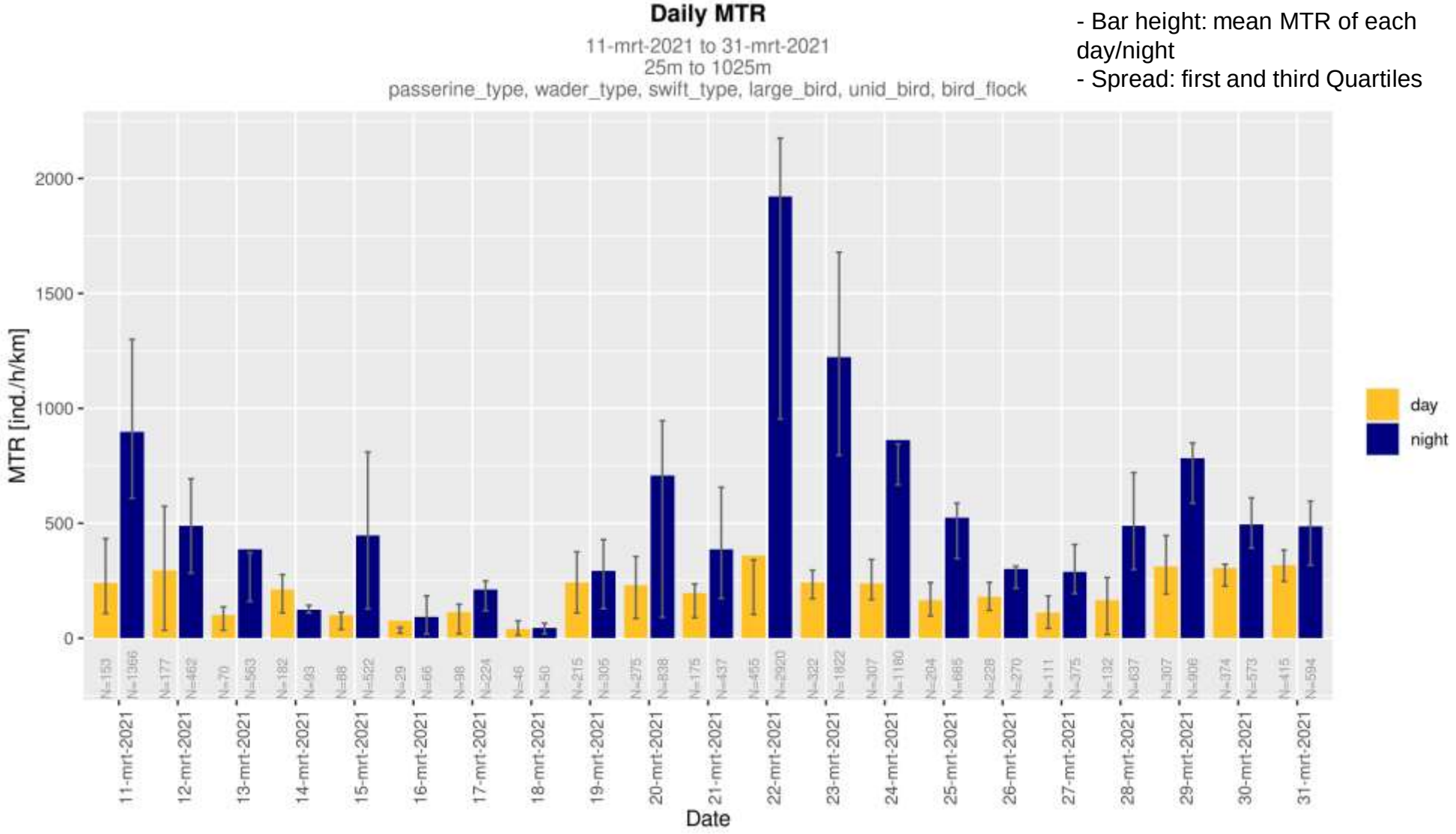
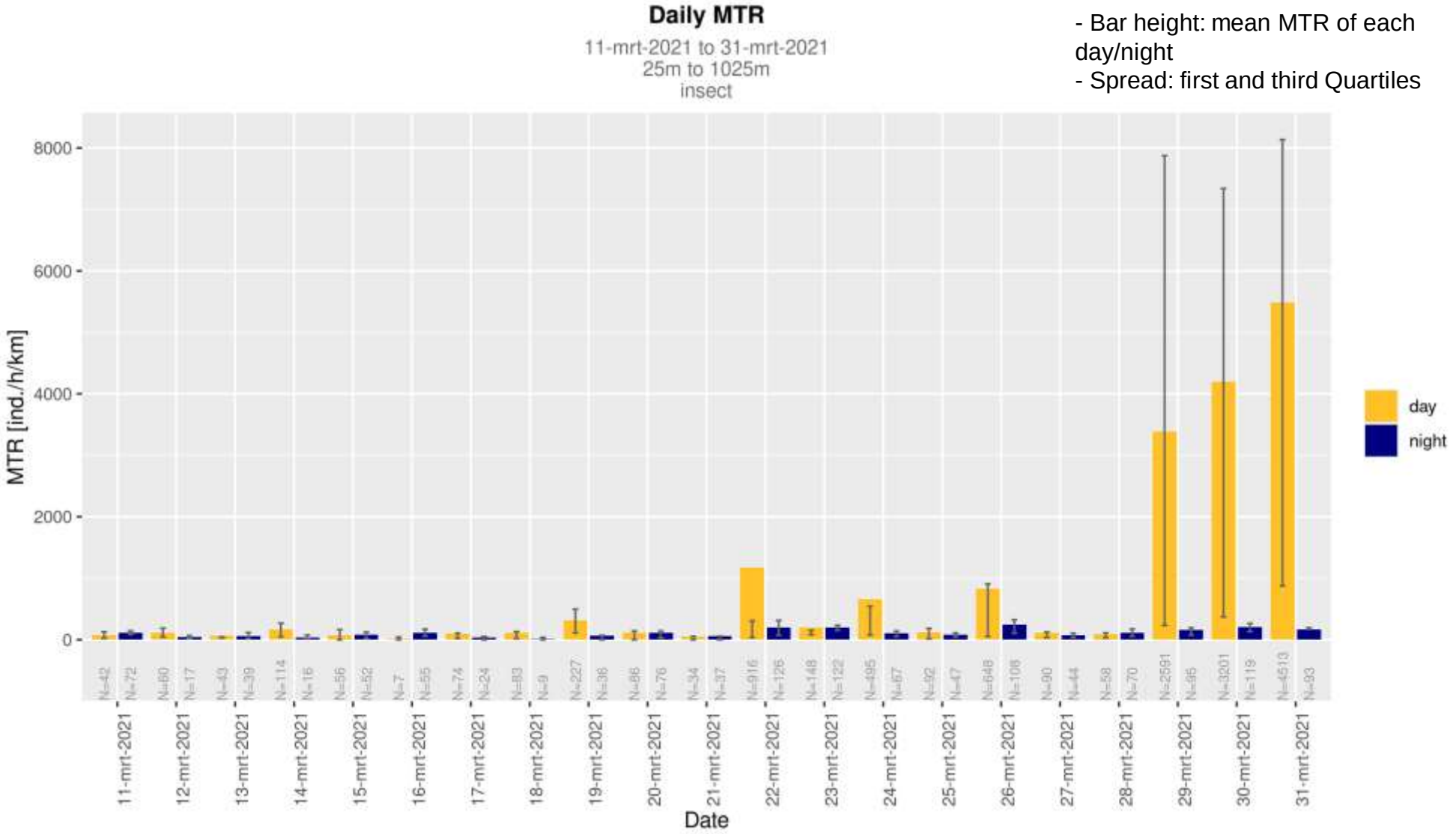
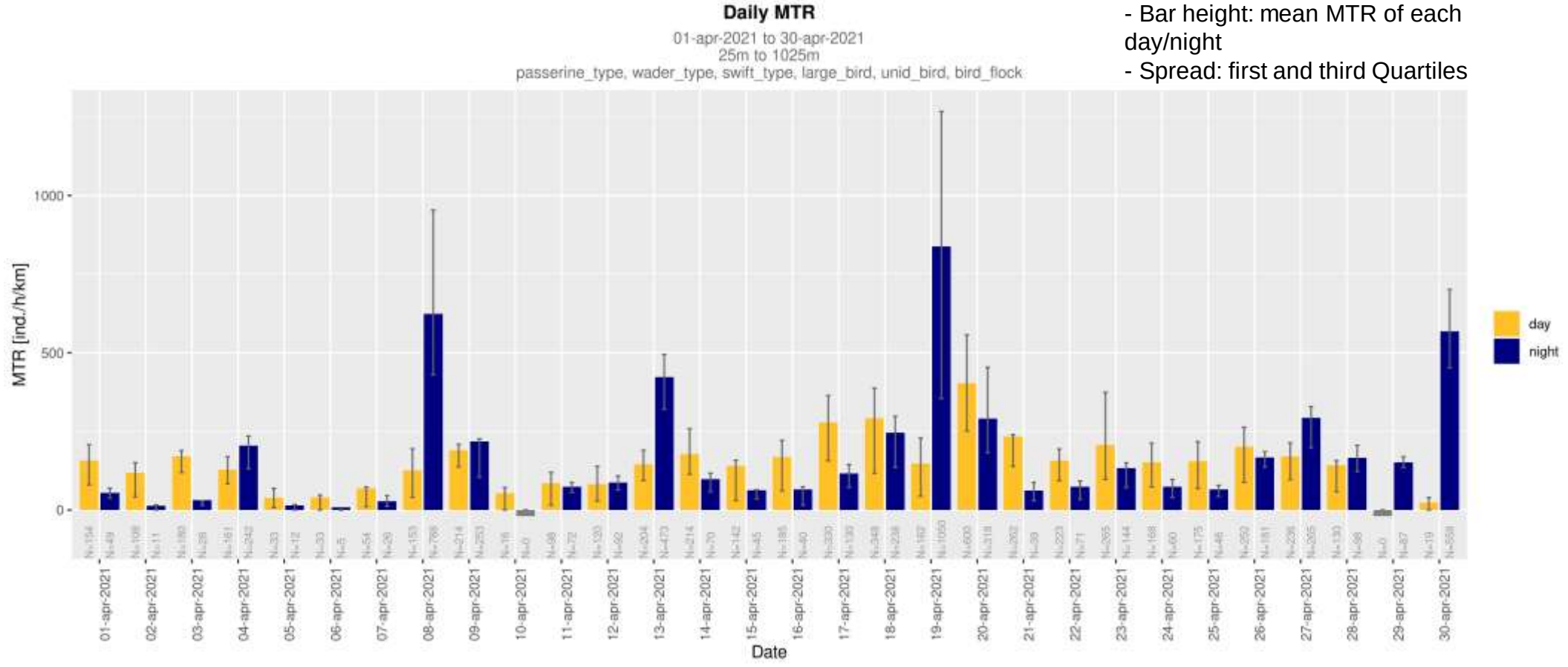
Amsterdam Birsdscan MR1 at ARTIS

Overview of data from 11/03/2021 to 31/08/2021

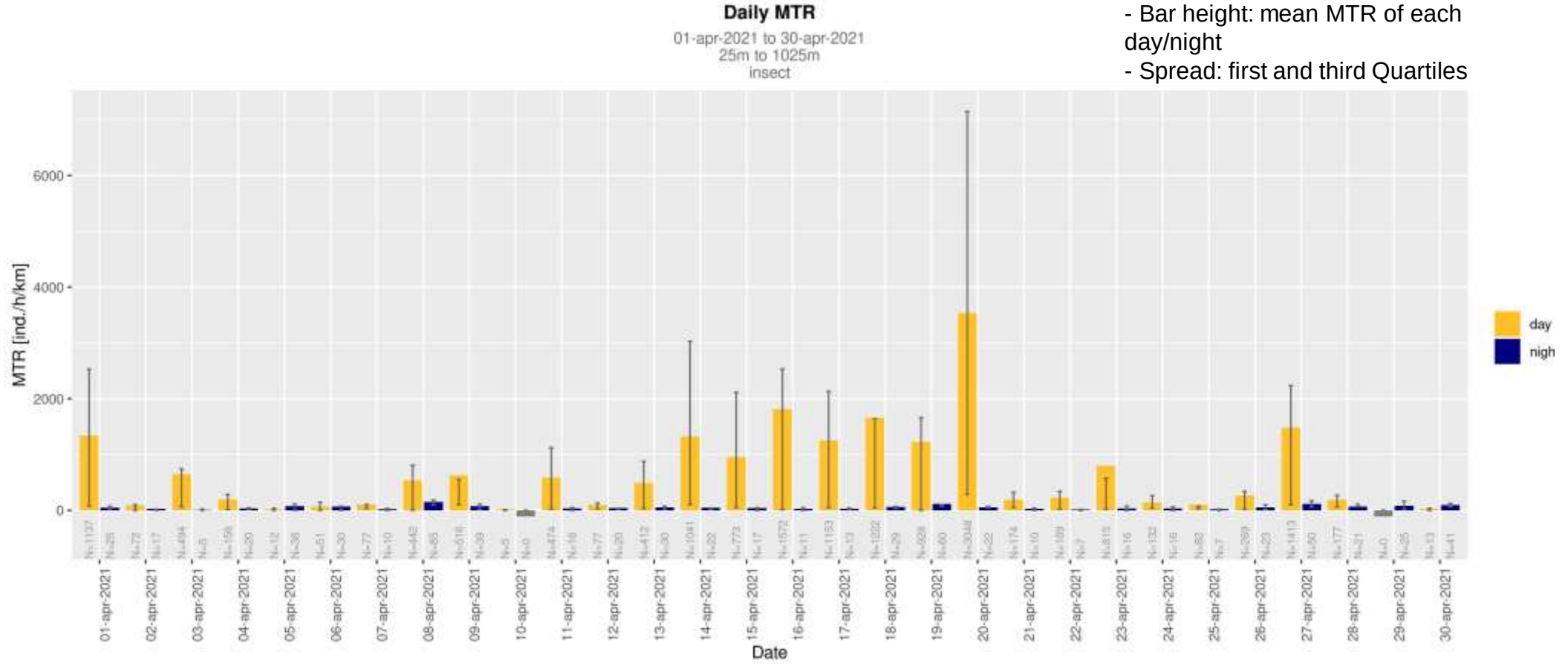
- The following data is extracted from the PostgreSQL cloud database and processed using the MR1 Analysis Tool developed by SBRS
- Further analysis is performed in Python
- The mean MTR per day/night is calculated in a single altitude bin between 25m and 1025m for the creation of MTR time series
- Only short pulse data is used
- The probability of classification cutoff is set to 0.3. Echoes with a lower probability of classification are excluded
- Echoes for which “observation time”/”time duration bin” < 0.2 are also excluded
- Birds and insects are identified. Birds are classified into: passerine, wader, swift, large bird, unidentified bird, and flock

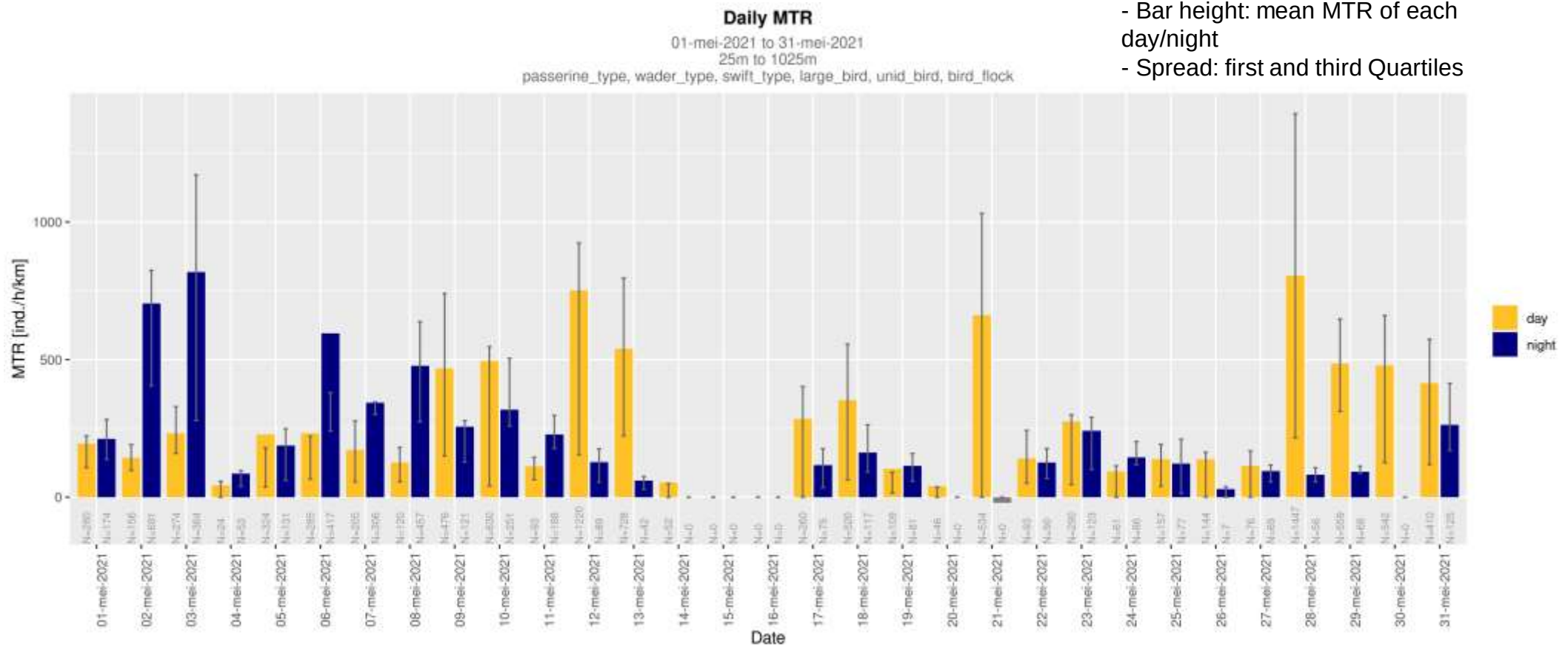

Daily MTR
11-mrt-2021 to 31-mrt-2021
25m to 1025m
passerine_type, wader_type, swift_type, large_bird, unid_bird, bird_flock
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
2000
1500
1000
500
0
N=153 N=1966 N=177 N=462 N=70 N=563 N=182 N=93 N=88 N=522 N=29 N=66 N=98 N=224 N=46 N=50 N=215 N=305 N=275 N=838 N=175 N=437 N=455 N=2920 N=322 N=1922 N=307 N=1180 N=204 N=685 N=228 N=270 N=111 N=375 N=132 N=637 N=307 N=906 N=374 N=573 N=415 N=594
11-mrt-2021
12-mrt-2021
13-mrt-2021
14-mrt-2021
15-mrt-2021
16-mrt-2021
17-mrt-2021
18-mrt-2021
19-mrt-2021
20-mrt-2021
21-mrt-2021
22-mrt-2021
23-mrt-2021
24-mrt-2021
25-mrt-2021
26-mrt-2021
27-mrt-2021
28-mrt-2021
29-mrt-2021
30-mrt-2021
31-mrt-2021
Date
day
night

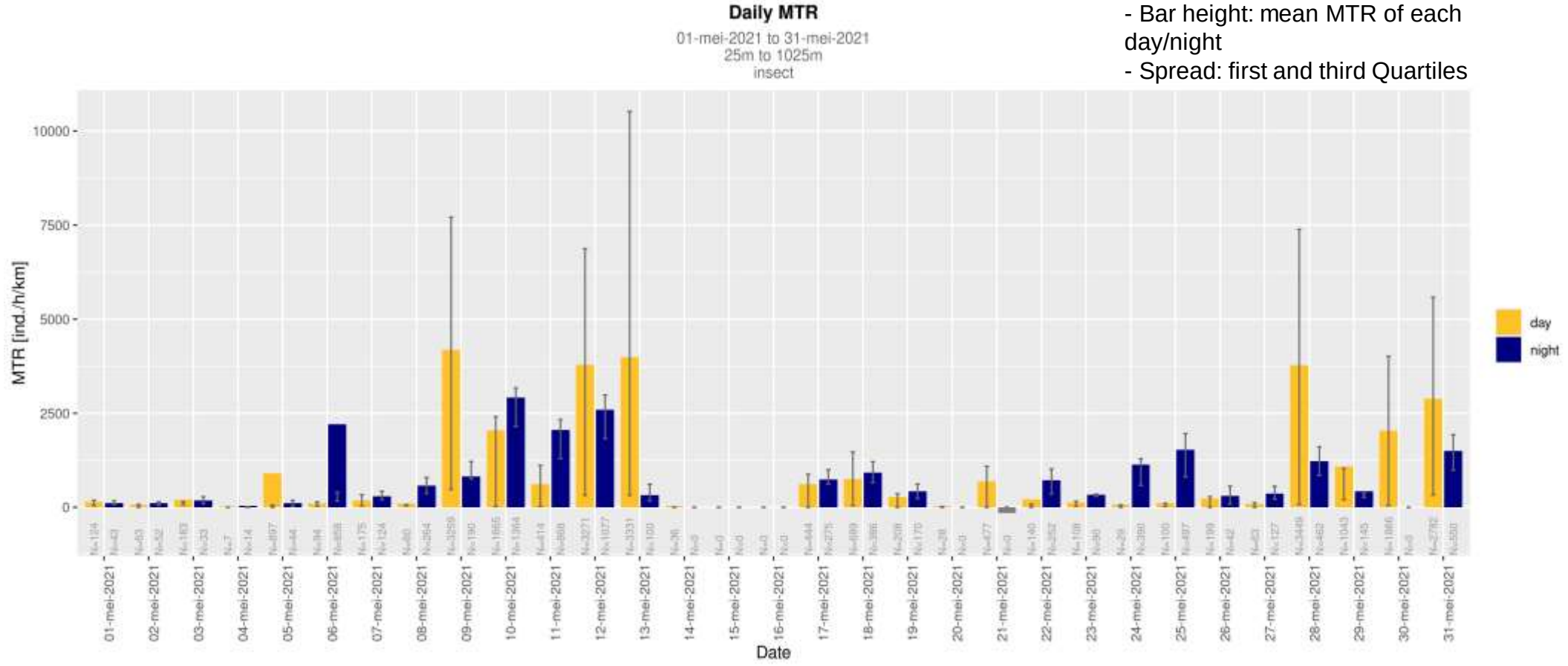

Daily MTR
11-mrt-2021 to 31-mrt-2021
25m to 1025m
insect
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
8000
6000
4000
2000
0
N=42 N=72 N=60 N=17 N=43 N=39 N=114 N=16 N=56 N=52 N=7 N=55 N=74 N=24 N=83 N=9 N=227 N=38 N=88 N=76 N=34 N=37 N=916 N=126 N=148 N=122 N=495 N=67 N=92 N=47 N=648 N=106 N=90 N=44 N=58 N=70 N=2581 N=95 N=3201 N=119 N=4513 N=93
11-mrt-2021
12-mrt-2021
13-mrt-2021
14-mrt-2021
15-mrt-2021
16-mrt-2021
17-mrt-2021
18-mrt-2021
19-mrt-2021
20-mrt-2021
21-mrt-2021
22-mrt-2021
23-mrt-2021
24-mrt-2021
25-mrt-2021
26-mrt-2021
27-mrt-2021
28-mrt-2021
29-mrt-2021
30-mrt-2021
31-mrt-2021
Date
day
night

