

Table S1. Survey history for harlequin duck on the Avalon Peninsula on the island of Newfoundland, Canada. The # field refers to numeric regional identifiers from the map in Figure 1. If more than one survey was conducted in the same year for a region, only the survey with the greatest spatial coverage is reported. For some earlier surveys, only the month of survey date is known.

| coverage | # | region | yr | survey type | count | survey date |
|------------|---|------------------|------|-------------|-------|-------------|
| historical | 1 | Avalon Peninsula | 1994 | Land | 14 | 02-?? |
| | | | 1995 | Land | 24 | 02-?? |
| | | | 1996 | Land/Boat | 28 | 02-?? |
| | | | 1997 | Land/Boat | 29 | 02-?? |
| | | | 1998 | Boat | 46 | 02-?? |
| | | | 1999 | Boat | 76 | 02-?? |
| | | | 2000 | Boat | 78 | 02-?? |
| | | | 2001 | Boat | 89 | 02-?? |
| | | | 2002 | Boat | 100 | 02-?? |
| | | | 2005 | Boat | 241 | 02-?? |
| | | | 2006 | Boat | 217 | 02-?? |
| | | | 2007 | Boat | 143 | 02-14 |
| | | | 2008 | Boat | 263 | 02-01 |
| | | | 2013 | Boat | 110 | 03-01 |
| | | | 2018 | Boat | 1,192 | 03-27 |

Table S2. Survey history for harlequin duck in Nova Scotia, Canada. The # field refers to numeric regional identifiers from the map in Figure 1. If more than one survey was conducted in the same year for a region, only the survey with the greatest spatial coverage is reported.

| coverage | # | region | yr | survey type | count | survey date |
|------------|------------|------------|------------|-------------|----------------------|----------------|
| historical | 1 | Digby Neck | 1988 | Helicopter | 3 | 03-03 |
| | | | 2000 | Land | 4 | 02-17 |
| | | | 2001 | Land | 28 | 02-13 |
| | | | 2002 | Boat | 16 | 02-10 |
| | | | 2002 | Land | 32 | 02-10 |
| | | | 2003 | Boat | 86 | 02-28 |
| | | | 2005 | Boat | 118 | 02-09 |
| | | | 2006 | Boat | 109 | 03-29 |
| | | | 2007 | Boat | 128 | 03-25 |
| | | | 2008 | Boat | 57 | 03-27 to 03-30 |
| | | | 2013 | Helicopter | 295 | 03-07 |
| | | | 2015 | Helicopter | 144 | 03-06 |
| | | | historical | 2 | Little Port L'Hebert | 2000 |
| 2001 | Land | 32 | | | | 02-14 |
| 2002 | Boat | 126 | | | | 02-20 |
| 2003 | Land | 78 | | | | 01-08 |
| 2005 | Boat | 176 | | | | 02-21 |
| 2006 | Boat | 219 | | | | 03-07 |
| 2008 | Boat | 93 | | | | 03-26 |
| 2013 | Helicopter | 224 | | | | 03-06 |
| 2015 | Helicopter | 172 | | | | 02-24 |

| coverage | # | region | yr | survey type | count | survey date |
|------------|---|-----------------------|------|-------------|-------|----------------|
| historical | 3 | Prospect | 2000 | Land | 45 | 02-15 |
| | | | 2001 | Land | 8 | 02-15 |
| | | | 2002 | Boat | 57 | 02-26 |
| | | | 2005 | Boat | 147 | 02-18 |
| | | | 2007 | Boat | 98 | 03-24 |
| | | | 2010 | Helicopter | 87 | 03-19 |
| | | | 2013 | Helicopter | 192 | 03-06 |
| | | | 2015 | Helicopter | 87 | 03-06 |
| historical | 4 | Eastern Shore WMA | 1988 | Helicopter | 22 | 02-12 to 02-19 |
| | | | 2001 | Boat | 262 | 02-14 |
| | | | 2001 | Land | 3 | 02-12 |
| | | | 2002 | Boat | 355 | 02-21 |
| | | | 2005 | Boat | 647 | 03-18 |
| | | | 2006 | Boat | 389 | 03-25 |
| | | | 2010 | Helicopter | 418 | 03-19 |
| | | | 2013 | Helicopter | 342 | 03-06 |
| expanded | 5 | Eastern Shore (south) | 2015 | Helicopter | 154 | 02-26 |
| | | | 2015 | Helicopter | 209 | 02-26 |
| | | | 2015 | Helicopter | 119 | 02-26 |
| expanded | 6 | Eastern Shore (north) | 2003 | Land | 12 | 11-26 |
| | | | 2013 | Land | 28 | 03-06 |
| | | | 2015 | Helicopter | 119 | 02-26 |
| expanded | 7 | Cape Breton | 2003 | Land | 12 | 11-26 |
| | | | 2013 | Land | 28 | 03-06 |
| expanded | 8 | Prospect (east) | 2000 | Land | 0 | 02-15 |
| | | | 2015 | Helicopter | 36 | 03-06 |

| coverage | # | region | yr | survey type | count | survey date |
|----------|------------|--------------|----------|-------------|-----------------|----------------|
| expanded | 9 | Southwest NS | 1988 | Plane | 108 | 02-09 to 02-11 |
| | | | 1999 | Plane | 27 | 03-14 |
| | | | 2000 | Land | 0 | 02-16 |
| | | | 2015 | Helicopter | 49 | 02-24 |
| | | | 2018 | Boat | 111 | 12-03 |
| | | | 2019 | Boat | 93 | 12-31 |
| | | | 2020 | Boat | 126 | 01-04 |
| | | | 2021 | Boat | 134 | 01-28 |
| | | | expanded | 10 | Bay of Fundy NS | 2000 |
| 2005 | Boat | 7 | | | | 02-09 |
| 2006 | Boat | 0 | | | | 03-29 |
| 2007 | Boat | 18 | | | | 03-24 |
| 2008 | Boat | 36 | | | | 03-27 |
| 2013 | Helicopter | 47 | | | | 03-07 |
| 2015 | Helicopter | 0 | | | | 03-06 |

