

# Annual Movements Supplemental

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## Supplemental Methods

Text Sections:

Rule-based thresholds chosen:

- Minimum distance between 2 potential segments: 2 kilometers
- Minimum time difference between 2 potential change points: 2 days
- Minimum distance moved between breeding/capture location and the furthest segment in order to consider onset of fall migration: 100 kilometers
- Minimum distance moved between the furthest segment and the segment representing return to spring territory: 100 kilometers
- Maximum distance between the spring return segment and the breeding/capture territory in order to consider a spring migration arrival: 10 kilometers
- Latest date to be considered a fall migration onset / earliest date to be considered a spring return onset: December 1st

Tables:

Swan ID	Swan Year-ID	Fall Migration Onset (
2A	2A-2019-2020	
4A	4A-2019-2020	
5A	5A-2019-2020	
6A	6A-2019-2020	
3A	3A-2019-2020	
2J	2J-2021-2022	
7A	7A-2019-2020	
3J	3J-2020-2021	
5J	5J-2019-2020	
4J	4J-2019-2020	
4J	4J-2020-2021	
4J	4J-2021-2022	
6J	6J-2019-2020	
6J	6J-2020-2021	
7J	7J-2019-2020	

Swan ID	Swan Year-ID	Fall Migration Onset (
7J	7J-2020-2021	
7J	7J-2021-2022	
9J (first deployment)	9J (first deployment)-2019-2020	
9A	9A-2019-2020	
9A	9A-2020-2021	
2K	2K-2019-2020	
2K	2K-2020-2021	
2K	2K-2021-2022	
3K	3K-2019-2020	
3K	3K-2020-2021	
3K	3K-2021-2022	
4K	4K-2019-2020	
4K	4K-2020-2021	
4K	4K-2021-2022	
6K	6K-2019-2020	
6K	6K-2020-2021	
6K	6K-2021-2022	
5K	5K-2019-2020	
8A	8A-2020-2021	
8A	8A-2021-2022	
1A	1A-2020-2021	
1A	1A-2021-2022	
1A	1A-2022-2023	
0A	0A-2020-2021	
0A	0A-2022-2023	
1E	1E-2020-2021	
1E	1E-2021-2022	
1E	1E-2022-2023	
2E	2E-2020-2021	
2E	2E-2021-2022	
0E	0E-2020-2021	
9E	9E-2020-2021	
8E	8E-2020-2021	

Swan ID	Swan Year-ID	Fall Migration Onset (
6E	6E-2020-2021	
6E	6E-2021-2022	
6E	6E-2022-2023	
7E	7E-2020-2021	
7E	7E-2021-2022	
7E	7E-2022-2023	
1R	1R-2020-2021	
0R	0R-2020-2021	
0R	0R-2021-2022	
0R	0R-2022-2023	
0H	0H-2020-2021	
0H	0H-2021-2022	
3R	3R-2020-2021	
3R	3R-2021-2022	
3R	3R-2022-2023	
2R	2R-2020-2021	
1H	1H-2020-2021	
1H	1H-2021-2022	
2H	2H-2020-2021	
3H	3H-2020-2021	
3H	3H-2021-2022	
3H	3H-2022-2023	
4H	4H-2020-2021	
4H	4H-2021-2022	
5H	5H-2020-2021	
6R	6R-2020-2021	
5R	5R-2020-2021	
5R	5R-2021-2022	
4R	4R-2020-2021	
4R	4R-2021-2022	
3E	3E-2020-2021	
3E	3E-2021-2022	
0M	0M-2020-2021	

Swan ID	Swan Year-ID	Fall Migration Onset (
0M	0M-2021-2022	
0M	0M-2022-2023	
7R	7R-2021-2022	
8R	8R-2020-2021	
8R	8R-2021-2022	
9R	9R-2020-2021	
9R	9R-2021-2022	
9R	9R-2022-2023	
2T	2T-2020-2021	
2T	2T-2021-2022	
2T	2T-2022-2023	
0N	0N-2020-2021	
3T	3T-2021-2022	
1N	1N-2020-2021	
1N	1N-2021-2022	
2N	2N-2020-2021	
3N	3N-2020-2021	
3N	3N-2021-2022	
6T	6T-2020-2021	
6T	6T-2021-2022	
6H	6H-2020-2021	
7H	7H-2020-2021	
8H	8H-2020-2021	
1M	1M-2020-2021	
1M	1M-2021-2022	
2M	2M-2020-2021	
2M	2M-2021-2022	
2M	2M-2022-2023	
3M	3M-2020-2021	
4N	4N-2020-2021	
4N	4N-2021-2022	
5N	5N-2020-2021	
5N	5N-2021-2022	