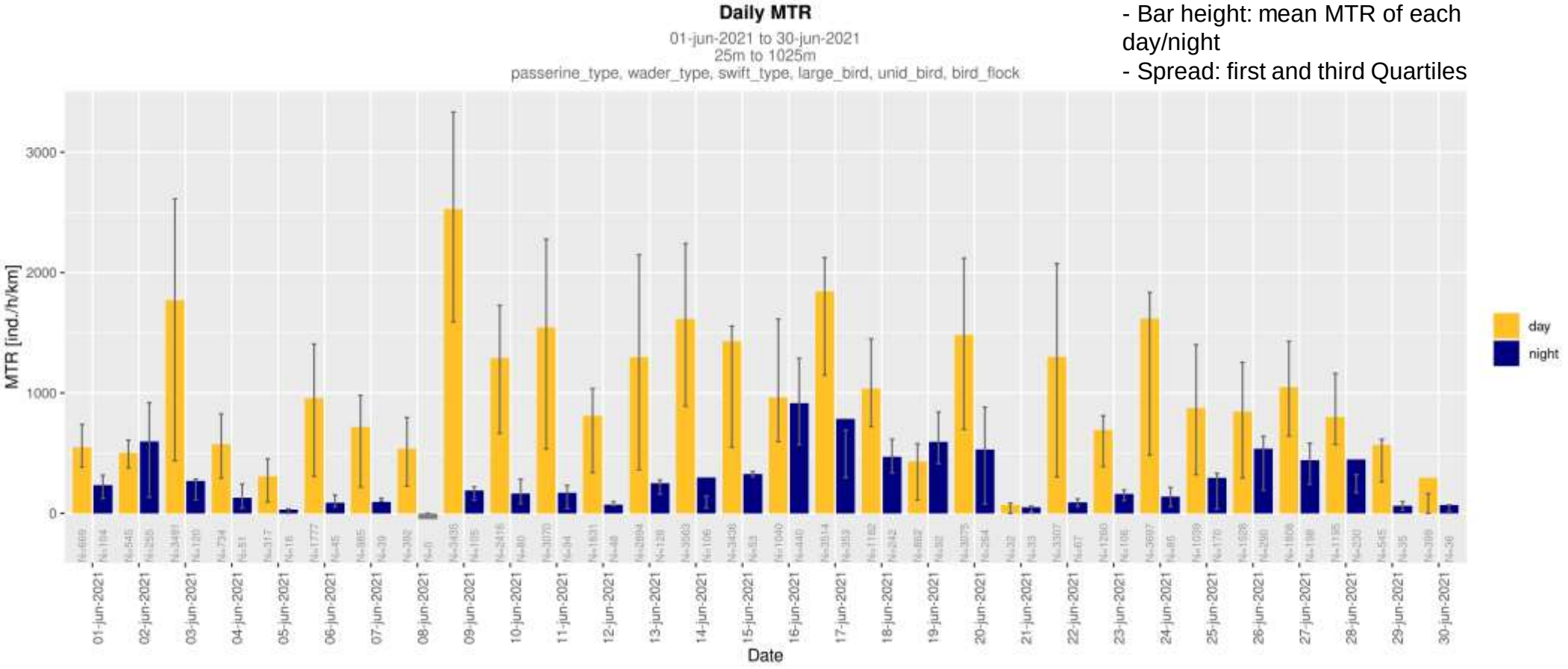


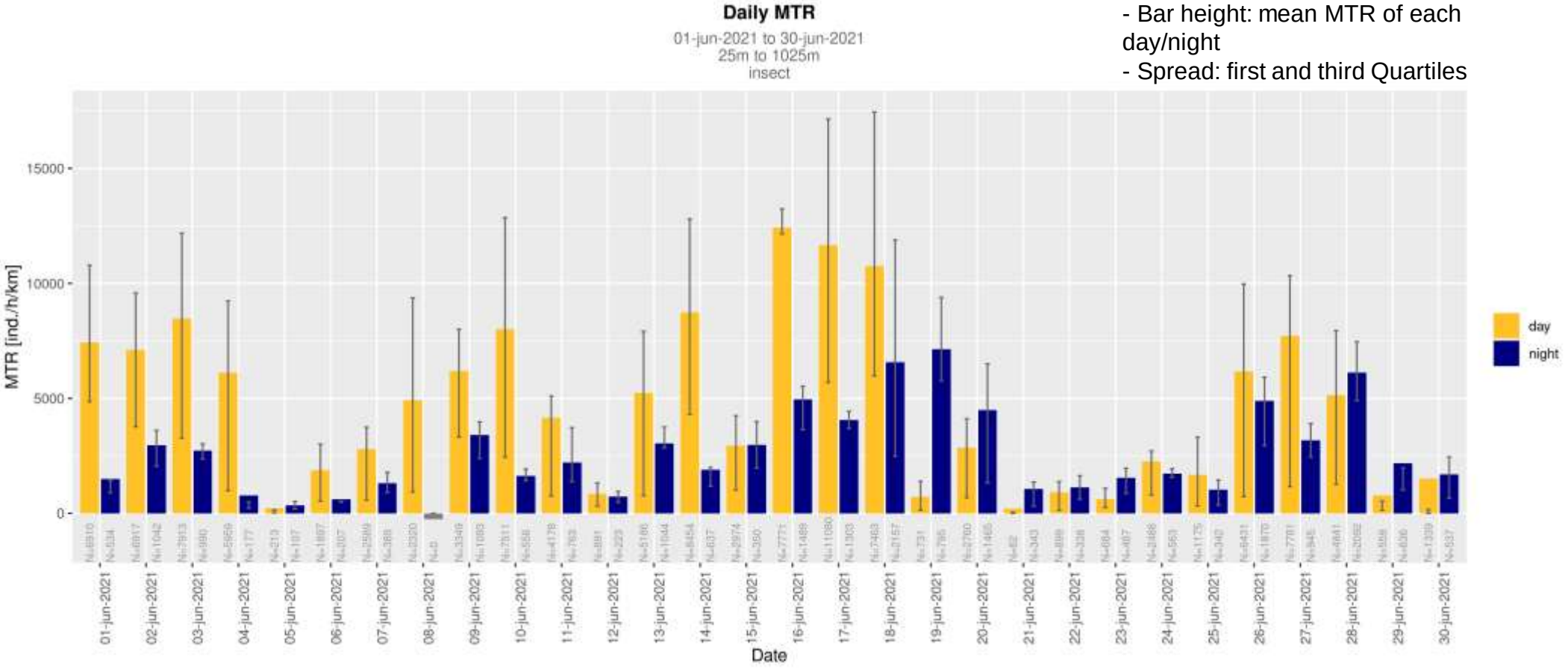
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles

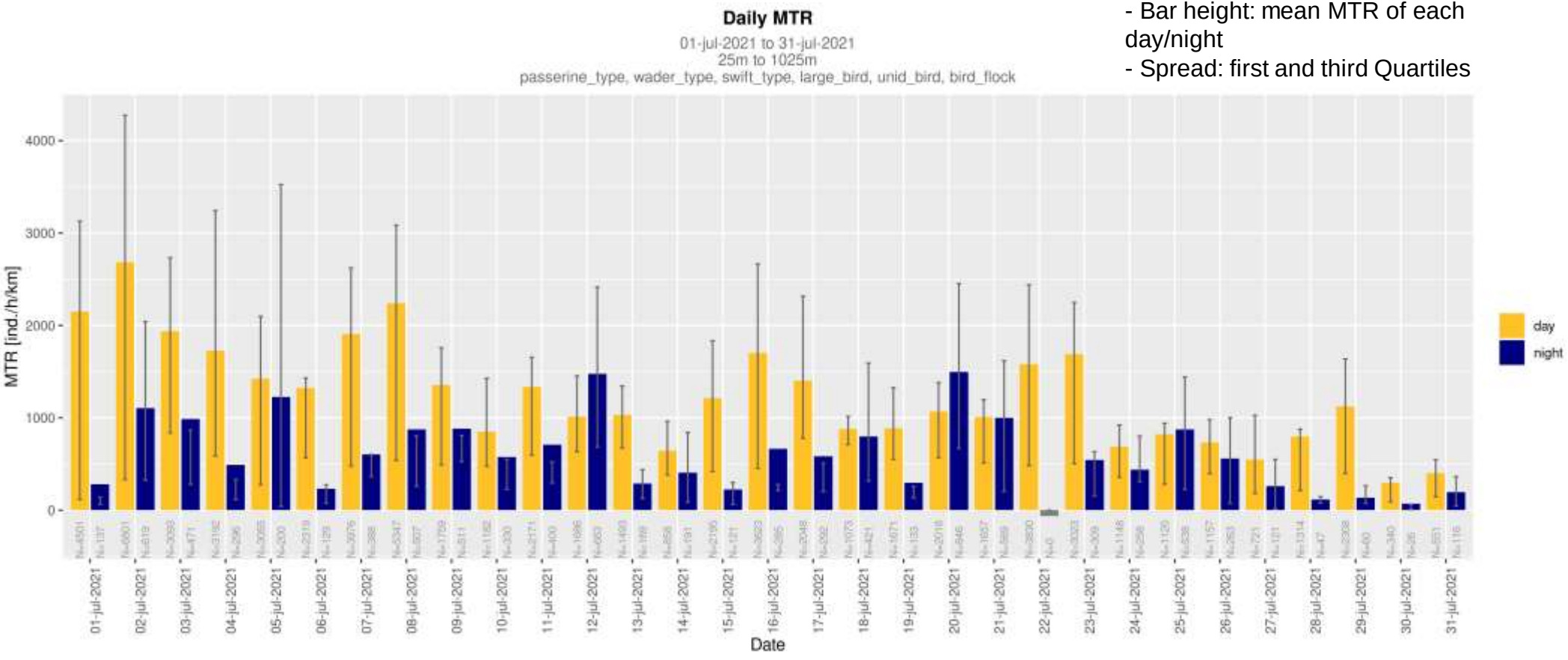

Daily MTR
01-apr-2021 to 30-apr-2021
25m to 1025m
insect
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
6000
4000
2000
0
day
nigh
N=1137
N=25
N=72
N=17
N=494
N=5
N=159
N=20
N=12
N=36
N=51
N=30
N=77
N=10
N=442
N=85
N=518
N=39
N=5
N=0
N=474
N=16
N=77
N=20
N=412
N=30
N=1041
N=22
N=773
N=17
N=1572
N=11
N=1153
N=13
N=1222
N=29
N=908
N=60
N=3044
N=22
N=174
N=10
N=189
N=7
N=815
N=16
N=132
N=16
N=82
N=7
N=269
N=20
N=1413
N=50
N=177
N=21
N=0
N=25
N=13
N=41
01-apr-2021
02-apr-2021
03-apr-2021
04-apr-2021
05-apr-2021
06-apr-2021
07-apr-2021
08-apr-2021
09-apr-2021
10-apr-2021
11-apr-2021
12-apr-2021
13-apr-2021
14-apr-2021
15-apr-2021
16-apr-2021
17-apr-2021
18-apr-2021
19-apr-2021
20-apr-2021
21-apr-2021
22-apr-2021
23-apr-2021
24-apr-2021
25-apr-2021
26-apr-2021
27-apr-2021
28-apr-2021
29-apr-2021
30-apr-2021
Date


Daily MTR
01-mei-2021 to 31-mei-2021
25m to 1025m
passerine_type, wader_type, swift_type, large_bird, unid_bird, bird_flock
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
1000
500
0
day
night
01-mei-2021
02-mei-2021
03-mei-2021
04-mei-2021
05-mei-2021
06-mei-2021
07-mei-2021
08-mei-2021
09-mei-2021
10-mei-2021
11-mei-2021
12-mei-2021
13-mei-2021
14-mei-2021
15-mei-2021
16-mei-2021
17-mei-2021
18-mei-2021
19-mei-2021
20-mei-2021
21-mei-2021
22-mei-2021
23-mei-2021
24-mei-2021
25-mei-2021
26-mei-2021
27-mei-2021
28-mei-2021
29-mei-2021
30-mei-2021
31-mei-2021
Date

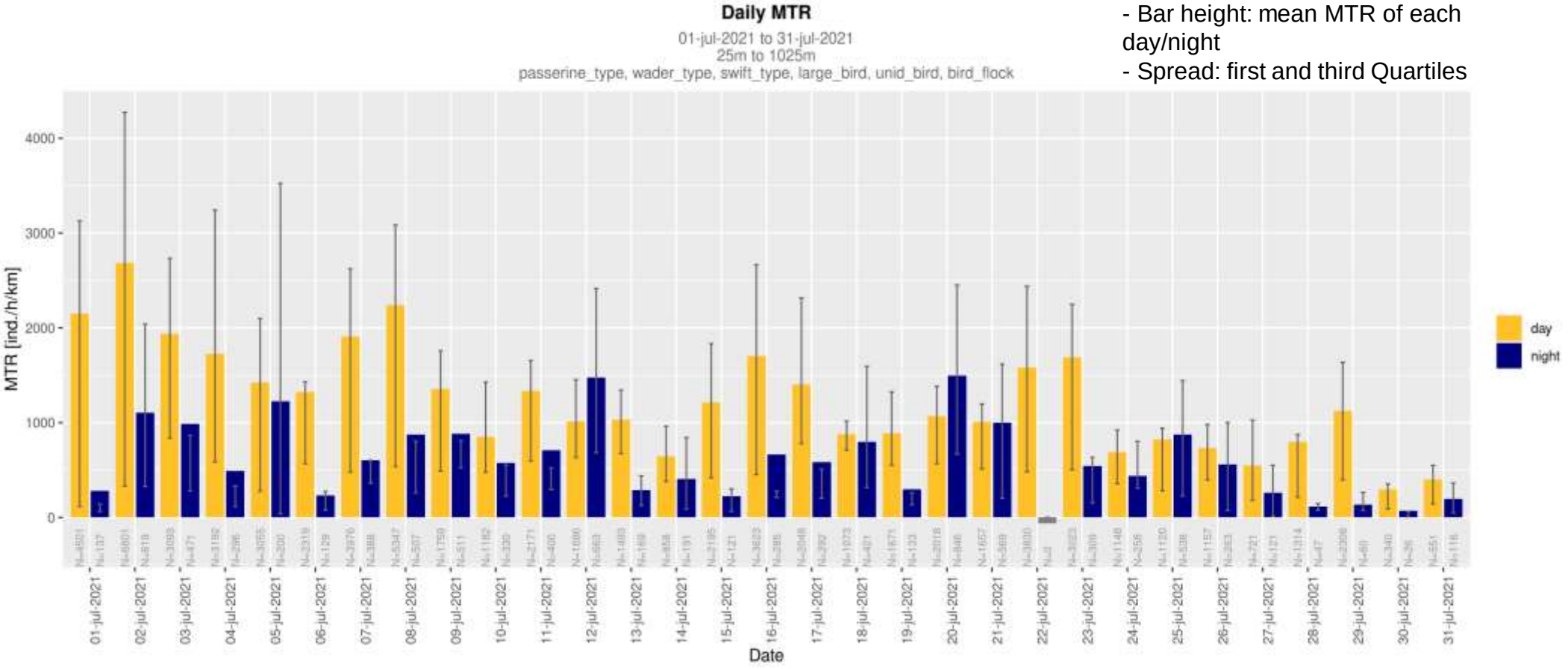

Daily MTR
01-mei-2021 to 31-mei-2021
25m to 1025m
insect
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
10000
7500
5000
2500
0
Date
01-mei-2021
02-mei-2021
03-mei-2021
04-mei-2021
05-mei-2021
06-mei-2021
07-mei-2021
08-mei-2021
09-mei-2021
10-mei-2021
11-mei-2021
12-mei-2021
13-mei-2021
14-mei-2021
15-mei-2021
16-mei-2021
17-mei-2021
18-mei-2021
19-mei-2021
20-mei-2021
21-mei-2021
22-mei-2021
23-mei-2021
24-mei-2021
25-mei-2021
26-mei-2021
27-mei-2021
28-mei-2021
29-mei-2021
30-mei-2021
31-mei-2021
day
night


Daily MTR
01-jun-2021 to 30-jun-2021
25m to 1025m
passerine_type, wader_type, swift_type, large_bird, unid_bird, bird_flock
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
3000
2000
1000
0
day
night
01-jun-2021
02-jun-2021
03-jun-2021
04-jun-2021
05-jun-2021
06-jun-2021
07-jun-2021
08-jun-2021
09-jun-2021
10-jun-2021
11-jun-2021
12-jun-2021
13-jun-2021
14-jun-2021
15-jun-2021
16-jun-2021
17-jun-2021
18-jun-2021
19-jun-2021
20-jun-2021
21-jun-2021
22-jun-2021
23-jun-2021
24-jun-2021
25-jun-2021
26-jun-2021
27-jun-2021
28-jun-2021
29-jun-2021
30-jun-2021
Date

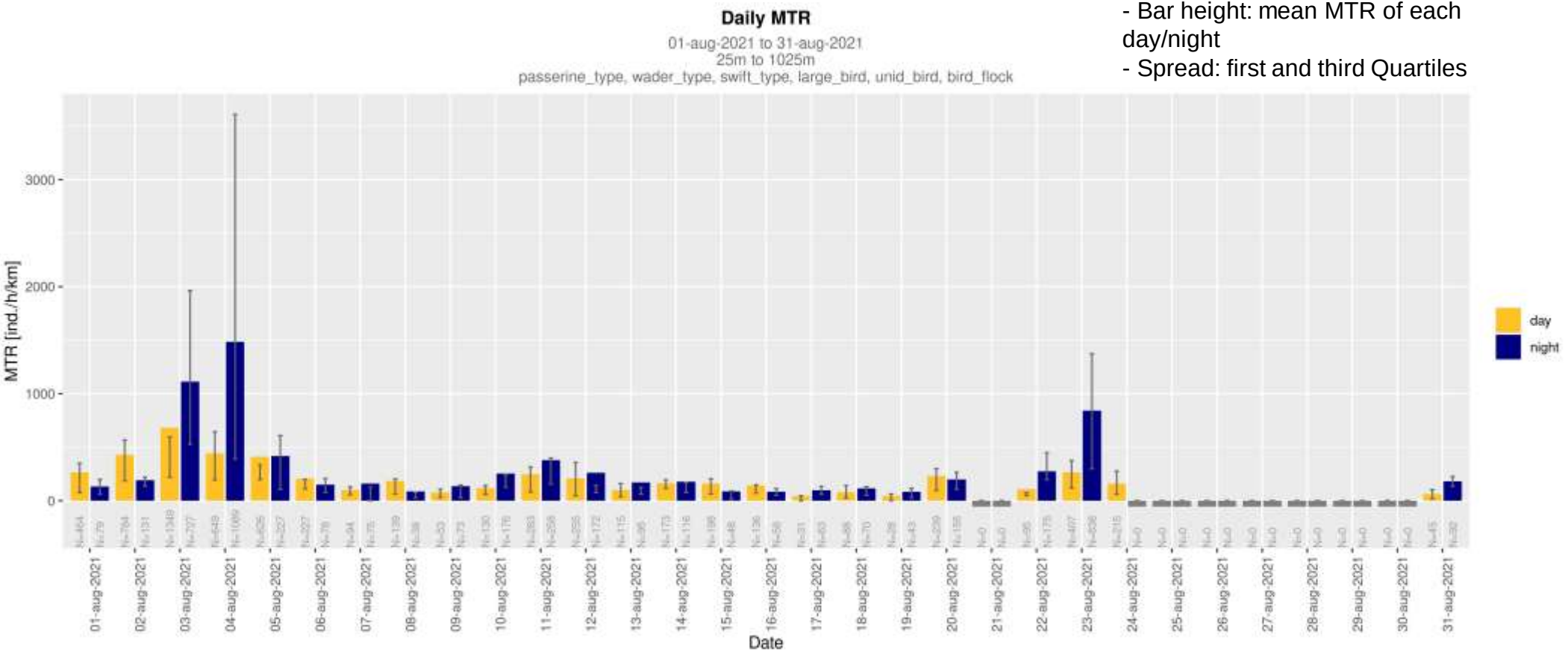

Daily MTR
01-jun-2021 to 30-jun-2021
25m to 1025m
insect
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
15000
10000
5000
0
day
night
01-jun-2021
02-jun-2021
03-jun-2021
04-jun-2021
05-jun-2021
06-jun-2021
07-jun-2021
08-jun-2021
09-jun-2021
10-jun-2021
11-jun-2021
12-jun-2021
13-jun-2021
14-jun-2021
15-jun-2021
16-jun-2021
17-jun-2021
18-jun-2021
19-jun-2021
20-jun-2021
21-jun-2021
22-jun-2021
23-jun-2021
24-jun-2021
25-jun-2021
26-jun-2021
27-jun-2021
28-jun-2021
29-jun-2021
30-jun-2021
Date



