |  |     |           |            |    |           |
|-------|---|-----|--|-----|-----------|------------|----|-----------|
| Woods | E | No  | Wading River Marsh (TNC)                 | 8   | 40.96158  | -72.85778  | NY | 2011      |
| Woods | E | No  | Weskeag River                            | 14  | 44.078    | -69.1438   | ME | 2001      |
| Woods | E | No  | William Forward Wildlife Management Area | 11  | 42.6188   | -70.85667  | MA | 2007-2010 |
| Woods | E | No  | York River                               | 12  | 43.1607   | -70.7335   | ME | 2001      |
| Woods | F | No  | Acadia National Park                     | 15  | 44.399443 | -68.243599 | ME | 2007      |
| Woods | F | No  | Acadia National Park - Aunt Betty Marsh  | 55  | 44.363178 | -68.273954 | ME | 2012      |
| Woods | F | No  | Annapolis Valley                         | 7   | 45.07784  | -64.3154   | NS | 2008      |
| Woods | F | No  | Cape Cod                                 | 4   | 42.28558  | -71.44901  | MA | 2003      |
| Woods | F | No  | Central New Brunswick #1                 | 2   | 46.333371 | -67.164617 | NB | 2009      |
| Woods | F | No  | Central New Brunswick #2                 | 3   | 46.198217 | -67.160292 | NB | 2009      |
| Woods | F | No  | Charles River                            | 96  | 42.41843  | -71.106164 | MA | 2003-2004 |
| Woods | F | No  | Crane Pond Wildlife Management Area      | 8   | 42.753224 | -70.977714 | MA | 2007      |
| Woods | F | No  | Delaney State Wildlife Management Area   | 18  | 42.447879 | -71.547154 | MA | 2003      |
| Woods | F | No  | Emmons Pond Bog                          | 17  | 42.4278   | -75.0163   | NY | 2006      |
| Woods | F | No  | Montezuma National Wildlife Refuge       | 12  | 42.99105  | -76.76831  | NY | 2008      |
| Woods | F | No  | Oneida Lake                              | 75  | 43.17299  | -75.93442  | NY | 2008-2009 |
| Woods | F | Yes | Orland River                             | 21  | 44.567427 | -68.745377 | ME | 2008-2009 |
| Woods | F | No  | Sandy Point Beach Park                   | 13  | 44.49958  | -68.81485  | ME | 2007      |
| Woods | F | No  | Sudbury Reservoir                        | 12  | 42.311272 | -71.498843 | MA | 2003      |
| Woods | F | Yes | Sudbury River                            | 250 | 42.301918 | -71.535038 | MA | 2003-2005 |
| Woods | F | No  | Tonawanda State Wildlife Management Area | 14  | 43.11608  | -78.49161  | NY | 2008      |
| Woods | F | No  | Whitehall Reservoir                      | 3   | 42.239513 | -71.575427 | MA | 2003      |
| Woods | U | No  | Acadia National Park - Aunt Betty Upland | 6   | 44.362493 | -68.280316 | ME | 2012      |
| Woods | U | No  | Brookfield Railroad State Forest         | 7   | 42.8562   | -75.4001   | NY | 2005      |
| Woods | U | No  | Happy Valley Wildlife Management Area    | 5   | 43.44336  | -75.97346  | NY | 2004      |
| Woods | U | No  | Hinesburg Town Forest                    | 5   | 44.329831 | -73.11046  | VT | 2003      |
| Woods | U | No  | Marshlands Conservancy                   | 1   | 40.958564 | -73.704947 | NY | 2007      |
| Woods | U | No  | Standish                                 | 9   | 43.735    | -70.5534   | ME | 2005      |

<sup>a</sup> Ecoregion based on the USEPA Level II Ecoregion: Appalachian forest (App), Atlantic Highlands (High), Atlantic Mixed Woods Plains (Woods), and mid-Atlantic Coastal Plain (Coast).

<sup>b</sup> Habitat is either freshwater wetland (F), estuarine wetland (E) or upland forest (U)

<sup>c</sup> Cont is whether the site has a known point-source contamination (yes) or no known point-source contamination (no)