**Table S4. H13 sequences used in this study.**

|  |  |  |
| --- | --- | --- |
| A\_American\_white\_pelican\_Minnesota\_AI-07-1819\_2007 | H13N9 | 2007 |
| A\_American\_white\_pelican\_Minnesota\_Sg-0611\_2008 | H13N9 | 7/29/08 |
| A\_Larus\_argentatus\_Astrakhan\_458\_1985 | H13N6 | 1985 |
| A\_Larus\_ichthyaetus\_Astrakhan\_75\_1983 | H13N2 | 1983/05/ |
| A\_Larus\_minutus\_Astrakhan\_3357\_2002 | H13N6 | 9/2/02 |
| A\_black\_Headed\_gull\_Astrakhan\_65\_1983 | H13N6 | 1983 |
| A\_black\_Headed\_gull\_Mongolia\_1766\_2006 | H13N6 | 9/8/06 |
| A\_black-headed\_gull\_Astrakhan\_227\_84 | H13N6 | 1984 |
| A\_black-headed\_gull\_Georgia\_1\_2011 | H13N8 | 4/19/11 |
| A\_black-headed\_gull\_Georgia\_3\_2011 | H13N8 | 4/19/11 |
| A\_black-headed\_gull\_Georgia\_4\_2011 | H13N8 | 4/19/11 |
| A\_black-headed\_gull\_Georgia\_6\_2011 | H13N8 | 4/19/11 |
| A\_black-headed\_gull\_Netherlands\_1\_00 | H13N8 | 2000 |
| A\_black-headed\_gull\_Sweden\_1\_1999 | H13N6 | 1999 |
| A\_black-headed\_gull\_Sweden\_1\_2005 | H13N8 | 2005 |
| A\_glaucous\_gull\_Alaska\_44199-006\_2006 | H13N9 | 9/23/06 |
| A\_glaucous\_gull\_Alaska\_44199-097\_2006 | H13N3 | 9/25/06 |
| A\_glaucous\_gull\_Alaska\_44199-104\_2006 | H13N9 | 9/25/06 |
| A\_great\_black-headed\_gull\_Astrakhan\_1420\_79 | H13N2 | 1979 |
| A\_great\_black-headed\_gull\_Astrakhan\_1421\_79 | H13N2 | 1979 |
| A\_great\_black-headed\_gull\_Astrakhan\_591\_82 | H13N2 | 1982 |
| A\_Larus\_ichthyaetus\_Astrakhan\_10\_1988 | H13N6 | 5/21/88 |
| A\_Mongolian\_gull\_Mongolia\_405\_2007 | H13N6 | 8/28/07 |
| A\_black-legged\_kittiwake\_Quebec\_02838-1\_2009 | H13N6 | 8/18/09 |
| A\_blackhead\_gull\_Astrakhan\_44\_1988 | H13N6 | 5/21/88 |
| A\_common\_gull\_Norway\_10\_1313\_2009 | H13N2 | 2009 |
| A\_duck\_Hokkaido\_WZ68\_2012 | H13N2 | 11/1/12 |
| A\_Mongolian\_gull\_Mongolia\_401\_2007 | H13N6 | 8/28/07 |
| A\_glaucous-winged\_gull\_Southcentral\_Alaska\_9JR0691R0\_2009 | H13N6 | 8/18/09 |
| A\_glaucous-winged\_gull\_Southcentral\_Alaska\_9JR0738R0\_2009 | H13N6 | 8/18/09 |
| A\_glaucous-winged\_gull\_Southcentral\_Alaska\_9JR0747R0\_2009 | H13N6 | 8/18/09 |
| A\_glaucous-winged\_gull\_Southcentral\_Alaska\_9JR0769R0\_2009 | H13N6 | 8/18/09 |
| A\_glaucous-winged\_gull\_Southcentral\_Alaska\_9JR0781R0\_2009 | H13N6 | 8/18/09 |
| A\_glaucous-winged\_gull\_Southeastern\_Alaska\_9JR0822R0\_2009 | H13N6 | 8/19/09 |
| A\_great\_black\_Headed\_gull\_Atyrau\_2966\_2008 | H13N6 | 7/13/08 |
| A\_great\_black-backed\_gull\_Newfoundland\_296\_2008 | H13N2 | 10/21/08 |
| A\_gull\_Astrakhan\_226\_1984 | H13N6 | 1984/05/ |
| A\_gull\_Astrakhan\_3483\_2002 | H13N6 | 9/9/02 |
| A\_gull\_Astrakhan\_998\_1990 | H13N6 | 1990/05/ |
| A\_great\_black-headed\_gull\_Gurjev\_76\_83 | H13N2 | 1983 |