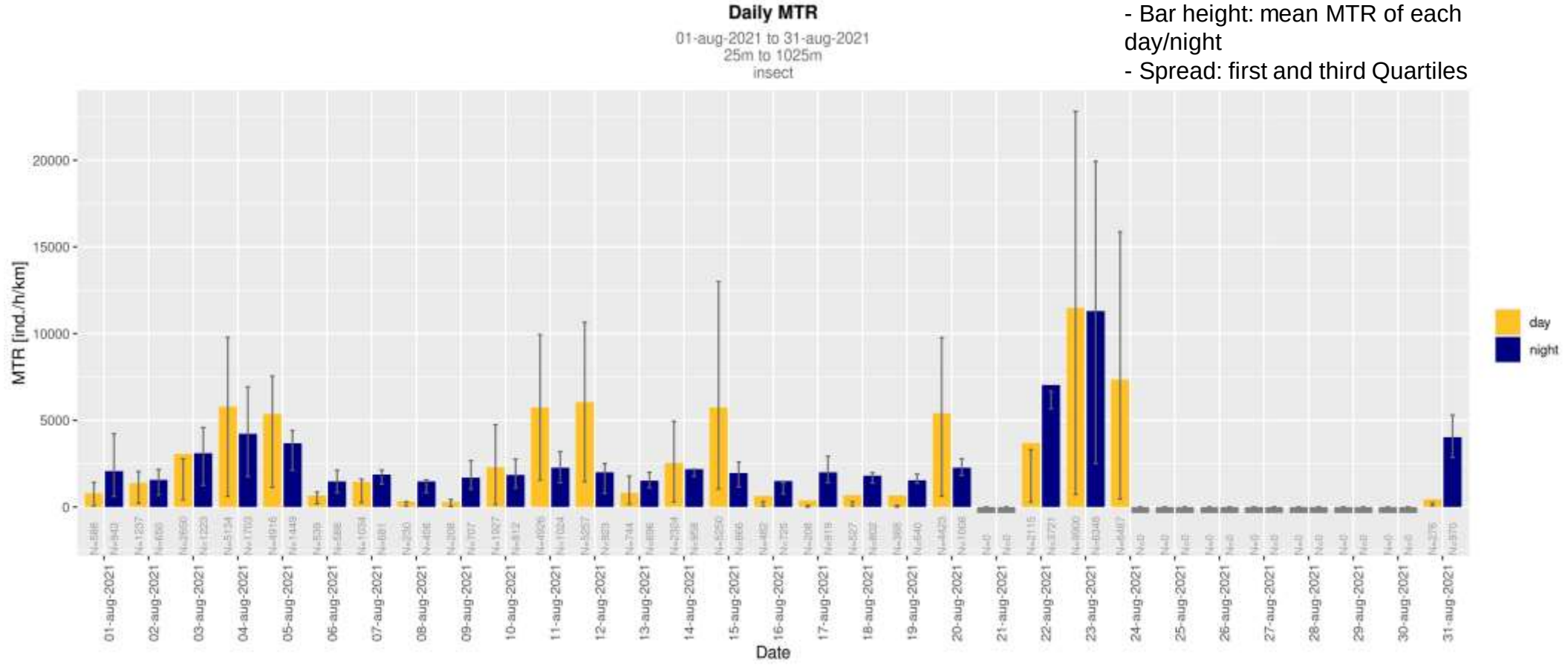
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles

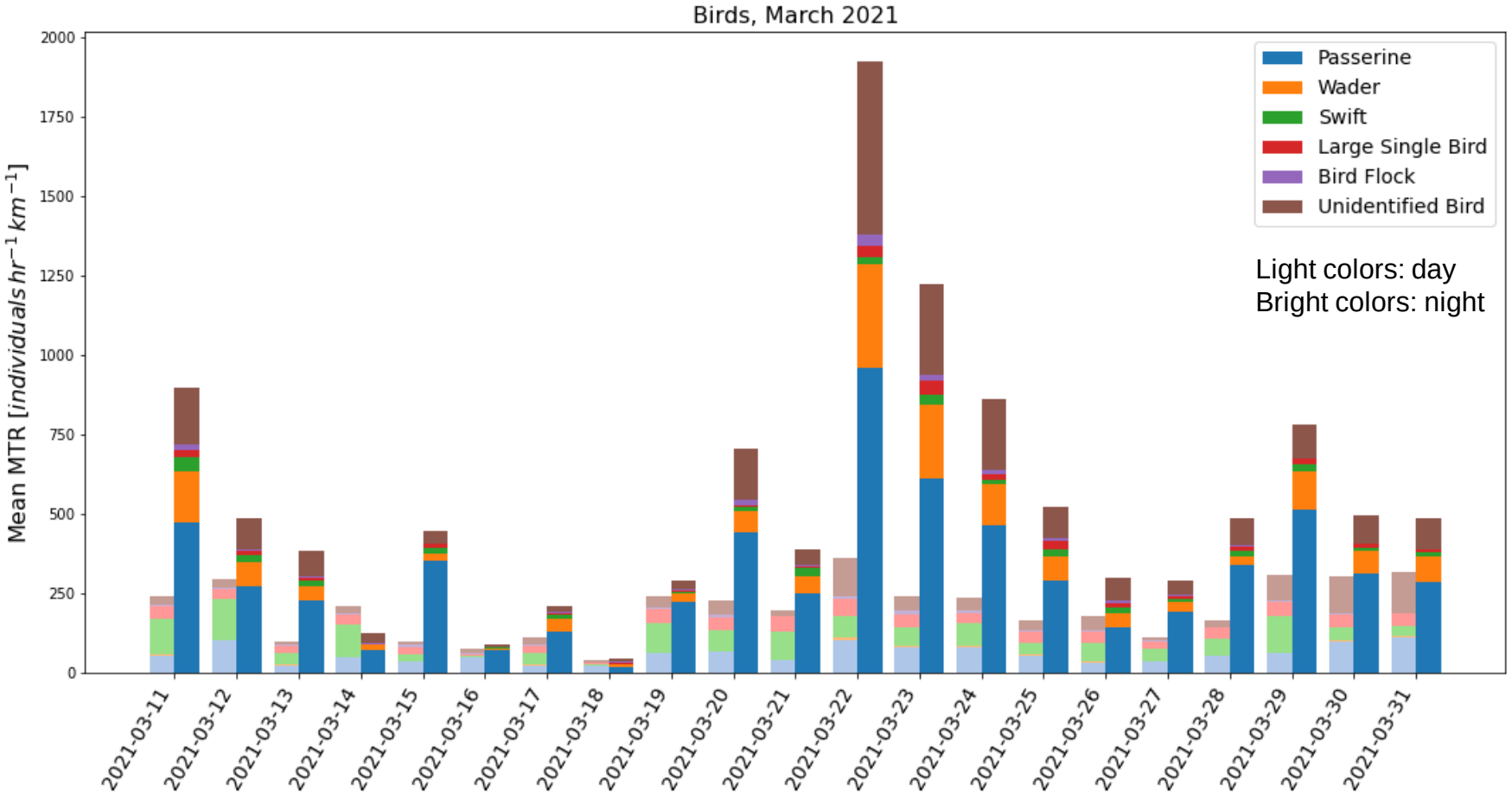


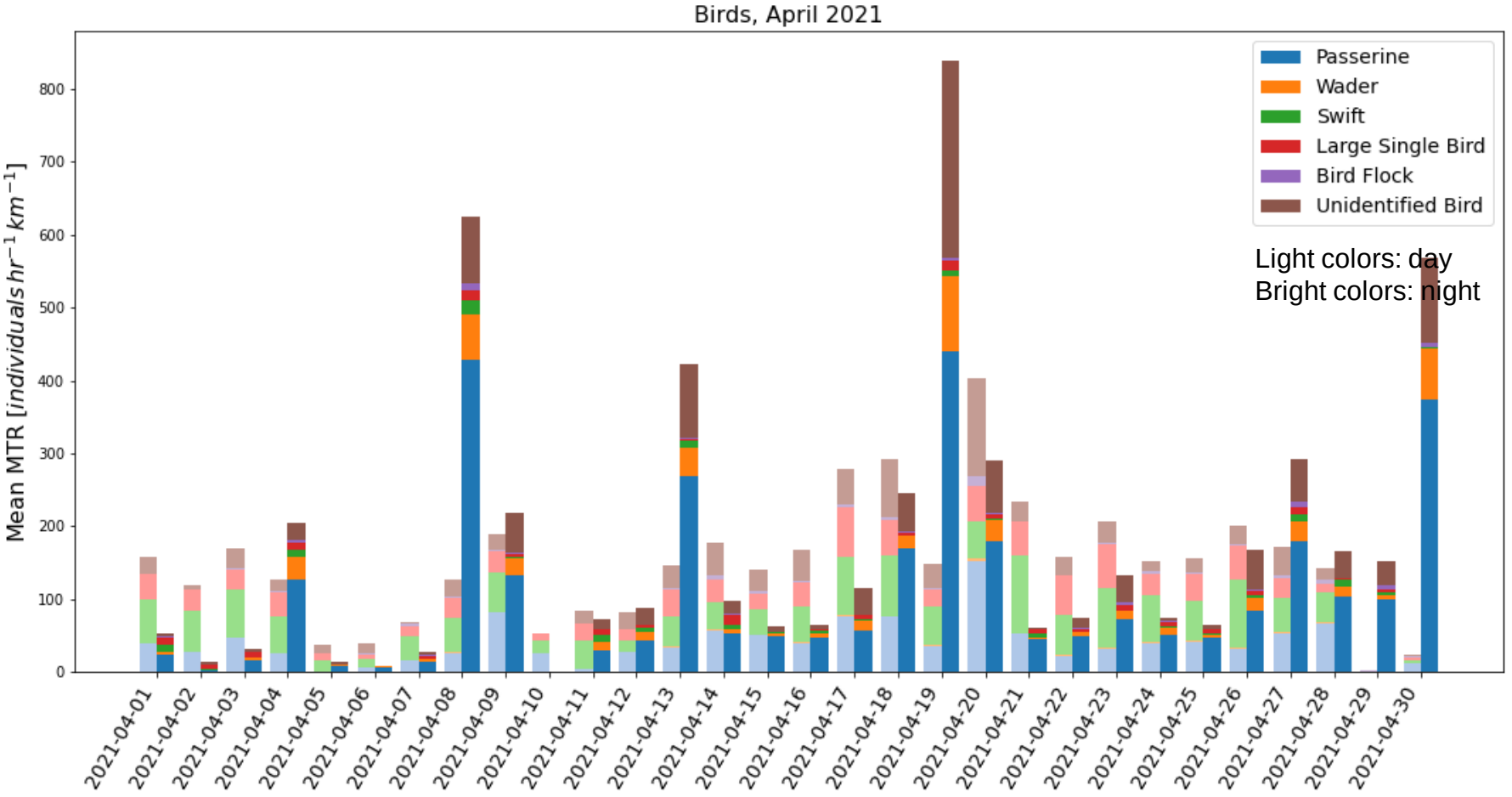
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles

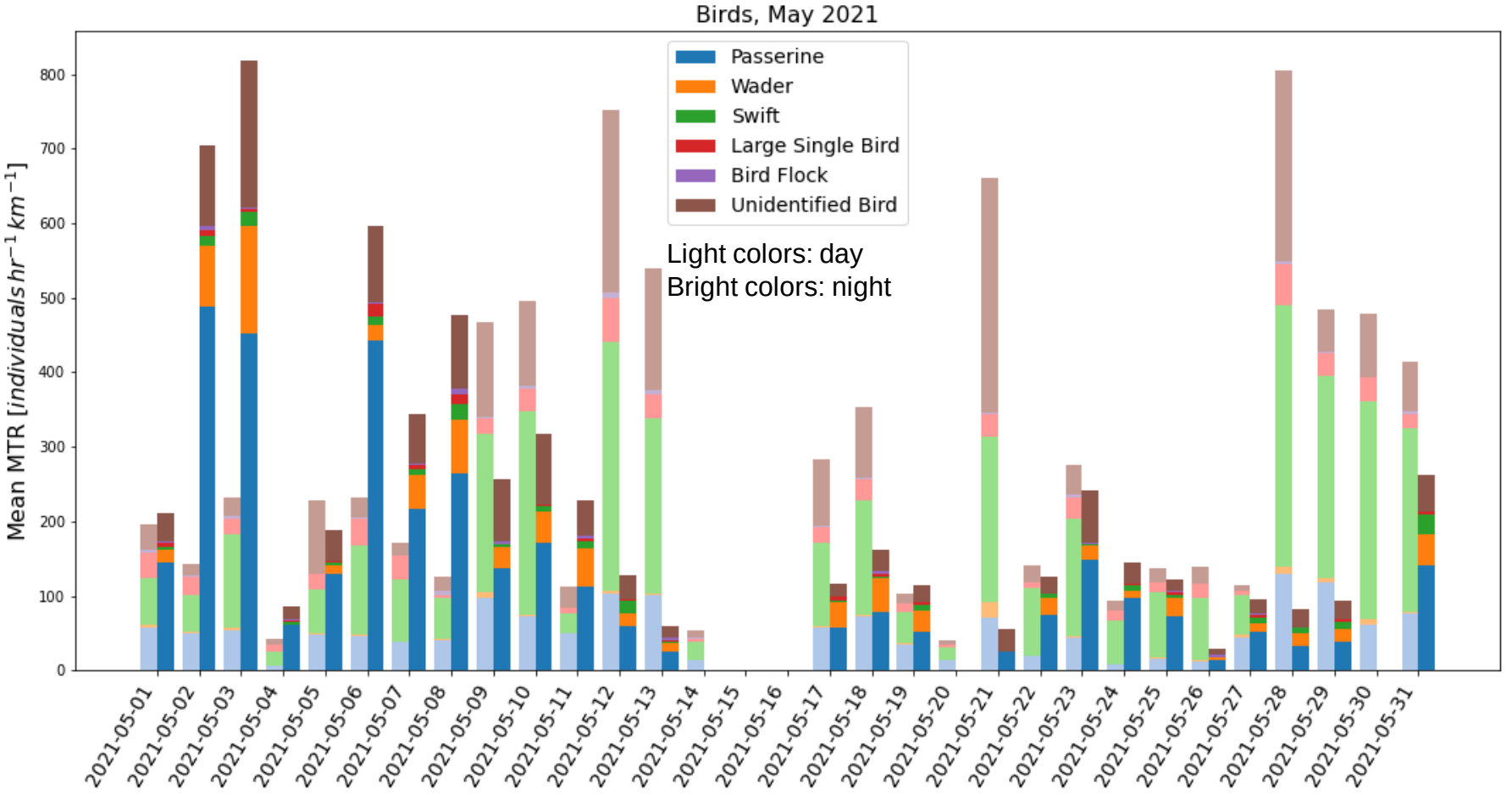


- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles


Daily MTR
01-aug-2021 to 31-aug-2021
25m to 1025m
insect
- Bar height: mean MTR of each day/night
- Spread: first and third Quartiles
MTR [ind./h/km]
20000
15000
10000
5000
0
day
night
01-aug-2021
02-aug-2021
03-aug-2021
04-aug-2021
05-aug-2021
06-aug-2021
07-aug-2021
08-aug-2021
09-aug-2021
10-aug-2021
11-aug-2021
12-aug-2021
13-aug-2021
14-aug-2021
15-aug-2021
16-aug-2021
17-aug-2021
18-aug-2021
19-aug-2021
20-aug-2021
21-aug-2021
22-aug-2021
23-aug-2021
24-aug-2021
25-aug-2021
26-aug-2021
27-aug-2021
28-aug-2021
29-aug-2021
30-aug-2021
31-aug-2021
Date


Birds, March 2021
Mean MTR [individuals hr^{-1} km^{-1}]
2000
1750
1500
1250
1000
750
500
250
0
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
2021-03-11
2021-03-12
2021-03-13
2021-03-14
2021-03-15
2021-03-16
2021-03-17
2021-03-18
2021-03-19
2021-03-20
2021-03-21
2021-03-22
2021-03-23
2021-03-24
2021-03-25
2021-03-26
2021-03-27
2021-03-28
2021-03-29
2021-03-30
2021-03-31


Birds, April 2021
Mean MTR [individuals hr^{-1} km^{-1}]
0
100
200
300
400
500
600
700
800
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
2021-04-01
2021-04-02
2021-04-03
2021-04-04
2021-04-05
2021-04-06
2021-04-07
2021-04-08
2021-04-09
2021-04-10
2021-04-11
2021-04-12
2021-04-13
2021-04-14
2021-04-15
2021-04-16
2021-04-17
2021-04-18
2021-04-19
2021-04-20
2021-04-21
2021-04-22
2021-04-23
2021-04-24
2021-04-25
2021-04-26
2021-04-27
2021-04-28
2021-04-29
2021-04-30


Birds, May 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
Mean MTR [individuals hr⁻¹ km⁻¹]
0
100
200
300
400
500
600
700
800
2021-05-01
2021-05-02
2021-05-03
2021-05-04
2021-05-05
2021-05-06
2021-05-07
2021-05-08
2021-05-09
2021-05-10
2021-05-11
2021-05-12
2021-05-13
2021-05-14
2021-05-15
2021-05-16
2021-05-17
2021-05-18
2021-05-19
2021-05-20
2021-05-21
2021-05-22
2021-05-23
2021-05-24
2021-05-25
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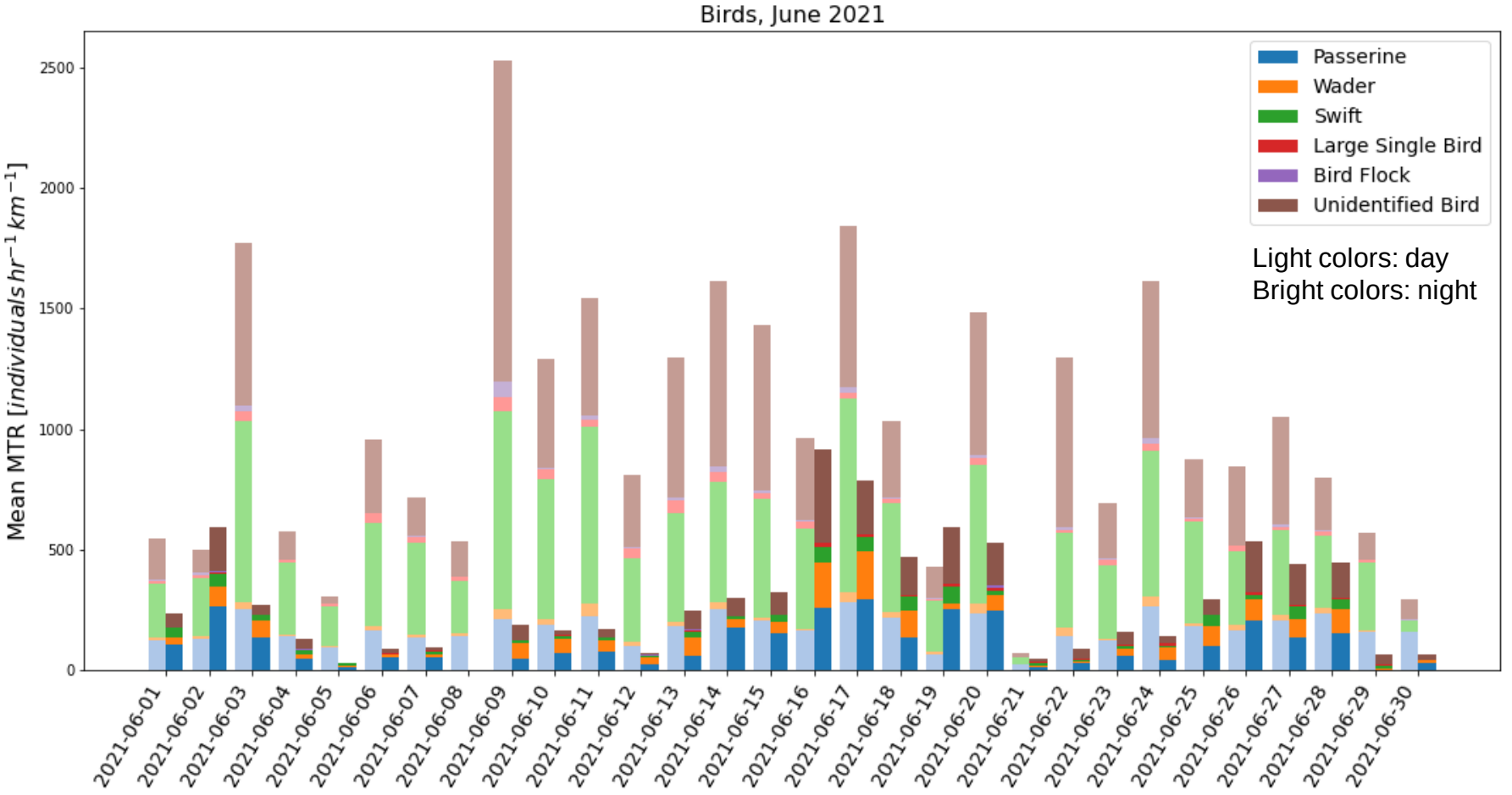
2021-05-28
2021-05-29
2021-05-30
2021-05-31