Swan ID	Swan Year-ID	Fall Migration Onset (
6N	6N-2020-2021	
6N	6N-2021-2022	
1T	1T-2020-2021	
1T	1T-2021-2022	
8T	8T-2020-2021	
8T	8T-2021-2022	
5T	5T-2020-2021	
7T	7T-2020-2021	
7T	7T-2021-2022	
7T	7T-2022-2023	
1L	1L-2020-2021	
1L	1L-2021-2022	
1L	1L-2022-2023	
0L	0L-2020-2021	
4T	4T-2020-2021	
4T	4T-2021-2022	
4T	4T-2022-2023	
3L	3L-2020-2021	
3L	3L-2021-2022	
4L	4L-2020-2021	
4L	4L-2021-2022	
4L	4L-2022-2023	
7N	7N-2020-2021	
7N	7N-2021-2022	
7N	7N-2022-2023	
5E	5E-2020-2021	
5E	5E-2021-2022	
4E	4E-2020-2021	
6L	6L-2020-2021	
9J (swan originally collared as 5J)	9J (swan originally collared as 5J)-2020-2021	
9J (swan originally collared as 5J)	9J (swan originally collared as 5J)-2021-2022	
5L	5L-2020-2021	
5L	5L-2021-2022	

Swan ID	Swan Year-ID	Fall Migration Onset (
7K	7K-2020-2021	
7K	7K-2021-2022	
0C	0C-2020-2021	
2C	2C-2020-2021	
2C	2C-2021-2022	
2C	2C-2022-2023	
1C	1C-2020-2021	
1C	1C-2021-2022	
1C	1C-2022-2023	
3C	3C-2020-2021	
3C	3C-2021-2022	
3C	3C-2022-2023	
4C	4C-2020-2021	
4C	4C-2021-2022	
4C	4C-2022-2023	
9H	9H-2020-2021	
5C	5C-2020-2021	
5C	5C-2021-2022	
5C	5C-2022-2023	
2P	2P-2020-2021	
3P	3P-2020-2021	
3P	3P-2021-2022	
1P	1P-2021-2022	
1P	1P-2022-2023	
6C	6C-2020-2021	
6C	6C-2021-2022	
7C	7C-2020-2021	
7C	7C-2021-2022	
7C	7C-2022-2023	
0T_2nd	0T_2nd-2020-2021	
0T_2nd	0T_2nd-2021-2022	
8C	8C-2020-2021	
8C	8C-2021-2022	

Swan ID	Swan Year-ID	Fall Migration Onset (
8C	8C-2022-2023	
4P	4P-2020-2021	
4P	4P-2021-2022	
0P	0P-2020-2021	
0P	0P-2021-2022	
0E_2nd	0E_2nd-2021-2022	
6L_2nd	6L_2nd-2021-2022	
9H_2nd	9H_2nd-2021-2022	
9H_2nd	9H_2nd-2022-2023	
2H_2nd	2H_2nd-2021-2022	
2H_2nd	2H_2nd-2022-2023	
9P	9P-2021-2022	
8N	8N-2021-2022	
9N	9N-2021-2022	
9N	9N-2022-2023	
4M	4M-2021-2022	
4M	4M-2022-2023	
5M	5M-2021-2022	
5M	5M-2022-2023	
5P	5P-2021-2022	
6M	6M-2021-2022	
6M	6M-2022-2023	
7M	7M-2022-2023	
8M	8M-2021-2022	
8M	8M-2022-2023	
6R_2nd	6R_2nd-2021-2022	
6R_2nd	6R_2nd-2022-2023	
0L_2nd	0L_2nd-2021-2022	
0L_2nd	0L_2nd-2022-2023	
8E_2nd	8E_2nd-2021-2022	
8E_2nd	8E_2nd-2022-2023	
7P	7P-2021-2022	
7P	7P-2022-2023	

Swan ID	Swan Year-ID	Fall Migration Onset (
8P	8P-2021-2022	
9M	9M-2021-2022	
9C	9C-2021-2022	
0C_2nd	0C_2nd-2021-2022	
0C_2nd	0C_2nd-2022-2023	
5H_2nd	5H_2nd-2021-2022	
5H_2nd	5H_2nd-2022-2023	
6P	6P-2021-2022	
0N_2nd	0N_2nd-2021-2022	
0N_2nd	0N_2nd-2022-2023	
7L	7L-2021-2022	
7L	7L-2022-2023	
8L	8L-2021-2022	
8L	8L-2022-2023	
9L	9L-2021-2022	
9L	9L-2022-2023	
6C_2nd	6C_2nd-2022-2023	