| A\_herring\_gull\_Mongolia\_454\_2008 | H13N8 | 2008/09/ |
| A\_gull\_Astrakhan\_1314\_1979 | H13N2 | 1979/05/ |
| A\_gull\_Astrakhan\_176\_1986 | H13N2 | 1986/05/ |
| A\_gull\_Astrakhan\_1818\_1998 | H13N6 | 1998/05/ |
| A\_gull\_Astrakhan\_1846\_1998 | H13N6 | 1998 |
| A\_herring\_gull\_Astrakhan\_479\_85 | H13N6 | 1985 |
| A\_gull\_Maryland\_704\_1977 | H13N6 | 1977 |
| A\_duck\_Siberia\_272\_1998 | H13N6 | 1998 |
| A\_duck\_Siberia\_272PF\_1998 | H13N6 | 1998 |
| A\_black-headed\_gull\_Georgia\_7\_2011 | H13N6 | 11/14/11 |
| A\_great\_black-headed\_gull\_Atyrau\_743\_2004 | H13N6 | 7/19/04 |
| A\_great\_black-headed\_gull\_Atyrau\_744\_2004 | H13N6 | 7/19/04 |
| A\_great\_black-headed\_gull\_Atyrau\_767\_2004 | H13N6 | 7/19/04 |
| A\_great\_black-headed\_gull\_Atyrau\_773\_2004 | H13N6 | 7/19/04 |
| A\_gull\_Maryland\_704\_1977 | H13N6 | 9/22/77 |
| A\_gull\_Delaware\_AI09-435\_2009 | mixed | |
| A\_ring-billed\_gull\_Georgia\_AI00-2658\_2000 | H13N6 | 12/11/00 |
| A\_ring-billed\_gull\_Quebec\_02434-1\_2009 | H13N6 | 7/20/09 |
| A\_ring-billed\_gull\_Quebec\_02622-1\_2009 | mixed | |
| A\_ruddy\_turnstone\_Delaware\_Bay\_520\_1988 | H13N9 | 5/15/88 |
| A\_mallard-black\_duck\_Hybrid\_New\_brunswick\_03736\_2009 | H13N6 | 9/14/09 |
| A\_silver\_gull\_Tasmania\_062\_2006 | H13N6 | 2006 |
| A\_yellow-legged\_gull\_Georgia\_1\_2010 | H13N2 | 10/18/10 |
| A\_yellow-legged\_gull\_Georgia\_1\_2011 | H13N6 | 10/28/11 |
| A\_ruddy\_turnstone\_New\_Jersey\_AI09-294\_2009 | H13N6 | 5/11/09 |
| A\_shorebird\_Delaware\_Bay\_424\_2007 | H13N9 | 5/24/07 |
| A\_gull\_Maryland\_704\_1977 | H13N6 | 1977 |
| A\_gull\_Minnesota\_945\_1980 | H13N6 | 8/25/80 |
| A\_herring\_gull\_DE\_475\_1986 | H13N2 | 6/1/86 |
| A\_herring\_gull\_Delaware\_660\_1988 | H13N6 | 5/16/88 |
| A\_herring\_gull\_NJ\_782\_1986 | H13N2 | 5/12/86 |
| A\_herring\_gull\_Norway\_10\_2336\_2006 | H13N6 | 2006 |
| A\_hooded\_merganser\_New\_brunswick\_03750\_2009 | H13N6 | 9/14/09 |
| A\_laughing\_gull\_Delaware\_Bay\_2838\_1987 | H13N2 | 5/19/87 |
| A\_laughing\_gull\_Delaware\_Bay\_2838\_1987 | H13N2 | 5/19/87 |
| A\_laughing\_gull\_New\_Jersey\_Sg-00485\_2008 | H13N9 | 5/15/08 |
| A\_laughing\_gull\_New\_Jersey\_Sg-00559\_2008 | H13N9 | 5/28/08 |
| A\_laughing\_gull\_New\_Jersey\_Sg-00568\_2008 | H13N9 | 5/28/08 |
| A\_mallard\_Korea\_SH38-45\_2010 | H13N2 | 3/22/10 |
| A\_shorebird\_Delaware\_221\_2006 | H13N9 | 5/22/06 |
| A\_seagull\_Chile\_5775\_2009 | H13N9 | 11/3/09 |
| A\_shorebird\_DE\_68\_2004 | H13N9 | 5/17/04 |
| A\_shorebird\_Delaware\_224\_2006 | H13N9 | 5/22/06 |
| A\_lesser\_snow\_goose\_Alaska\_44199-115\_2006 | H13N9 | 9/24/06 |
| A\_kelp\_gull\_Argentina\_LDC4\_2006 | H13N9 | 2006 |