Birds, June 2021
Mean MTR [individuals hr^{-1} km^{-1}]
0
500
1000
1500
2000
2500
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
2021-06-01
2021-06-02
2021-06-03
2021-06-04
2021-06-05
2021-06-06
2021-06-07
2021-06-08
2021-06-09
2021-06-10
2021-06-11
2021-06-12
2021-06-13
2021-06-14
2021-06-15
2021-06-16
2021-06-17
2021-06-18
2021-06-19
2021-06-20
2021-06-21
2021-06-22
2021-06-23
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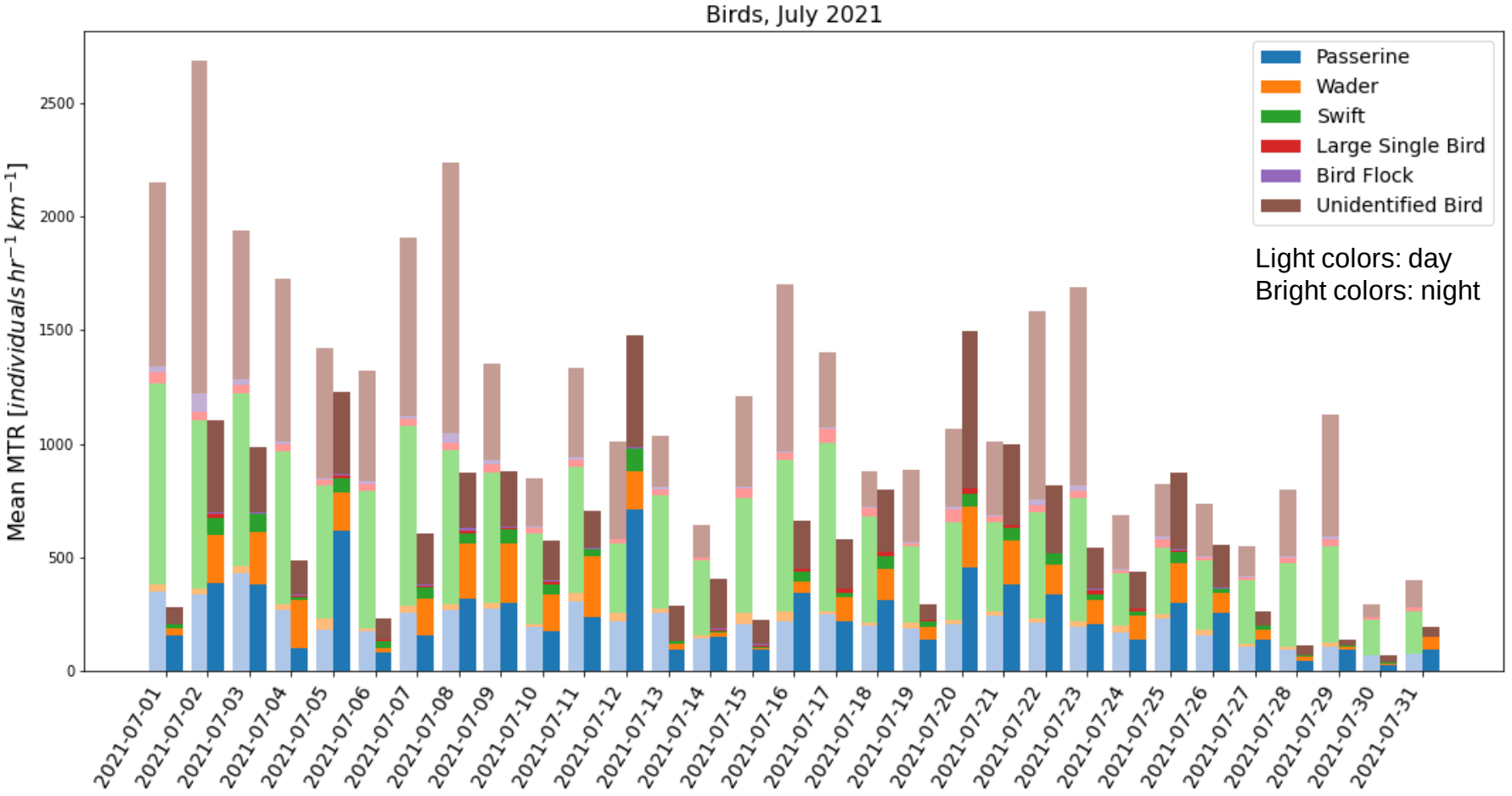
2021-06-27
2021-06-28
2021-06-29
2021-06-30


Birds, July 2021
Mean MTR [individuals hr⁻¹ km⁻¹]
0
500
1000
1500
2000
2500
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
2021-07-01
2021-07-02
2021-07-03
2021-07-04
2021-07-05
2021-07-06
2021-07-07
2021-07-08
2021-07-09
2021-07-10
2021-07-11
2021-07-12
2021-07-13
2021-07-14
2021-07-15
2021-07-16
2021-07-17
2021-07-18
2021-07-19
2021-07-20
2021-07-21
2021-07-22
2021-07-23
2021-07-24
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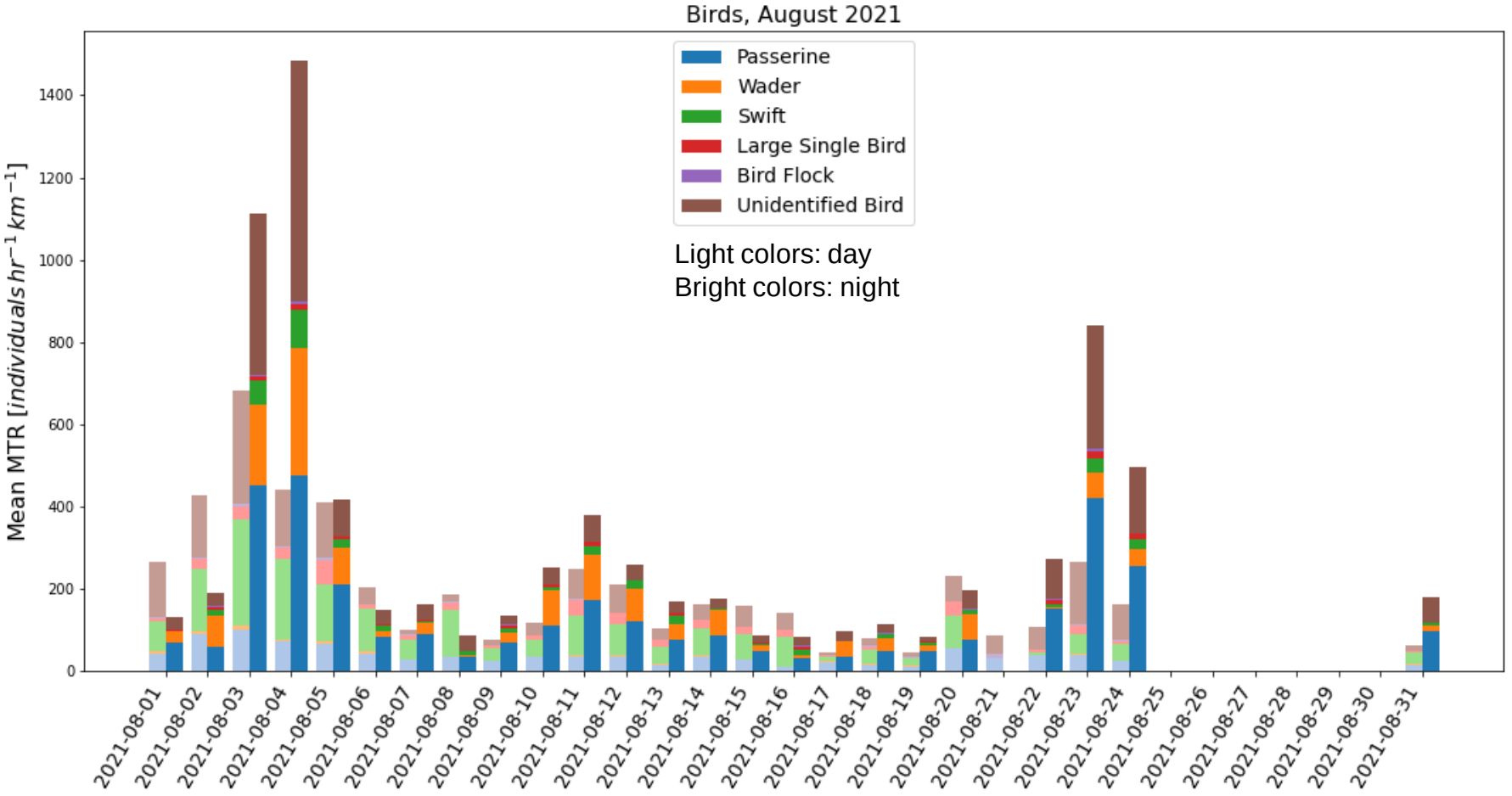
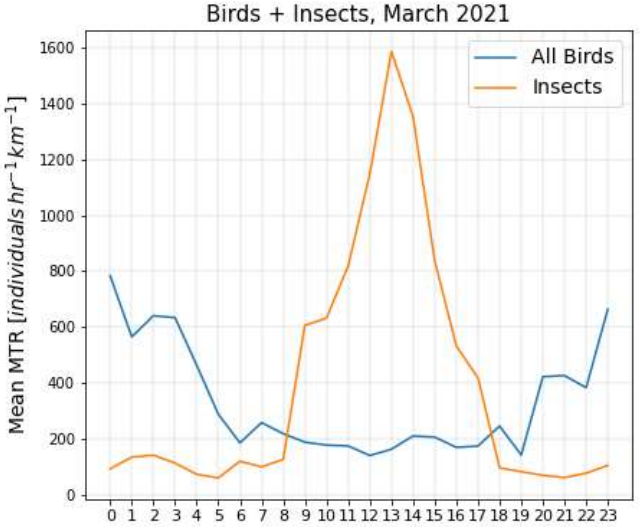
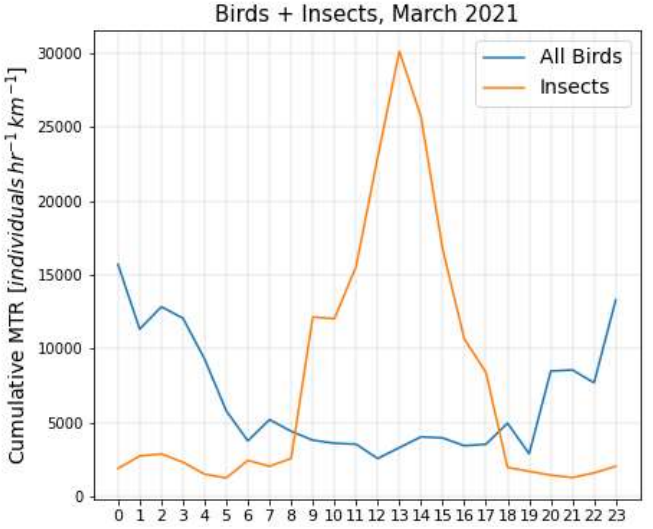
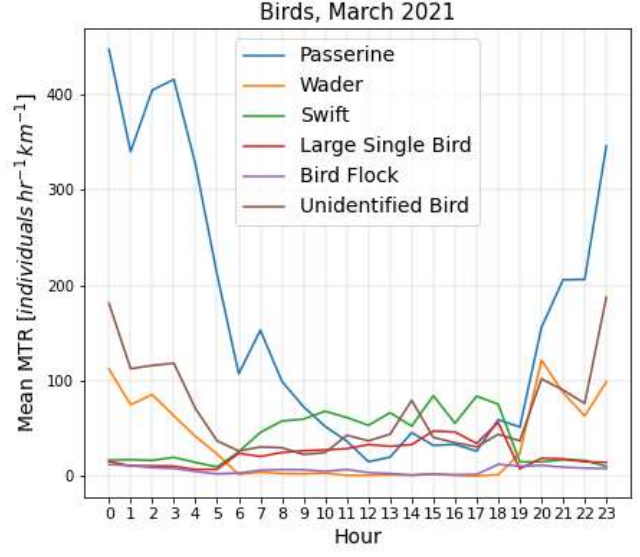
2021-07-29
2021-07-30
2021-07-31

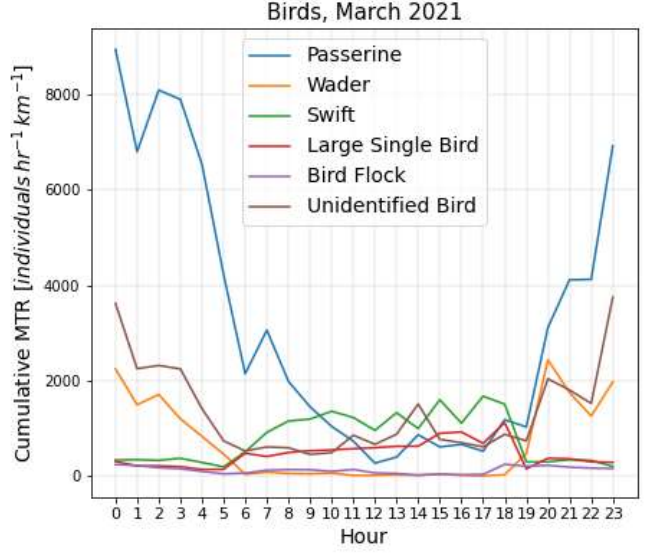

Birds, August 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Light colors: day
Bright colors: night
Mean MTR [individuals hr⁻¹ km⁻¹]
0
200
400
600
800
1000
1200
1400
2021-08-01
2021-08-02
2021-08-03
2021-08-04
2021-08-05
2021-08-06
2021-08-07
2021-08-08
2021-08-09
2021-08-10
2021-08-11
2021-08-12
2021-08-13
2021-08-14
2021-08-15
2021-08-16
2021-08-17
2021-08-18
2021-08-19
2021-08-20
2021-08-21
2021-08-22
2021-08-23
2021-08-24
2021-08-25
2021-08-26
2021-08-27
2021-08-28
2021-08-29
2021-08-30
2021-08-31

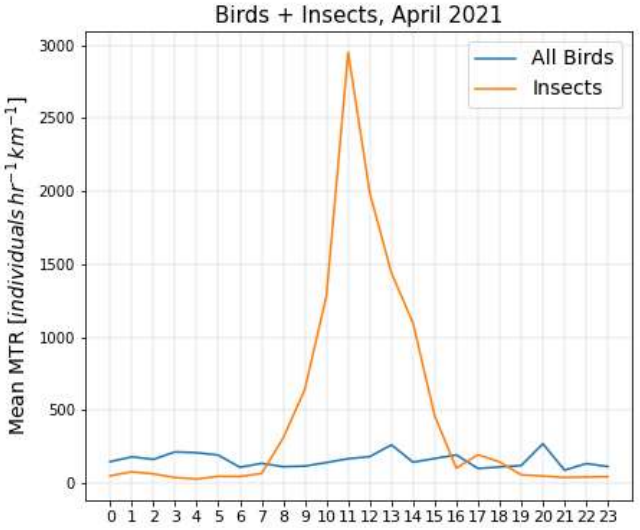
- The average MTR for each month, and the cumulative MTR throughout the entire month, versus (local) hour is calculated for birds and insects
- Plots are created of MTR versus (local) hour for birds and insects together, and for different types of birds

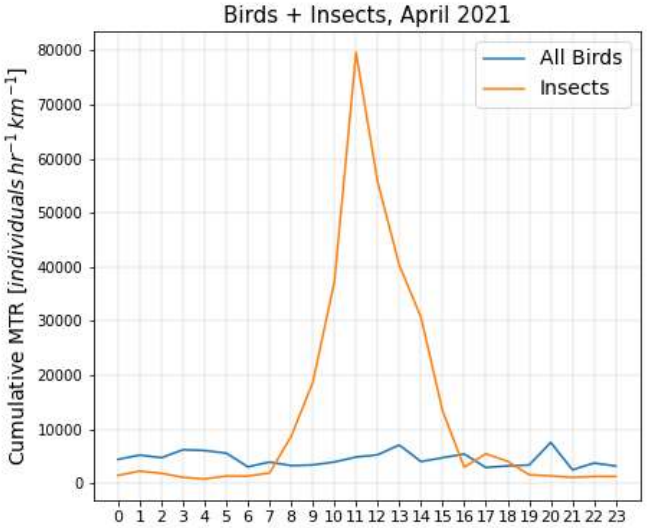

Birds + Insects, March 2021
Mean MTR [individuals hr^{-1} km^{-1}]
All Birds
Insects

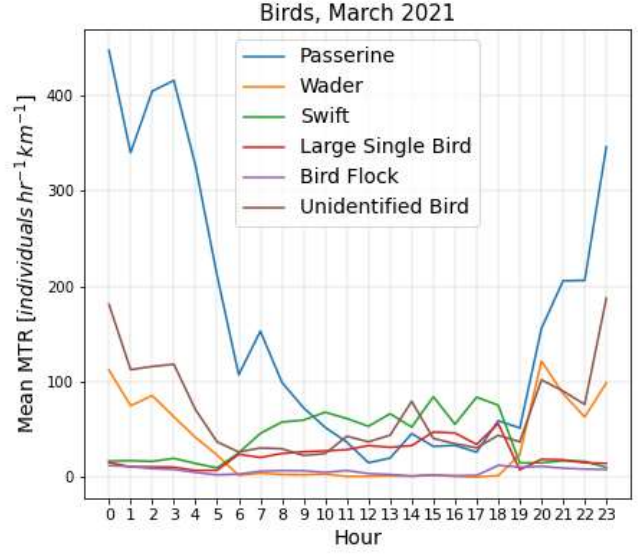

Birds + Insects, March 2021
Cumulative MTR [individuals hr^{-1} km^{-1}]
All Birds
Insects

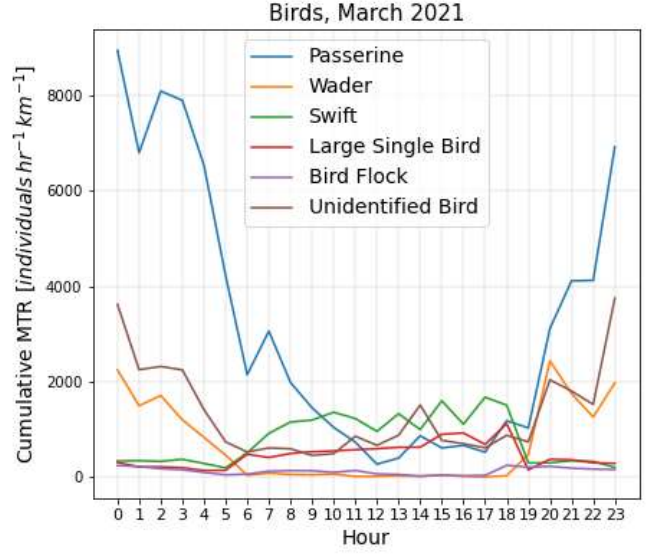

Birds, March 2021
Mean MTR [individuals hr^{-1} km^{-1}]
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Hour

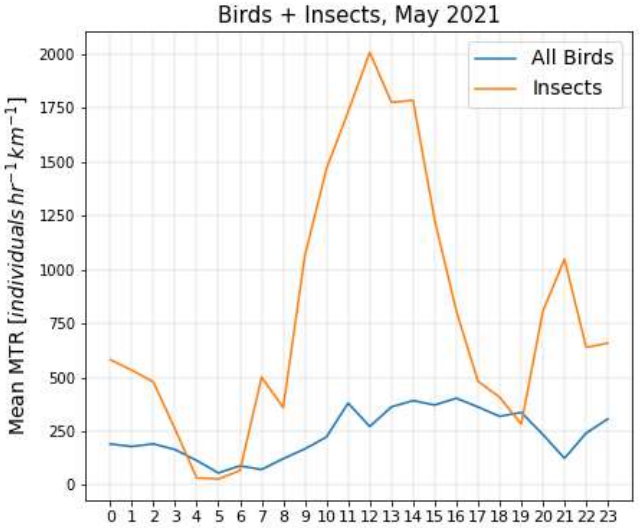

Birds, March 2021
Cumulative MTR [individuals hr^{-1} km^{-1}]
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Hour

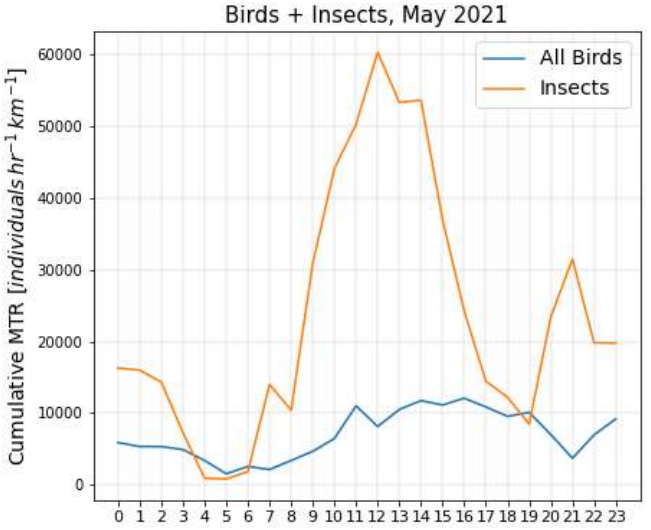

Birds + Insects, April 2021
All Birds
Insects
Mean MTR [individuals hr^{-1} km^{-1}]
3000
2500
2000
1500
1000
500
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

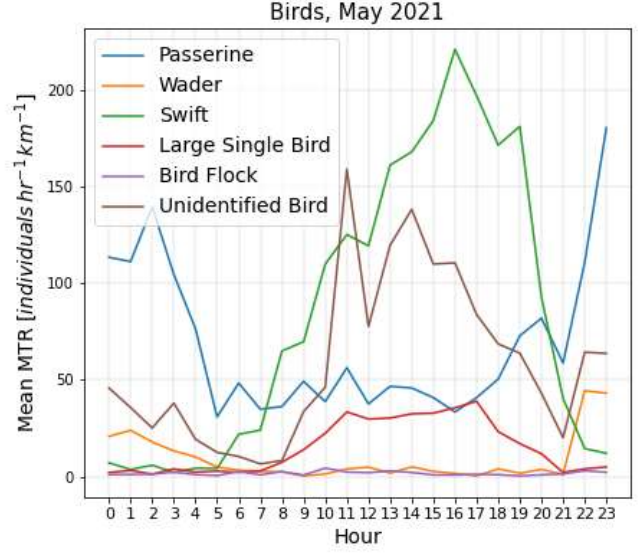

Birds + Insects, April 2021
All Birds
Insects
Cumulative MTR [individuals hr^{-1} km^{-1}]
80000
70000
60000
50000
40000
30000
20000
10000
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