Table S3. Survey history for harlequin duck in New Brunswick, Canada. The # field refers to numeric regional identifiers from the map in Figure 1. If more than one survey was conducted in the same year for a region, only the survey with the greatest spatial coverage is reported.

| coverage | # | region | year | survey type | count | survey date |
|------------|---|------------------------|------|-------------|-------|-------------|
| historical | 1 | Machias Seal Island | 2001 | Boat | 14 | 02-08 |
| | | | 2002 | Boat | 17 | 03-08 |
| | | | 2013 | Helicopter | 27 | 03-06 |
| | | | 2016 | Helicopter | 32 | 02-15 |
| historical | 2 | White Head Island | 2000 | Land | 55 | 02-22 |
| | | | 2001 | Boat | 68 | 02-08 |
| | | | 2002 | Boat | 130 | 03-08 |
| | | | 2013 | Helicopter | 103 | 03-06 |
| | | | 2016 | Helicopter | 36 | 02-15 |
| historical | 3 | The Wolves Archipelago | 1988 | Helicopter | 13 | 03-03 |
| | | | 1995 | Boat | 38 | 03-15 |
| | | | 1996 | Boat | 22 | 11-06 |
| | | | 2000 | Boat | 40 | 02-22 |
| | | | 2001 | Boat | 16 | 02-08 |
| | | | 2002 | Boat | 50 | 01-31 |
| | | | 2013 | Helicopter | 69 | 03-06 |
| | | | 2016 | Helicopter | 8 | 02-15 |
| historical | 4 | Point Lepreau | 2000 | Land | 15 | 02-22 |
| | | | 2001 | Boat | 0 | 02-08 |
| | | | 2002 | Boat | 6 | 03-08 |
| | | | 2016 | Helicopter | 11 | 02-15 |
| expanded | 5 | South Shore NB | 2013 | Helicopter | 17 | 03-06 |
| | | | 2016 | Helicopter | 8 | 02-15 |

| coverage | # | region | year | survey type | count | survey date |
|----------|---|-------------------------|------|-------------|-------|-------------|
| expanded | 6 | Grand Manan Archipelago | 2002 | Boat | 9 | 03-08 |
| | | | 2013 | Helicopter | 69 | 03-06 |
| | | | 2016 | Helicopter | 26 | 02-15 |

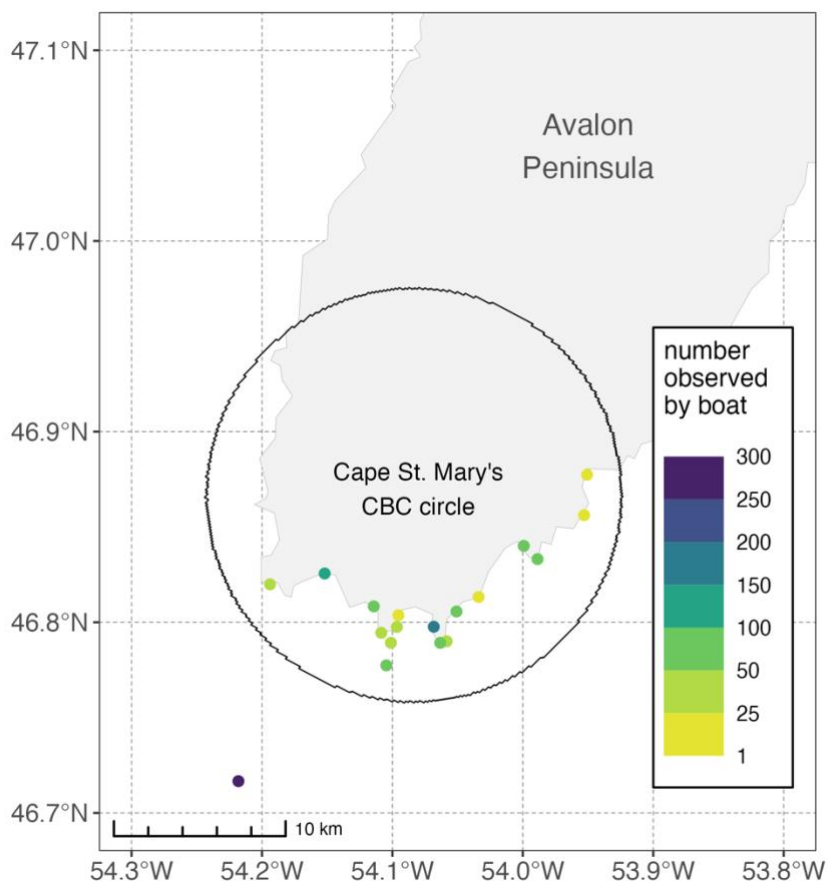


Figure S1. Counts of harlequin duck (*Histrionicus histrionicus*) observed on boat surveys on the southern end of the Avalon Peninsula, Newfoundland, in winter 2018. The extent of the Cape St. Mary's Christmas Bird Count circle (12 km radius) is shown for reference.