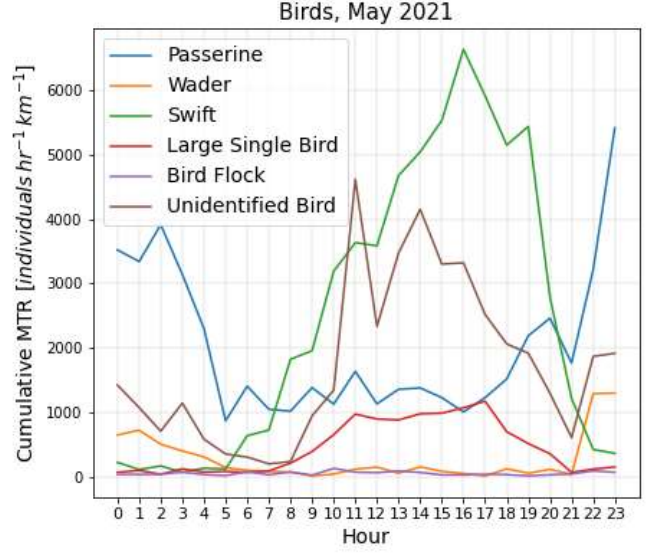

Birds, March 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Mean MTR [individuals hr^{-1} km^{-1}]
400
300
200
100
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

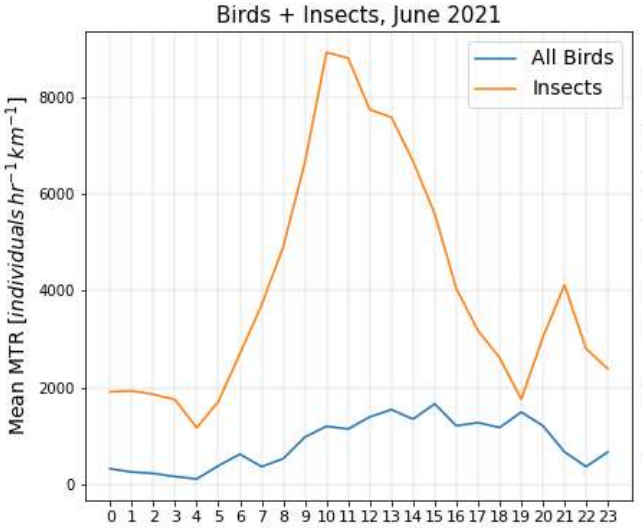

Birds, March 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Cumulative MTR [individuals hr^{-1} km^{-1}]
8000
6000
4000
2000
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

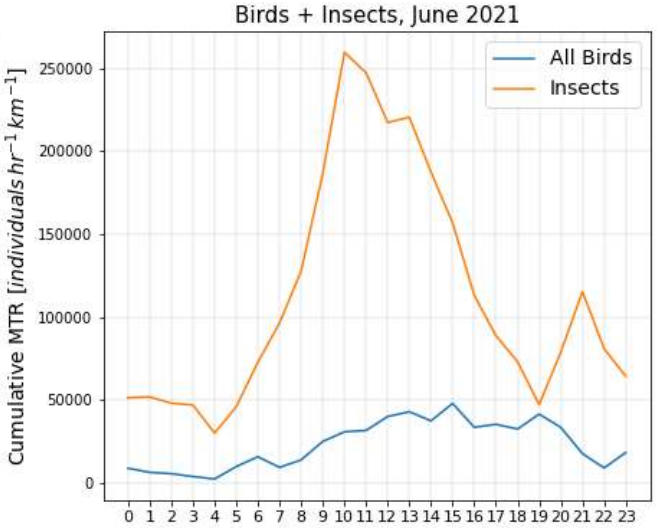

Birds + Insects, May 2021
All Birds
Insects
Mean MTR [individuals hr^{-1} km^{-1}]
0 250 500 750 1000 1250 1500 1750 2000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

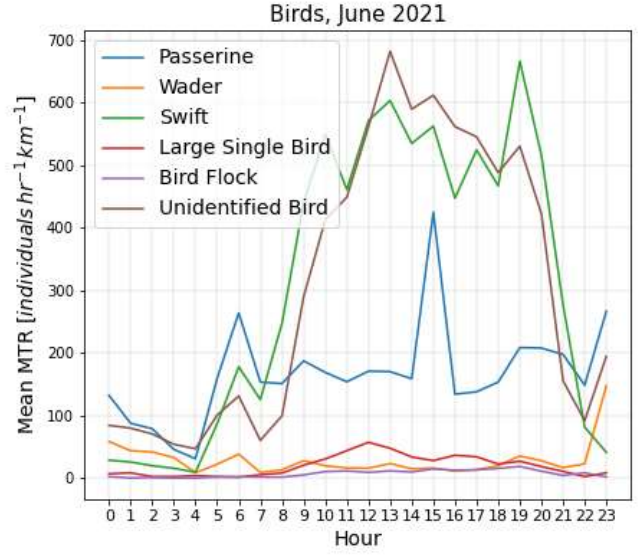

Birds + Insects, May 2021
All Birds
Insects
Cumulative MTR [individuals hr^{-1} km^{-1}]
0 10000 20000 30000 40000 50000 60000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

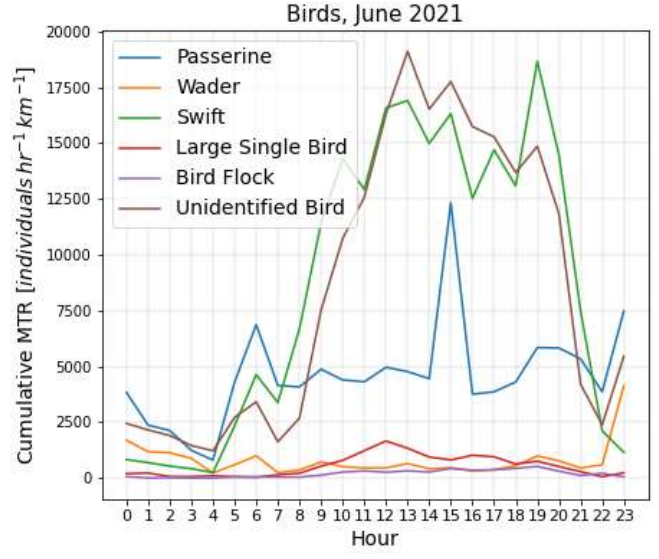

Birds, May 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Mean MTR [individuals hr^{-1} km^{-1}]
0 50 100 150 200
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

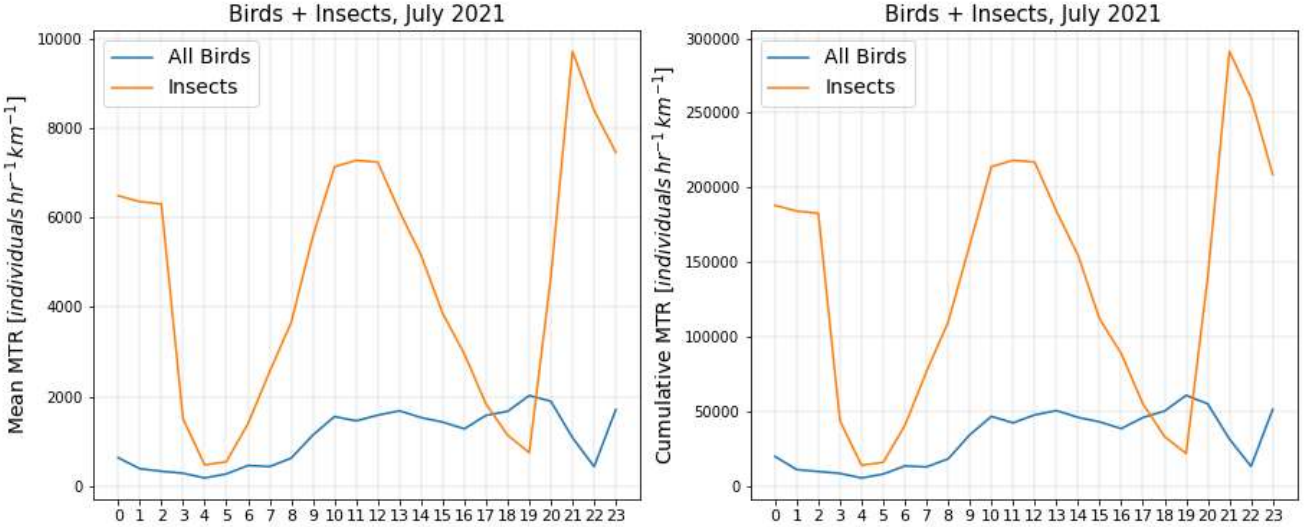

Birds, May 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Cumulative MTR [individuals hr^{-1} km^{-1}]
0 1000 2000 3000 4000 5000 6000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

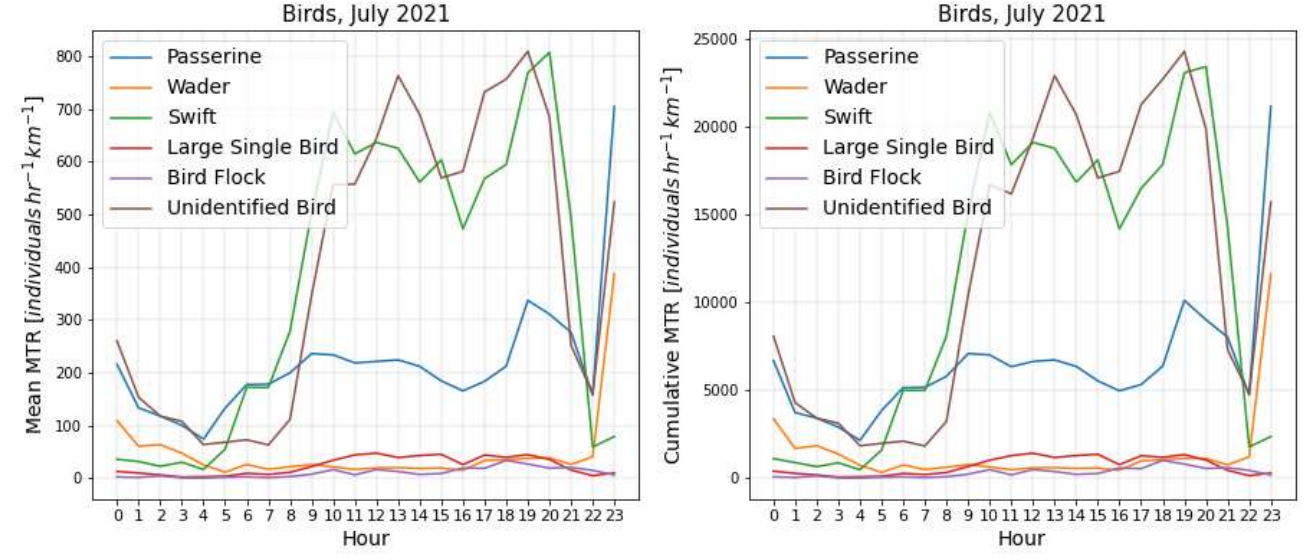

Birds + Insects, June 2021
All Birds
Insects
Mean MTR [individuals hr^{-1} km^{-1}]
0
2000
4000
6000
8000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

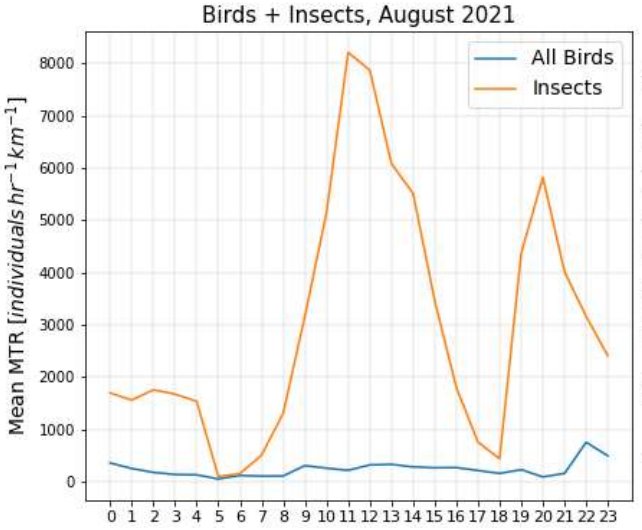

Birds + Insects, June 2021
All Birds
Insects
Cumulative MTR [individuals hr^{-1} km^{-1}]
0
50000
100000
150000
200000
250000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

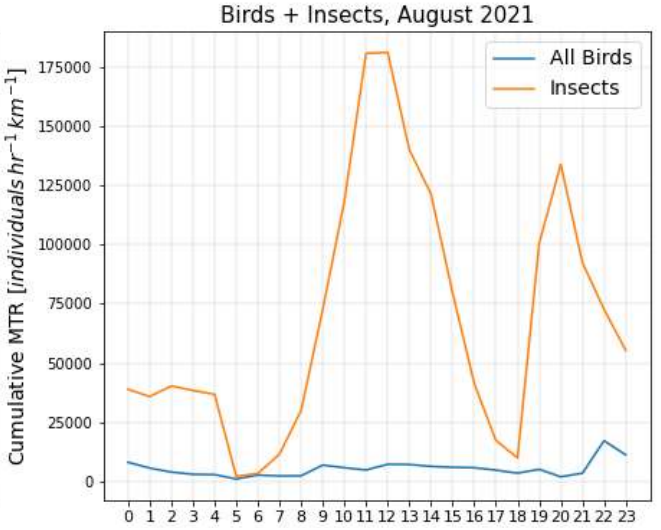

Birds, June 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Mean MTR [individuals hr^{-1} km^{-1}]
0
100
200
300
400
500
600
700
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

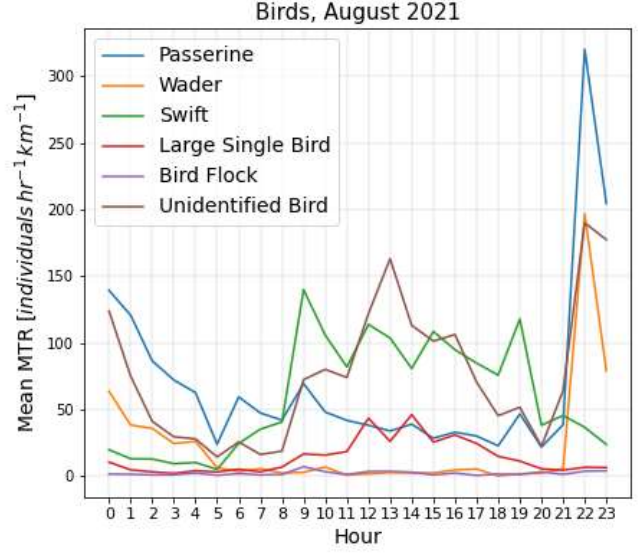

Birds, June 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Cumulative MTR [individuals hr^{-1} km^{-1}]
0
2500
5000
7500
10000
12500
15000
17500
20000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

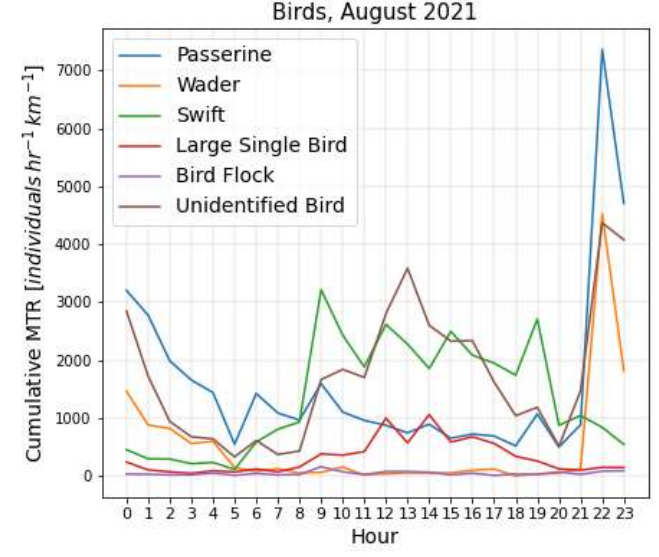

Birds + Insects, July 2021
All Birds
Insects
Mean MTR [individuals hr^{-1} km^{-1}]
Cumulative MTR [individuals hr^{-1} km^{-1}]


Birds, July 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Mean MTR [individuals hr^{-1} km^{-1}]
Cumulative MTR [individuals hr^{-1} km^{-1}]
Hour

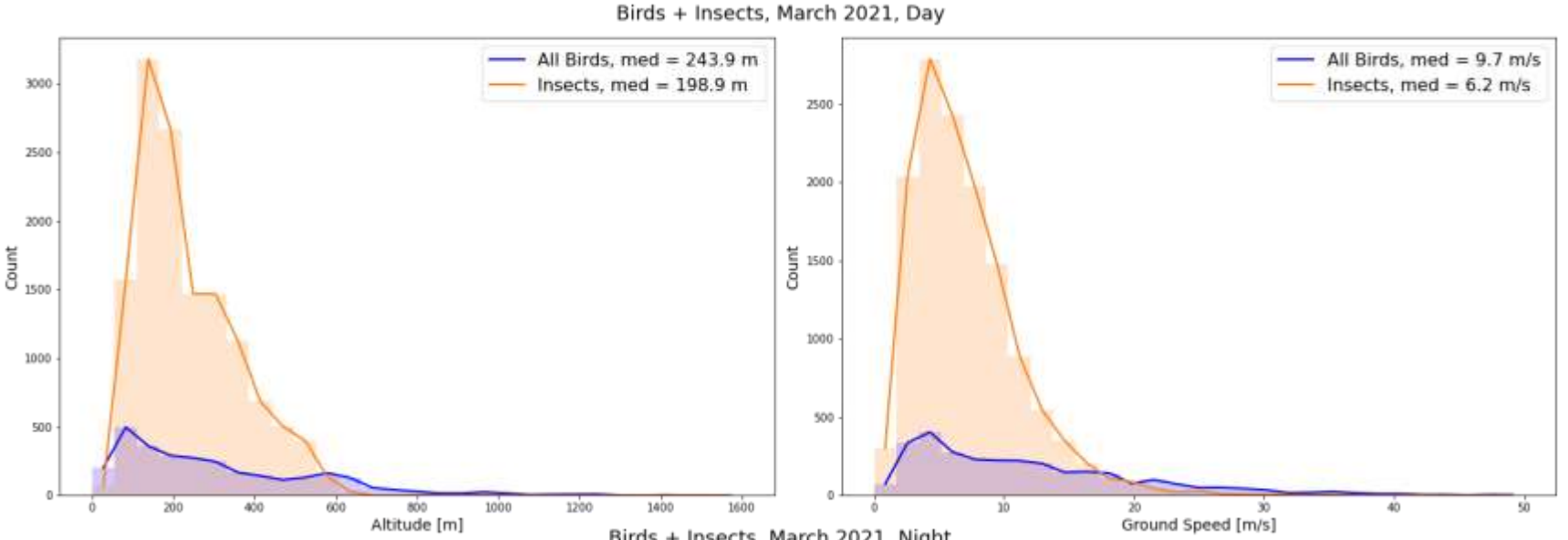

Birds + Insects, August 2021
All Birds
Insects
Mean MTR [individuals hr^{-1} km^{-1}]
0 1000 2000 3000 4000 5000 6000 7000 8000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

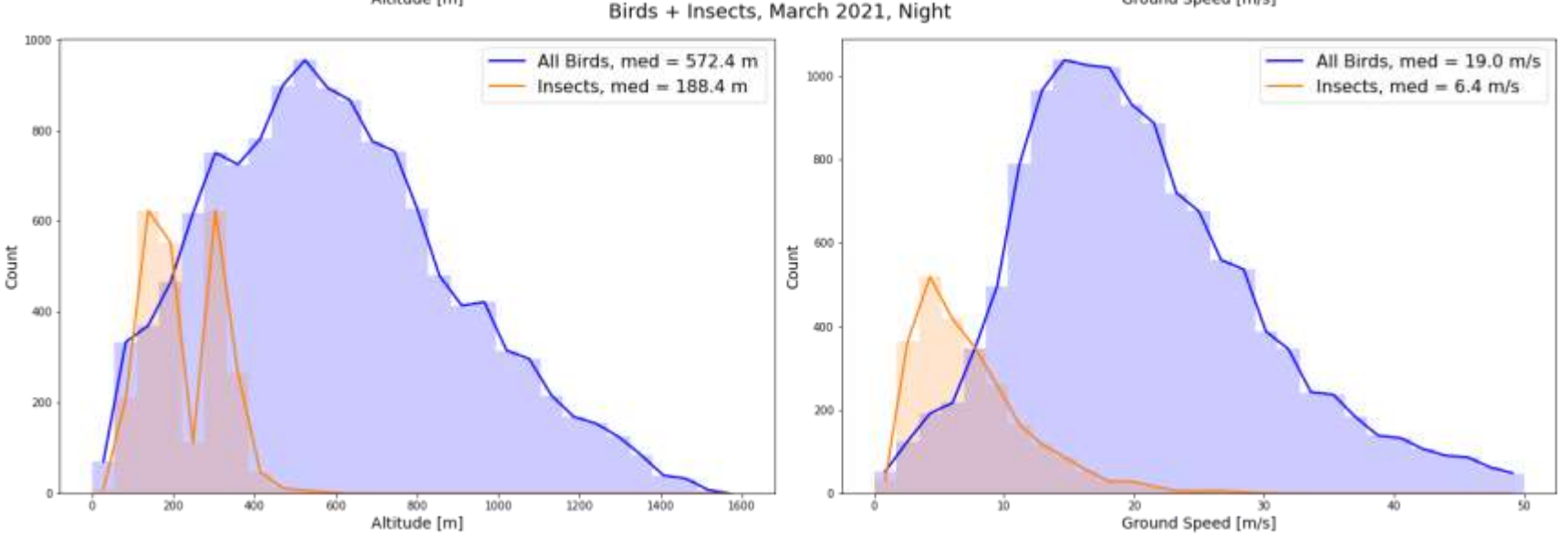

Birds + Insects, August 2021
All Birds
Insects
Cumulative MTR [individuals hr^{-1} km^{-1}]
0 25000 50000 75000 100000 125000 150000 175000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

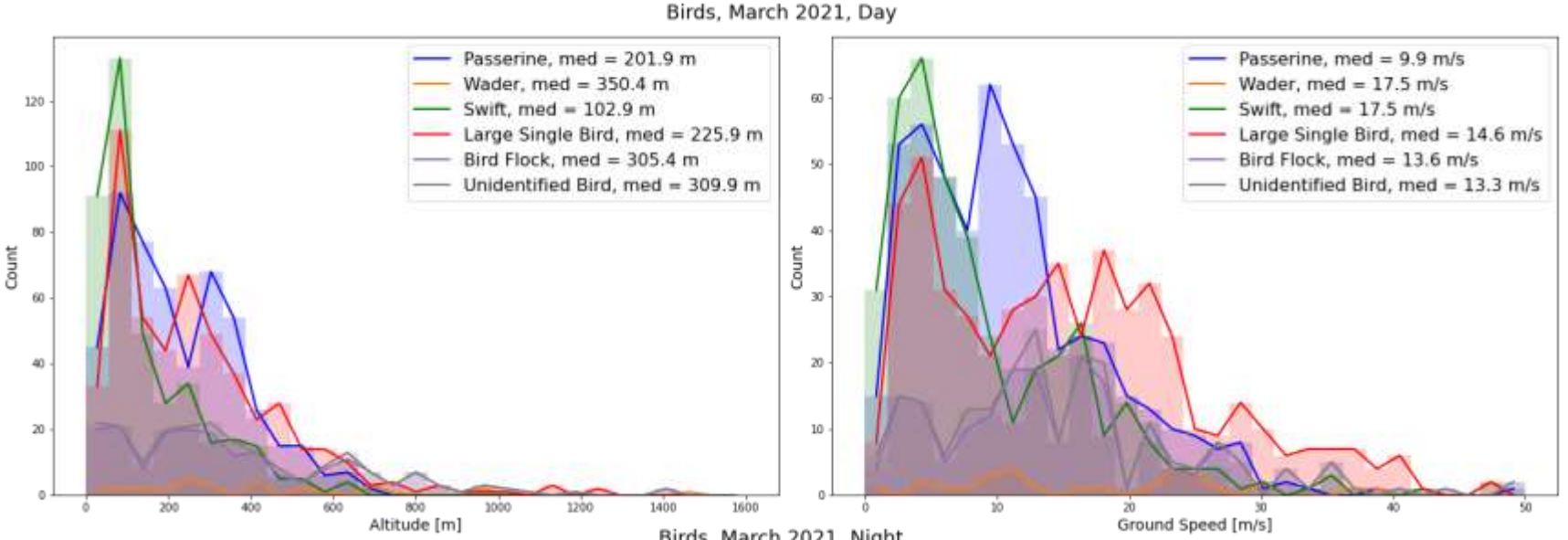

Birds, August 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Mean MTR [individuals hr^{-1} km^{-1}]
0 50 100 150 200 250 300
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

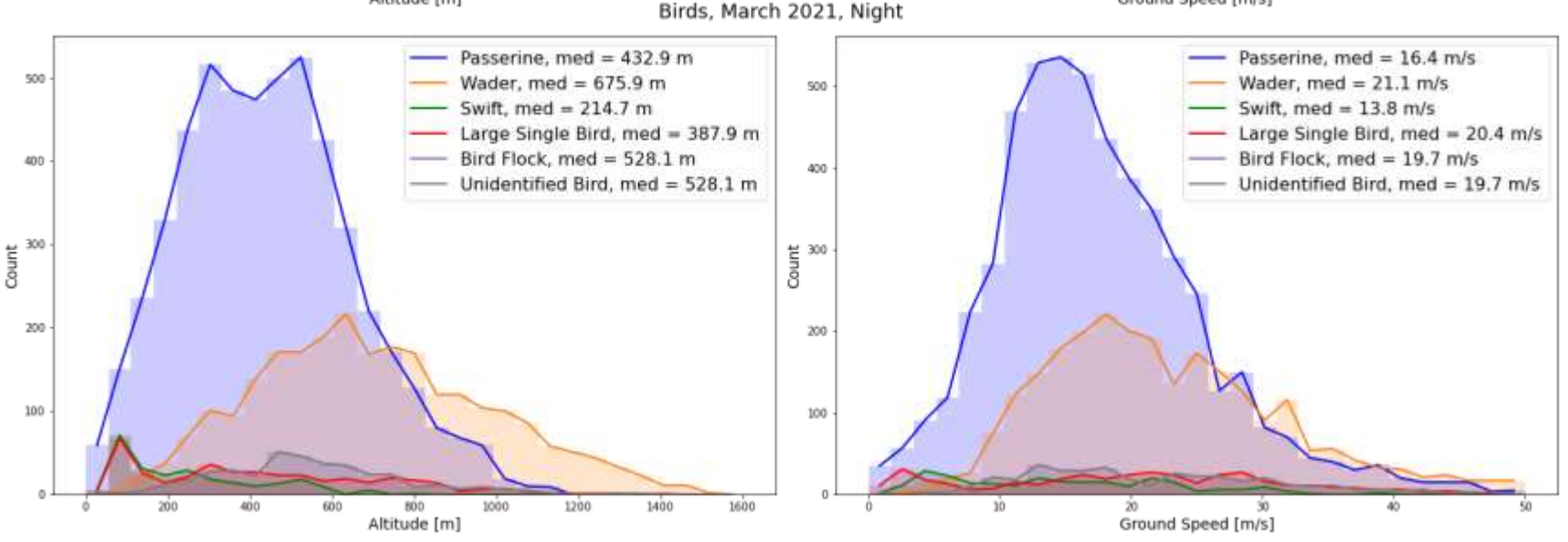

Birds, August 2021
Passerine
Wader
Swift
Large Single Bird
Bird Flock
Unidentified Bird
Cumulative MTR [individuals hr^{-1} km^{-1}]
0 1000 2000 3000 4000 5000 6000 7000
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Hour

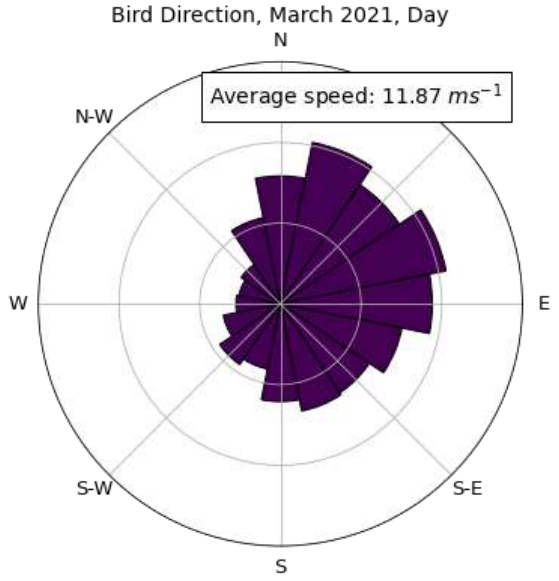
- For the following analysis, data is extracted from pgAdmin using and the query “query_pgAdmin_20210907.sql”
- Further analysis is performed in Python
- The distributions of altitude, speed, and direction, for each month, and for birds and insects separately, are calculated given the following conditions:
  - “blind time”/”time duration bin” < 0.80
  - Probability of detection >= 0.3
  - Short pulse only
  - 0m/s <Speed < 50m/s

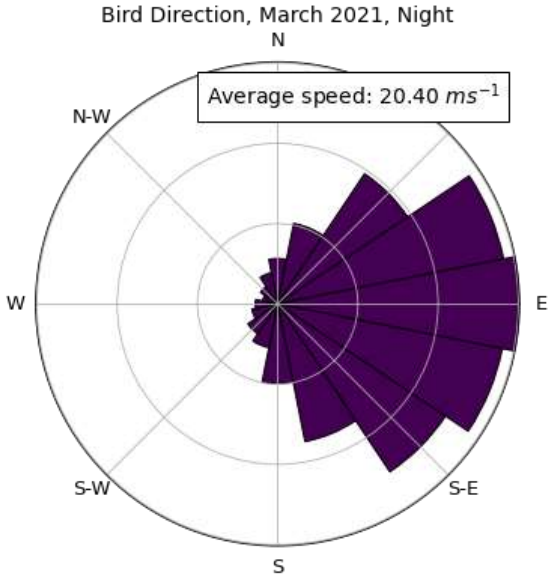

Birds + Insects, March 2021, Day
All Birds, med = 243.9 m
Insects, med = 198.9 m
Count
Altitude [m]
All Birds, med = 9.7 m/s
Insects, med = 6.2 m/s
Count
Ground Speed [m/s]

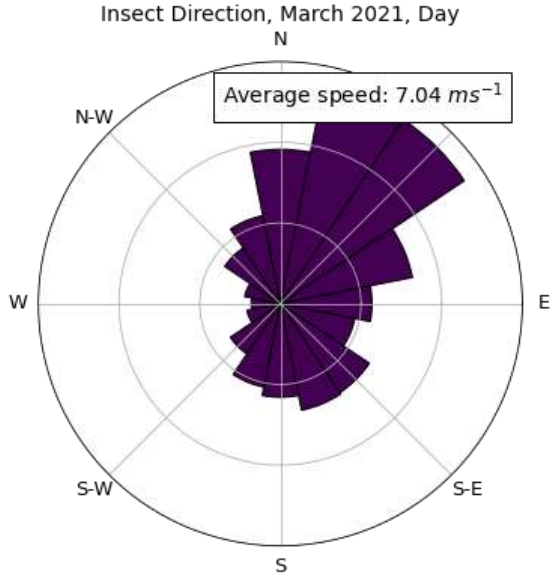

Birds + Insects, March 2021, Night
All Birds, med = 572.4 m
Insects, med = 188.4 m
Count
Altitude [m]
All Birds, med = 19.0 m/s
Insects, med = 6.4 m/s
Count
Ground Speed [m/s]

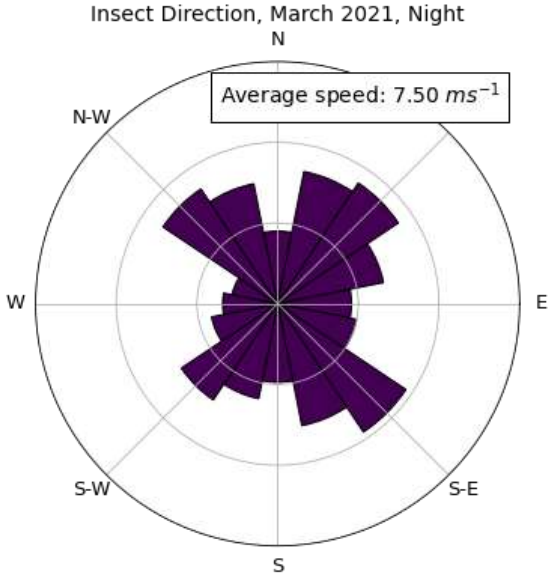

Birds, March 2021, Day
Passerine, med = 201.9 m
Wader, med = 350.4 m
Swift, med = 102.9 m
Large Single Bird, med = 225.9 m
Bird Flock, med = 305.4 m
Unidentified Bird, med = 309.9 m
Count
Altitude [m]
Passerine, med = 9.9 m/s
Wader, med = 17.5 m/s
Swift, med = 17.5 m/s
Large Single Bird, med = 14.6 m/s
Bird Flock, med = 13.6 m/s
Unidentified Bird, med = 13.3 m/s
Count
Ground Speed [m/s]

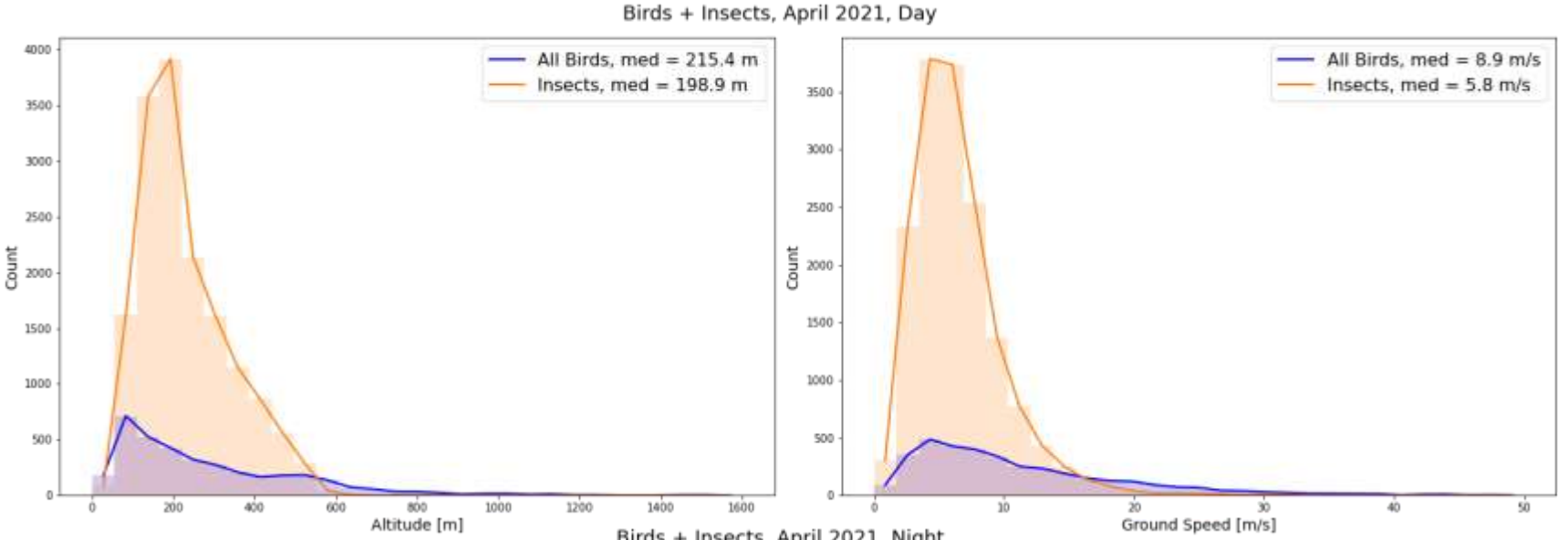

Birds, March 2021, Night
Passerine, med = 432.9 m
Wader, med = 675.9 m
Swift, med = 214.7 m
Large Single Bird, med = 387.9 m
Bird Flock, med = 528.1 m
Unidentified Bird, med = 528.1 m
Count
Altitude [m]
Passerine, med = 16.4 m/s
Wader, med = 21.1 m/s
Swift, med = 13.8 m/s
Large Single Bird, med = 20.4 m/s
Bird Flock, med = 19.7 m/s
Unidentified Bird, med = 19.7 m/s
Count
Ground Speed [m/s]

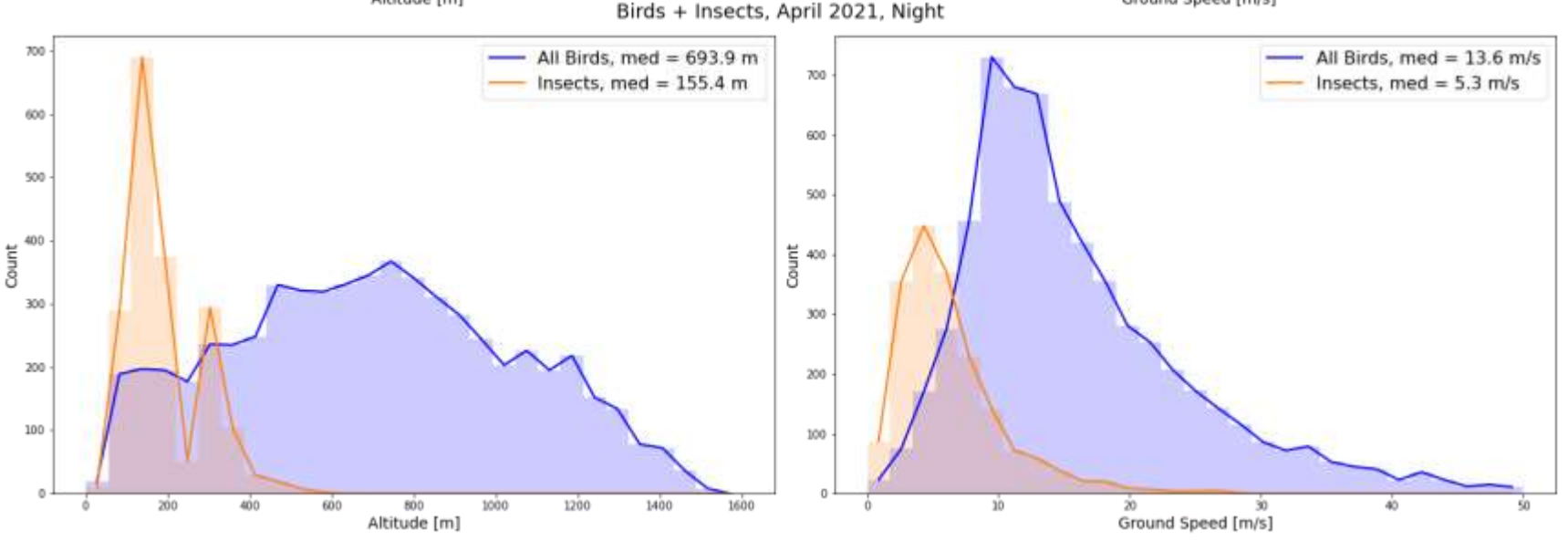

Bird Direction, March 2021, Day
Average speed: 11.87 ms^{-1}
N
N-W
W
E
S-W
S-E
S

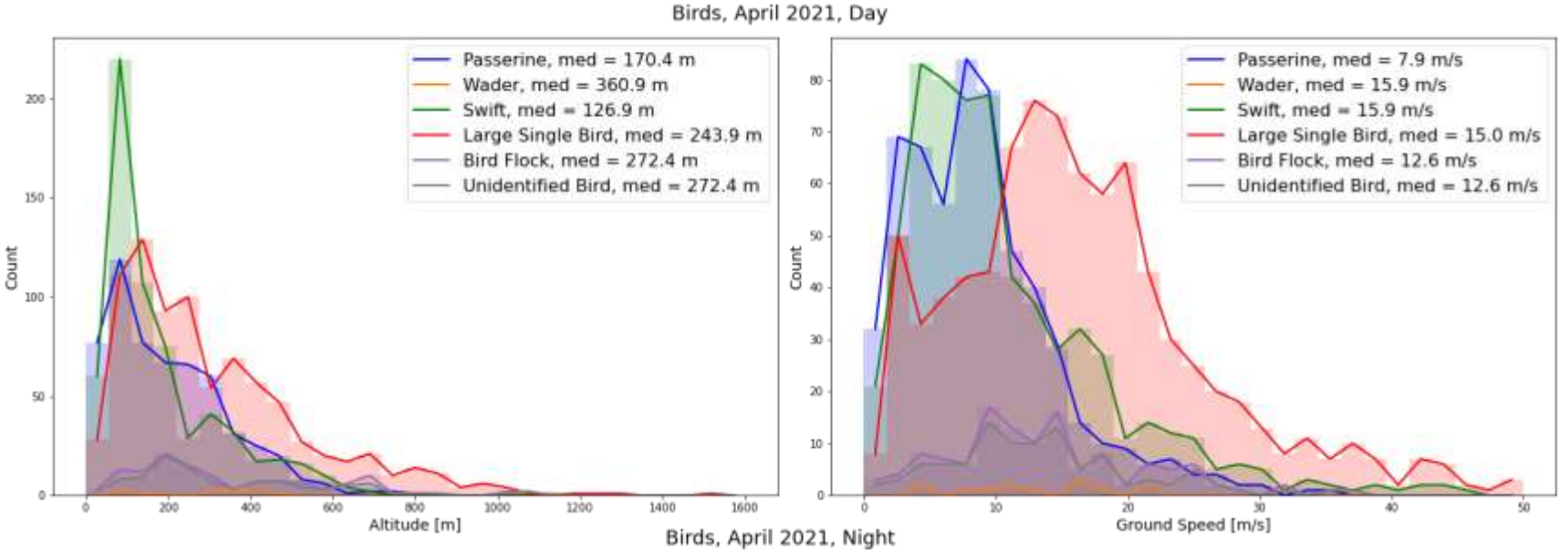

Bird Direction, March 2021, Night
Average speed: 20.40 ms^{-1}
N
N-W
W
E
S-W
S-E
S

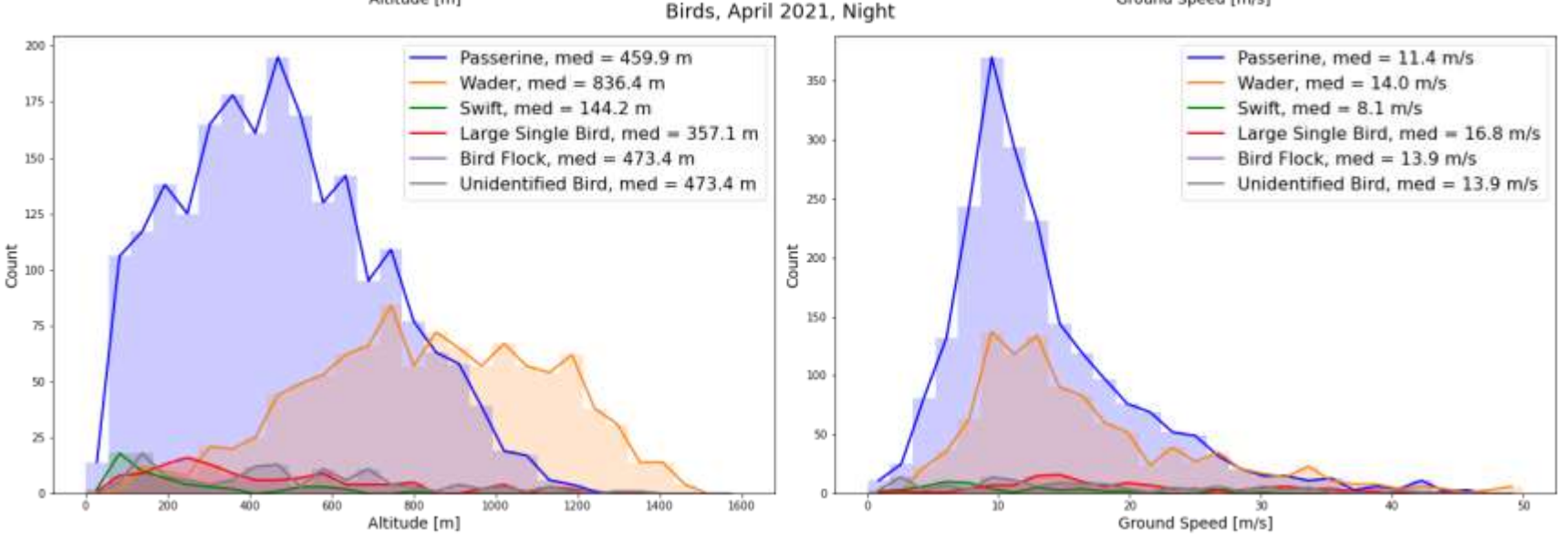

Insect Direction, March 2021, Day
Average speed: 7.04 ms^{-1}
N
N-W
W
E
S-W
S-E
S

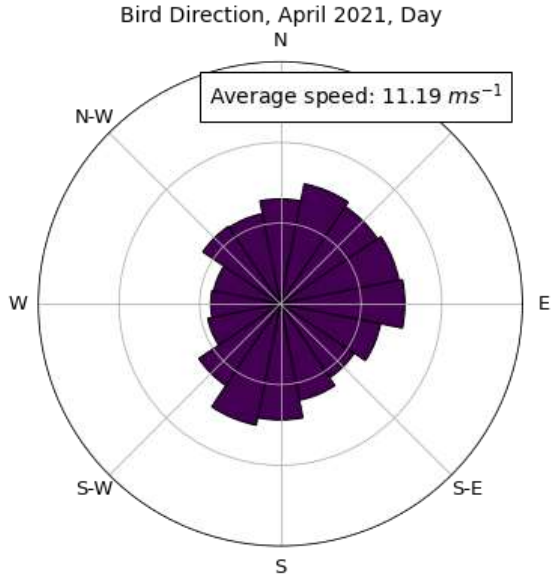

Insect Direction, March 2021, Night
Average speed: 7.50 ms^{-1}
N
N-W
W
E
S-W
S-E
S

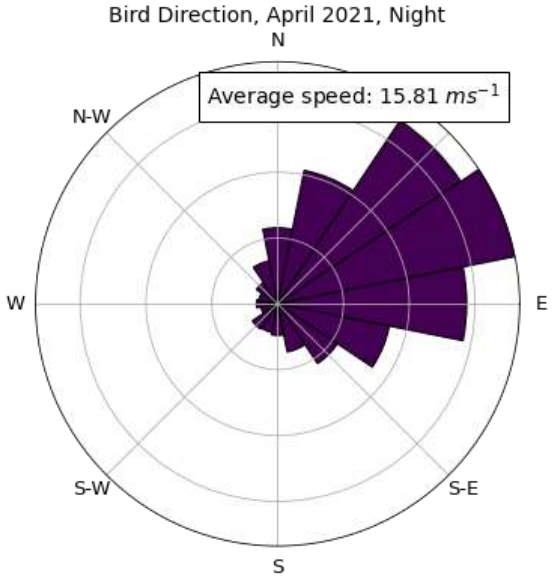

Birds + Insects, April 2021, Day
All Birds, med = 215.4 m
Insects, med = 198.9 m
Count
Altitude [m]
All Birds, med = 8.9 m/s
Insects, med = 5.8 m/s
Count
Ground Speed [m/s]

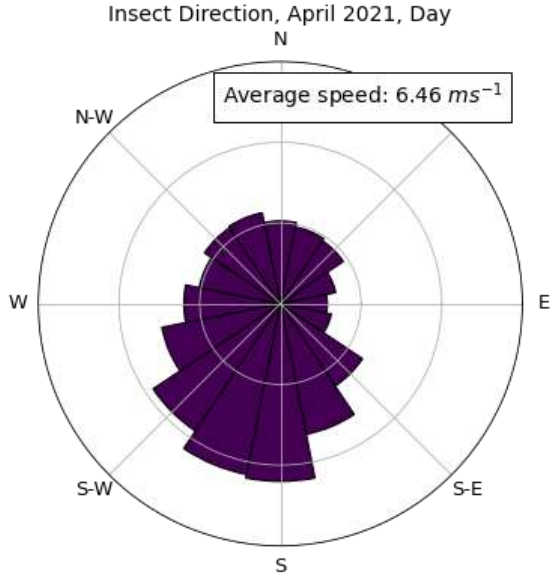

Birds + Insects, April 2021, Night
All Birds, med = 693.9 m
Insects, med = 155.4 m
Count
Altitude [m]
All Birds, med = 13.6 m/s
Insects, med = 5.3 m/s
Count
Ground Speed [m/s]

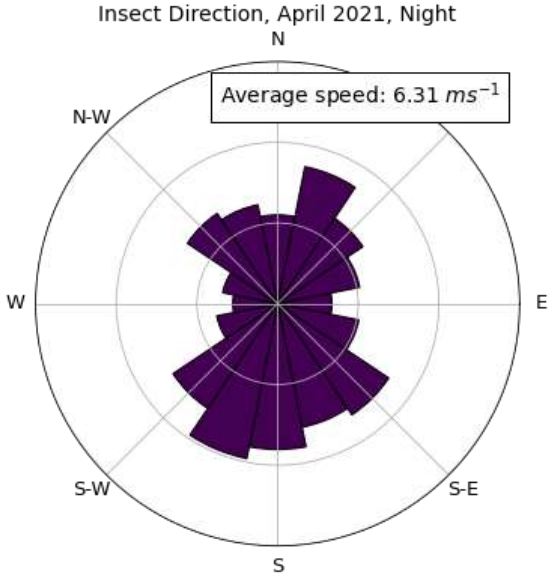

Birds, April 2021, Day
Passerine, med = 170.4 m
Wader, med = 360.9 m
Swift, med = 126.9 m
Large Single Bird, med = 243.9 m
Bird Flock, med = 272.4 m
Unidentified Bird, med = 272.4 m
Count
Altitude [m]
Passerine, med = 7.9 m/s
Wader, med = 15.9 m/s
Swift, med = 15.9 m/s
Large Single Bird, med = 15.0 m/s
Bird Flock, med = 12.6 m/s
Unidentified Bird, med = 12.6 m/s
Count
Ground Speed [m/s]

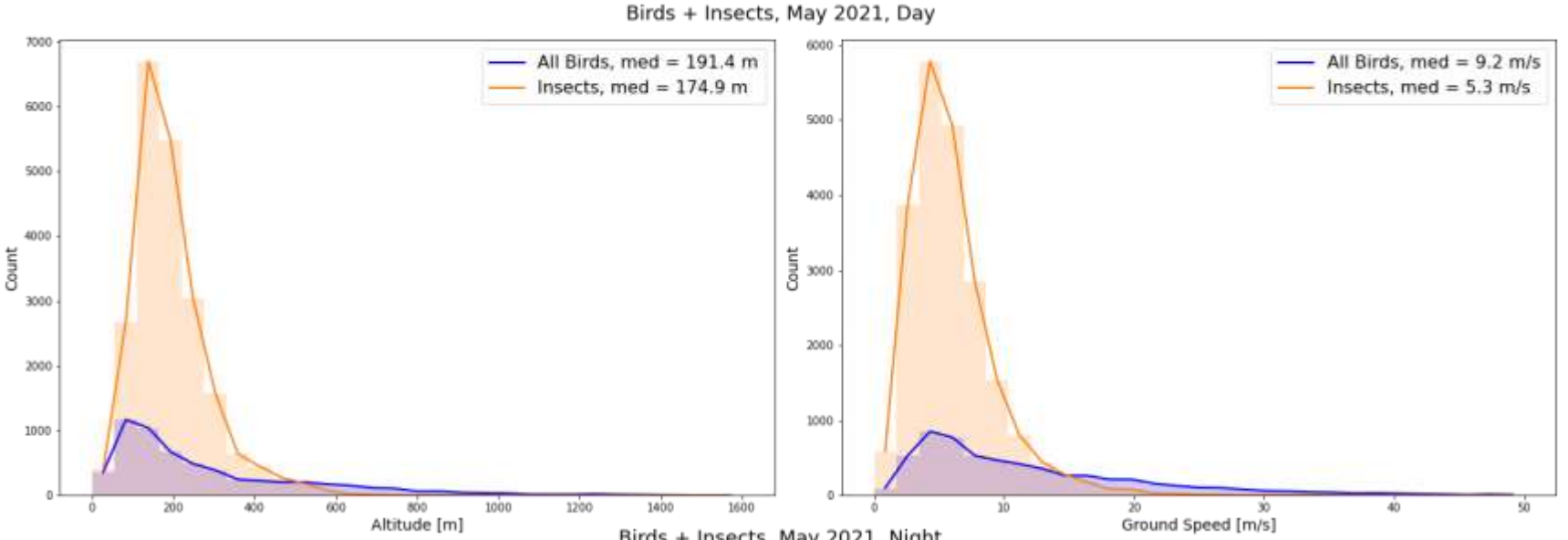

Birds, April 2021, Night
Passerine, med = 459.9 m
Wader, med = 836.4 m
Swift, med = 144.2 m
Large Single Bird, med = 357.1 m
Bird Flock, med = 473.4 m
Unidentified Bird, med = 473.4 m
Count
Altitude [m]
Passerine, med = 11.4 m/s
Wader, med = 14.0 m/s
Swift, med = 8.1 m/s
Large Single Bird, med = 16.8 m/s
Bird Flock, med = 13.9 m/s
Unidentified Bird, med = 13.9 m/s
Count
Ground Speed [m/s]

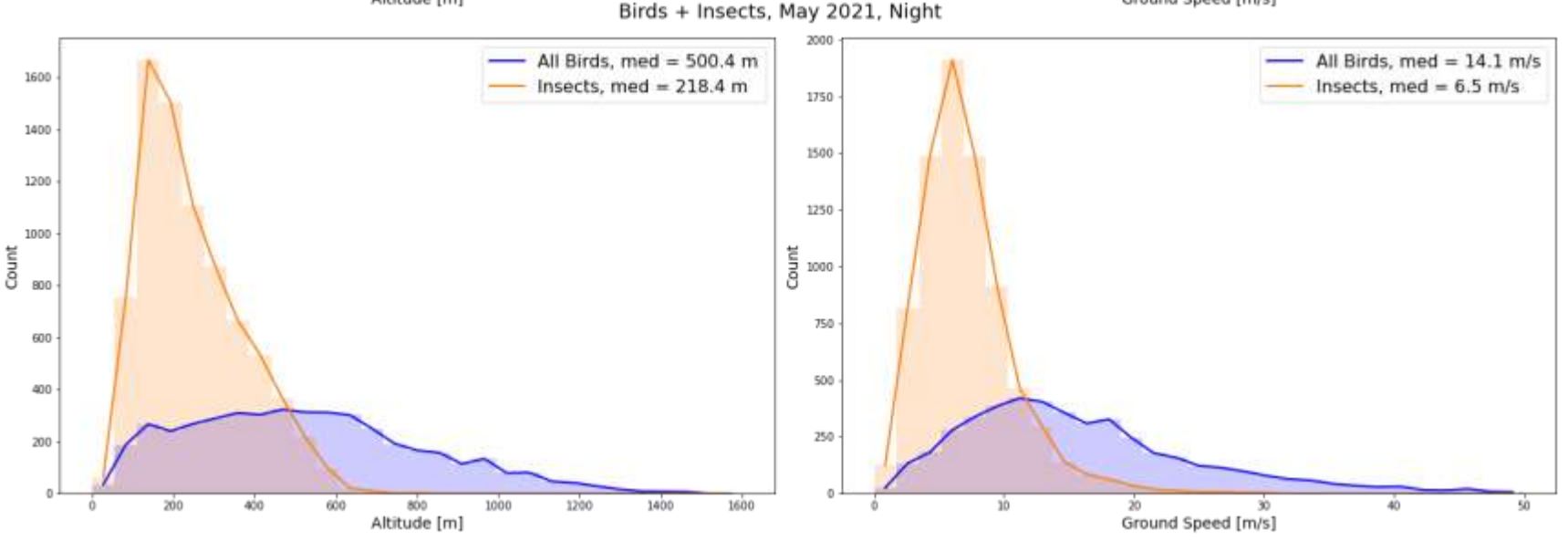

Bird Direction, April 2021, Day
Average speed: 11.19 ms^{-1}
N
N-W
W
E
S-W
S-E
S

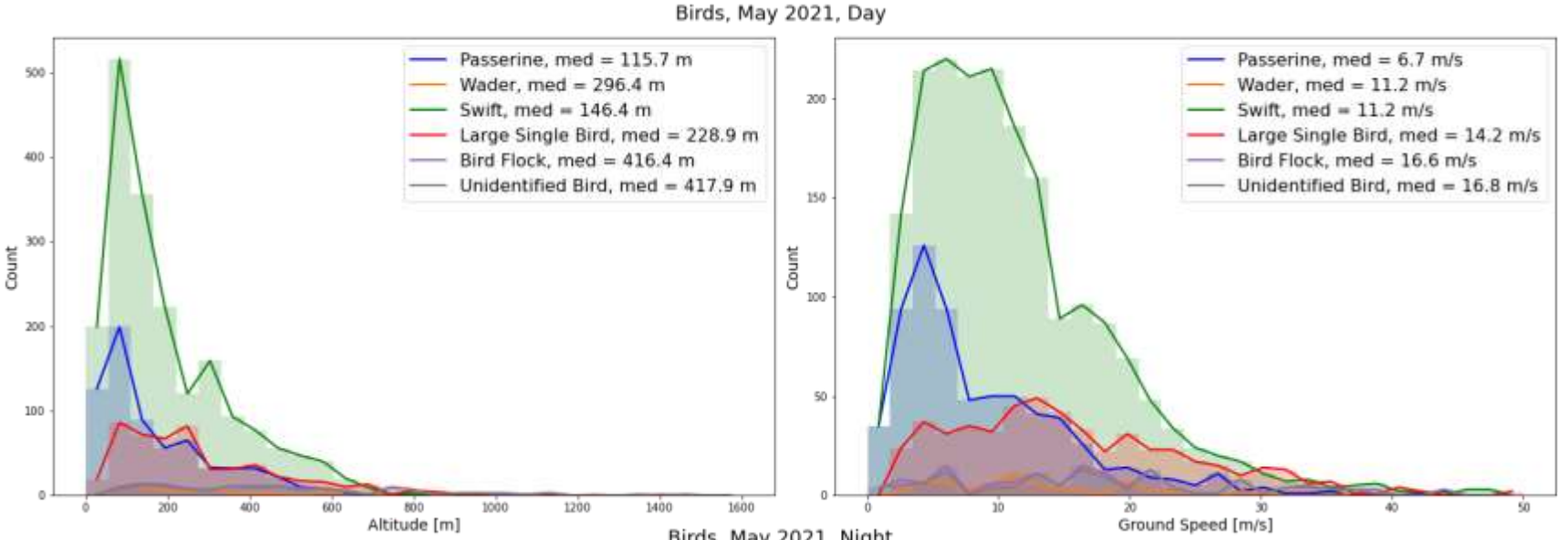

Bird Direction, April 2021, Night
Average speed: 15.81 ms^{-1}
N
N-W
W
E
S-W
S-E
S

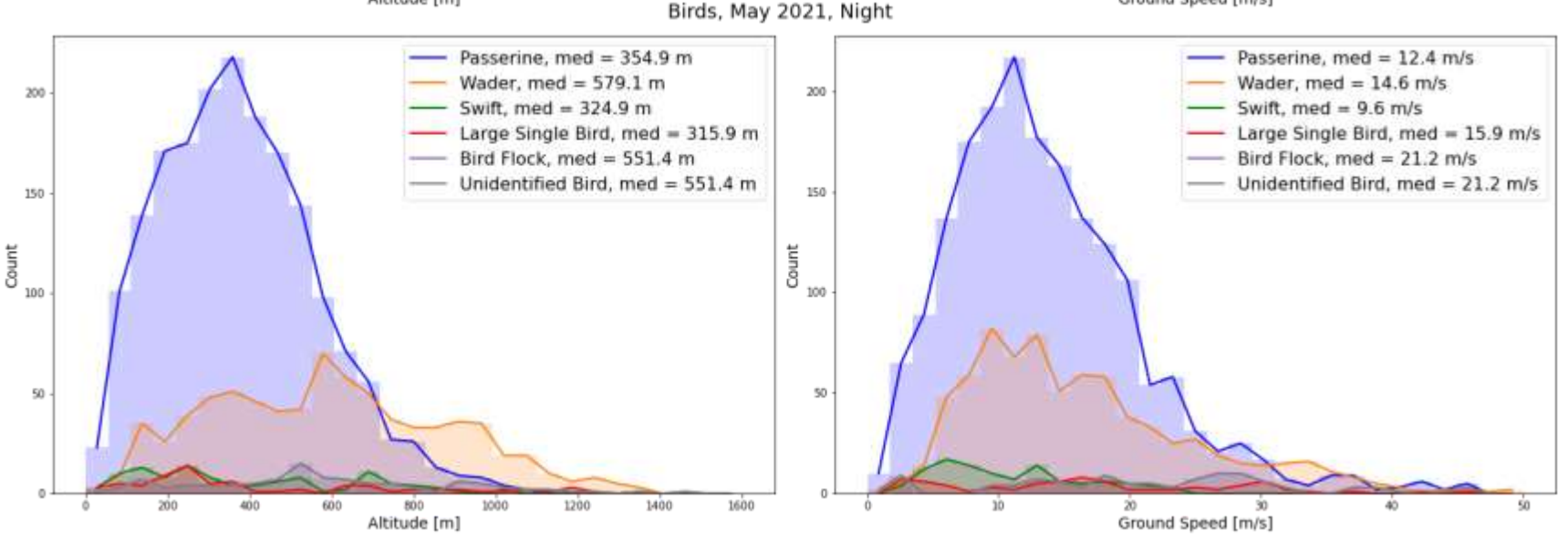

Insect Direction, April 2021, Day
Average speed: 6.46 ms^{-1}
N
N-W
W
E
S-W
S-E
S

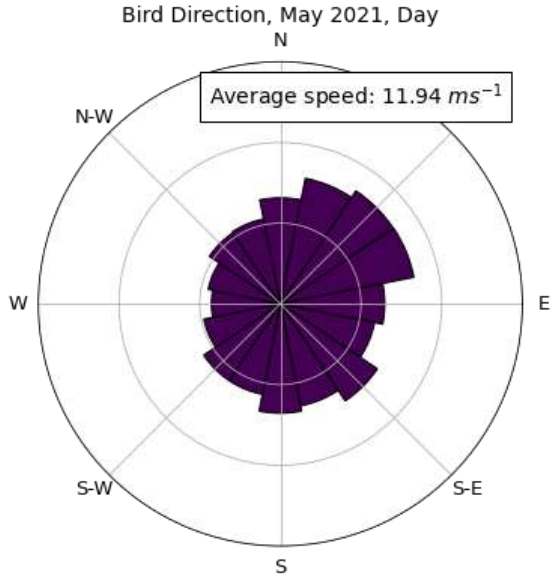

Insect Direction, April 2021, Night
Average speed: 6.31 ms^{-1}
N
N-W
W
E
S-W
S-E
S

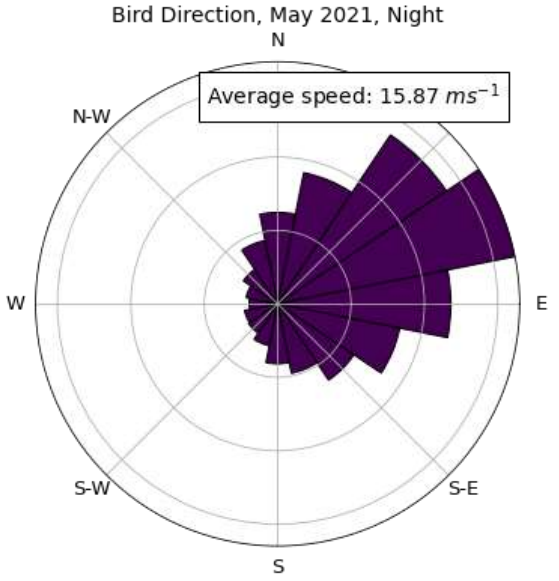

Birds + Insects, May 2021, Day
All Birds, med = 191.4 m
Insects, med = 174.9 m
Count
Altitude [m]
All Birds, med = 9.2 m/s
Insects, med = 5.3 m/s
Count
Ground Speed [m/s]

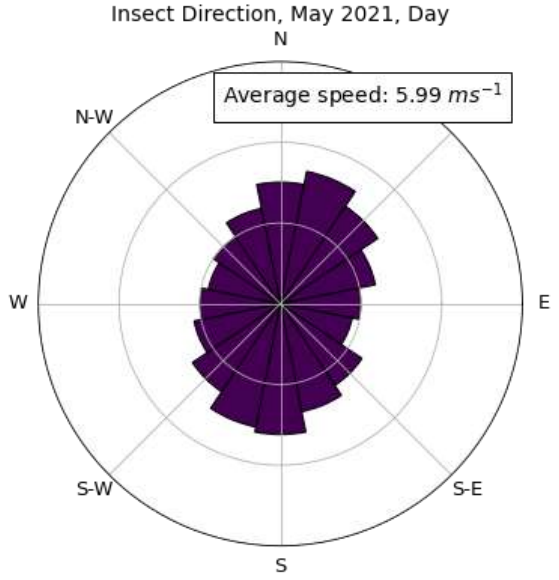

Birds + Insects, May 2021, Night
All Birds, med = 500.4 m
Insects, med = 218.4 m
Count
Altitude [m]
All Birds, med = 14.1 m/s
Insects, med = 6.5 m/s
Count
Ground Speed [m/s]

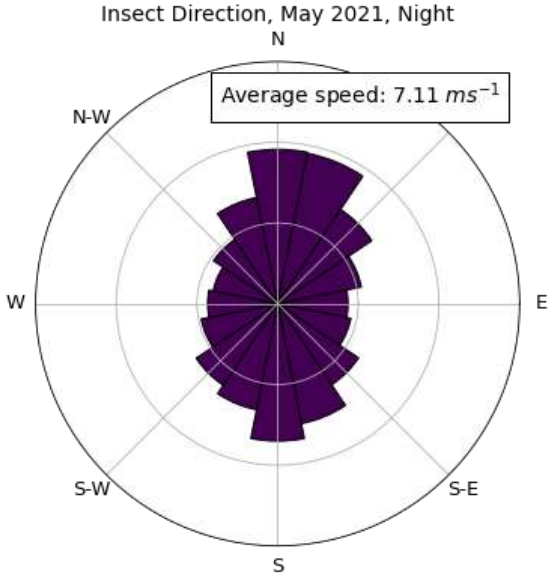

Birds, May 2021, Day
Passerine, med = 115.7 m
Wader, med = 296.4 m
Swift, med = 146.4 m
Large Single Bird, med = 228.9 m
Bird Flock, med = 416.4 m
Unidentified Bird, med = 417.9 m
Count
Altitude [m]
Passerine, med = 6.7 m/s
Wader, med = 11.2 m/s
Swift, med = 11.2 m/s
Large Single Bird, med = 14.2 m/s
Bird Flock, med = 16.6 m/s
Unidentified Bird, med = 16.8 m/s
Count
Ground Speed [m/s]

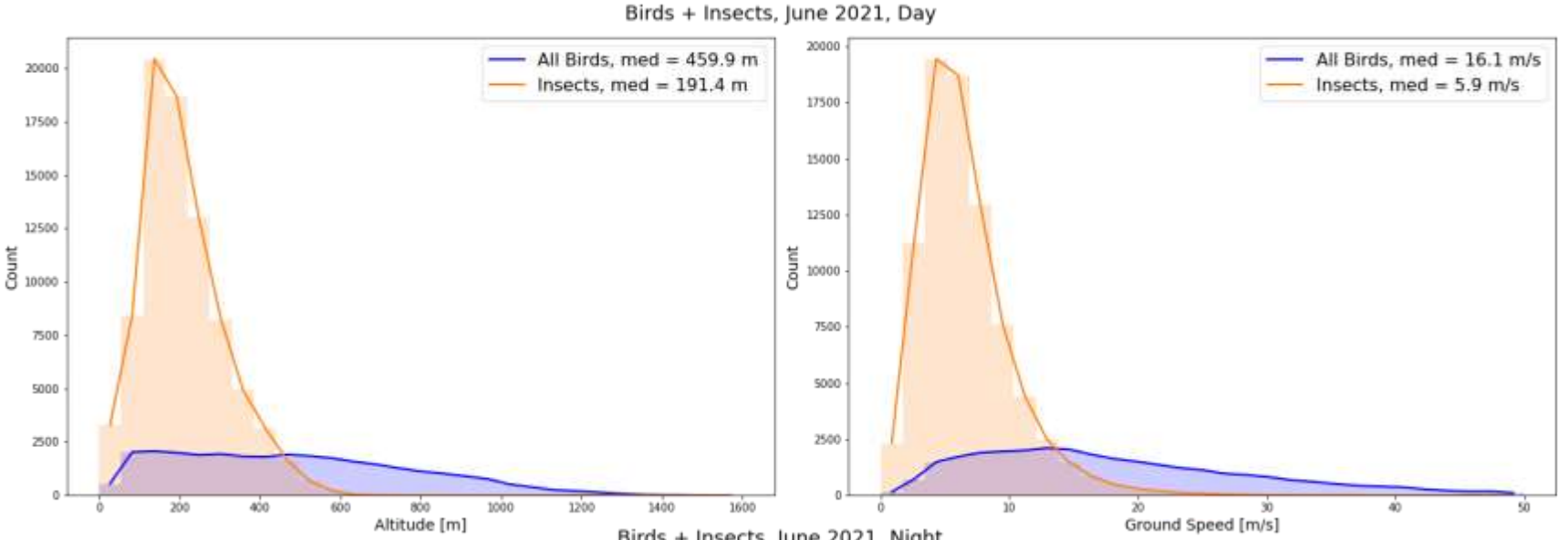

Birds, May 2021, Night
Passerine, med = 354.9 m
Wader, med = 579.1 m
Swift, med = 324.9 m
Large Single Bird, med = 315.9 m
Bird Flock, med = 551.4 m
Unidentified Bird, med = 551.4 m
Count
Altitude [m]
Passerine, med = 12.4 m/s
Wader, med = 14.6 m/s
Swift, med = 9.6 m/s
Large Single Bird, med = 15.9 m/s
Bird Flock, med = 21.2 m/s
Unidentified Bird, med = 21.2 m/s
Count
Ground Speed [m/s]

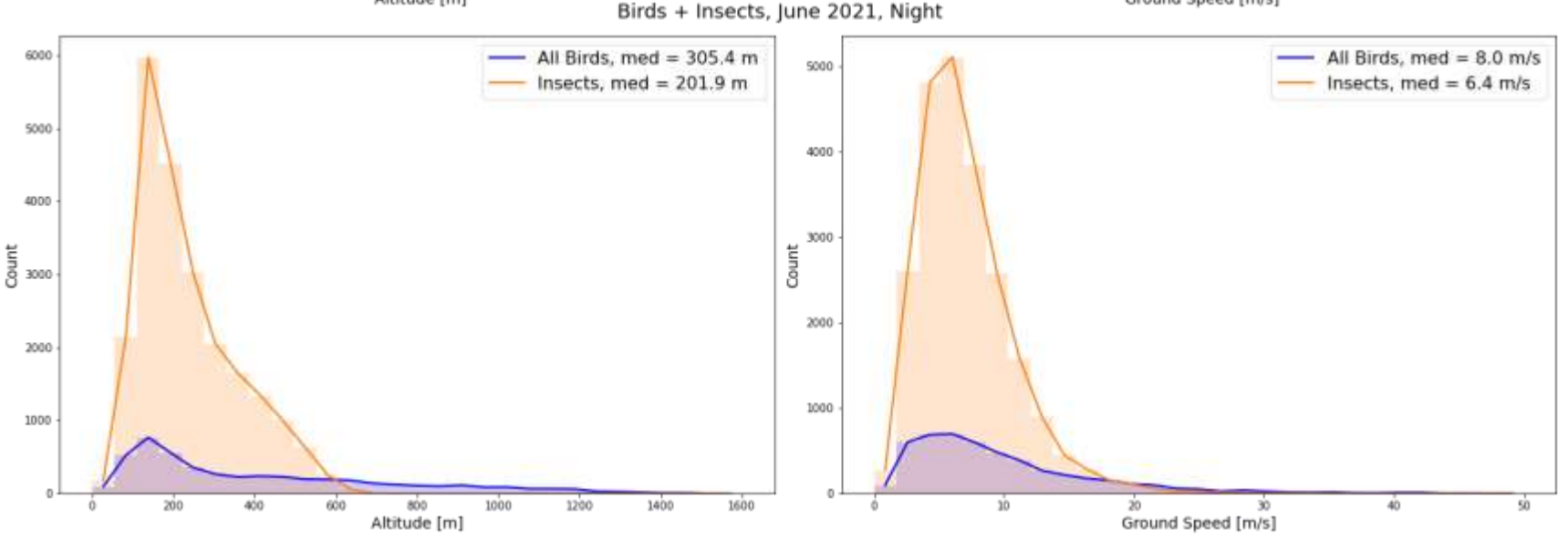

Bird Direction, May 2021, Day
Average speed: 11.94 ms^{-1}
N
N-W
W
E
S-W
S-E
S

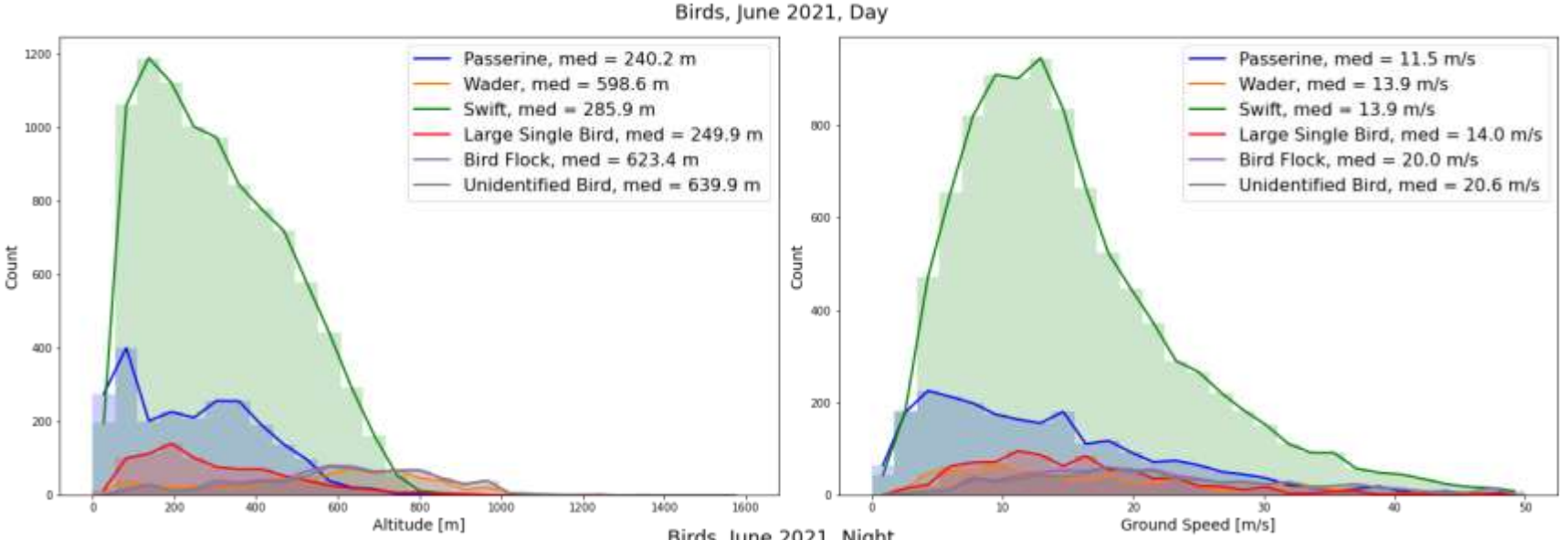

Bird Direction, May 2021, Night
Average speed: 15.87 ms^{-1}
N
N-W
W
E
S-W
S-E
S

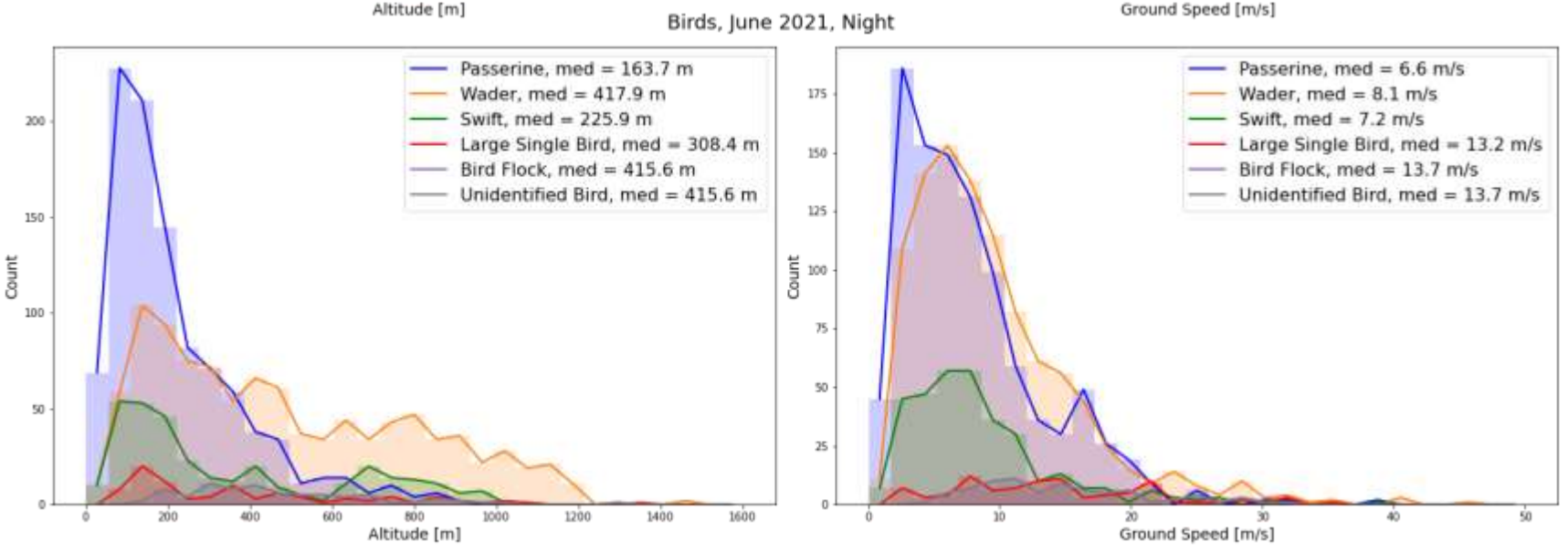

Insect Direction, May 2021, Day
Average speed: 5.99 ms^{-1}
N
N-W
W
E
S-W
S-E
S

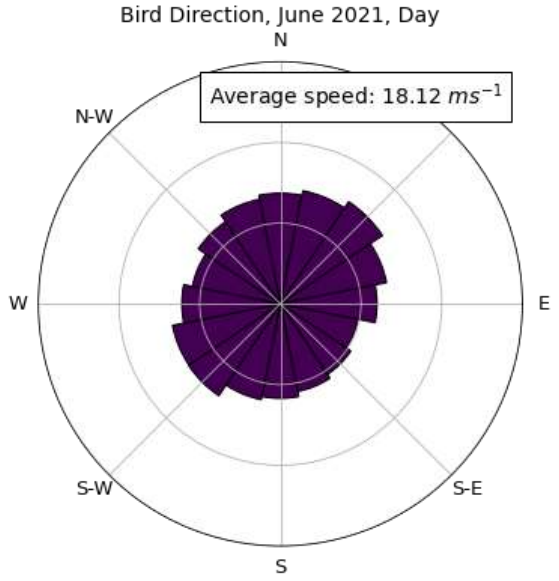

Insect Direction, May 2021, Night
Average speed: 7.11 ms^{-1}
N
N-W
W
E
S-W
S-E
S

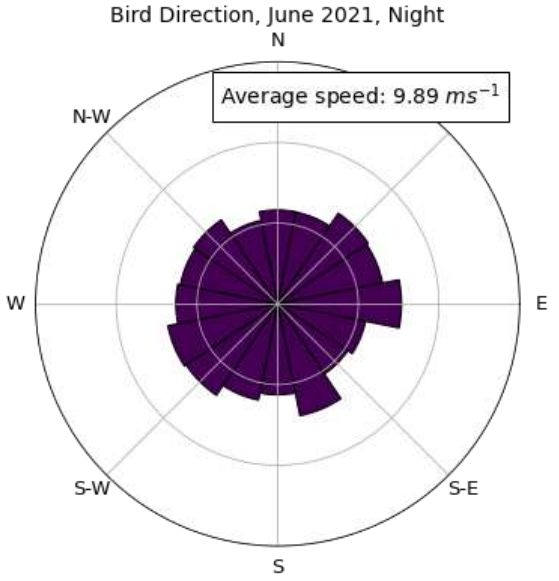

Birds + Insects, June 2021, Day
All Birds, med = 459.9 m
Insects, med = 191.4 m
Count
Altitude [m]
All Birds, med = 16.1 m/s
Insects, med = 5.9 m/s
Count
Ground Speed [m/s]

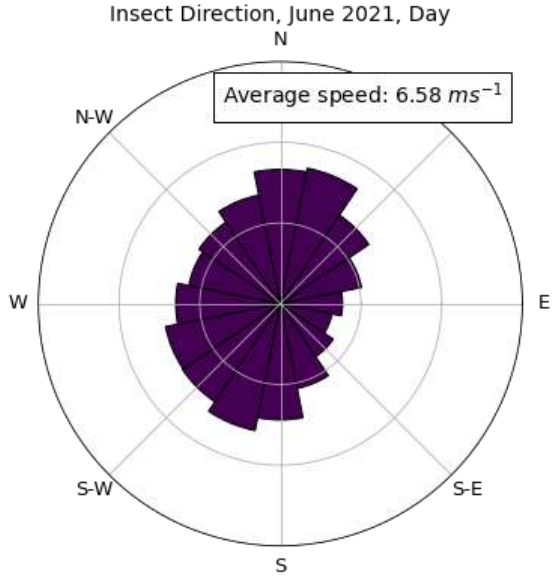

Birds + Insects, June 2021, Night
All Birds, med = 305.4 m
Insects, med = 201.9 m
Count
Altitude [m]
All Birds, med = 8.0 m/s
Insects, med = 6.4 m/s
Count
Ground Speed [m/s]

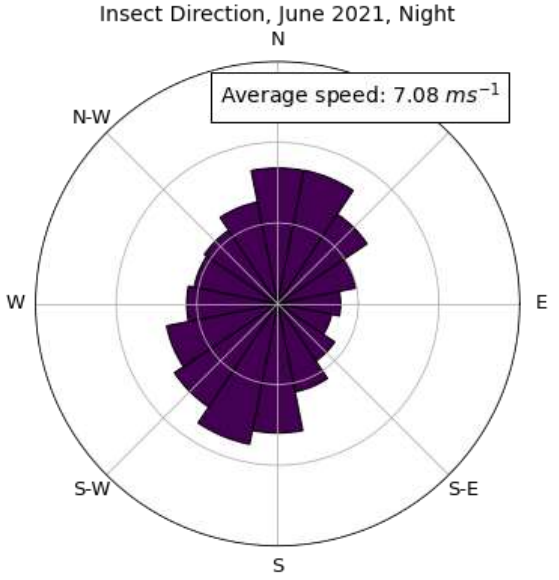

Birds, June 2021, Day
Passerine, med = 240.2 m
Wader, med = 598.6 m
Swift, med = 285.9 m
Large Single Bird, med = 249.9 m
Bird Flock, med = 623.4 m
Unidentified Bird, med = 639.9 m
Count
Altitude [m]
Passerine, med = 11.5 m/s
Wader, med = 13.9 m/s
Swift, med = 13.9 m/s
Large Single Bird, med = 14.0 m/s
Bird Flock, med = 20.0 m/s
Unidentified Bird, med = 20.6 m/s
Count
Ground Speed [m/s]

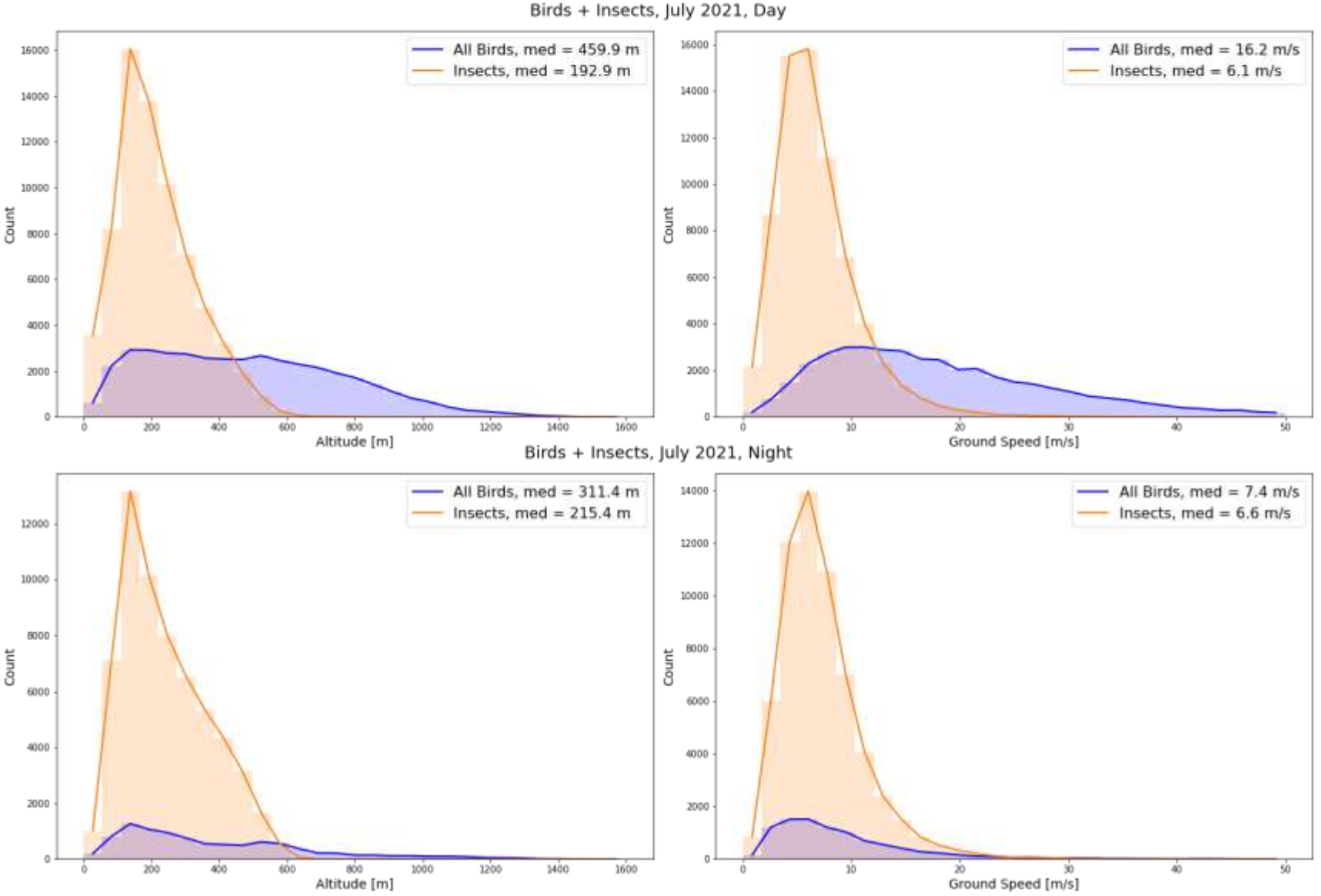

Birds, June 2021, Night
Passerine, med = 163.7 m
Wader, med = 417.9 m
Swift, med = 225.9 m
Large Single Bird, med = 308.4 m
Bird Flock, med = 415.6 m
Unidentified Bird, med = 415.6 m
Count
Altitude [m]
Passerine, med = 6.6 m/s
Wader, med = 8.1 m/s
Swift, med = 7.2 m/s
Large Single Bird, med = 13.2 m/s
Bird Flock, med = 13.7 m/s
Unidentified Bird, med = 13.7 m/s
Count
Ground Speed [m/s]

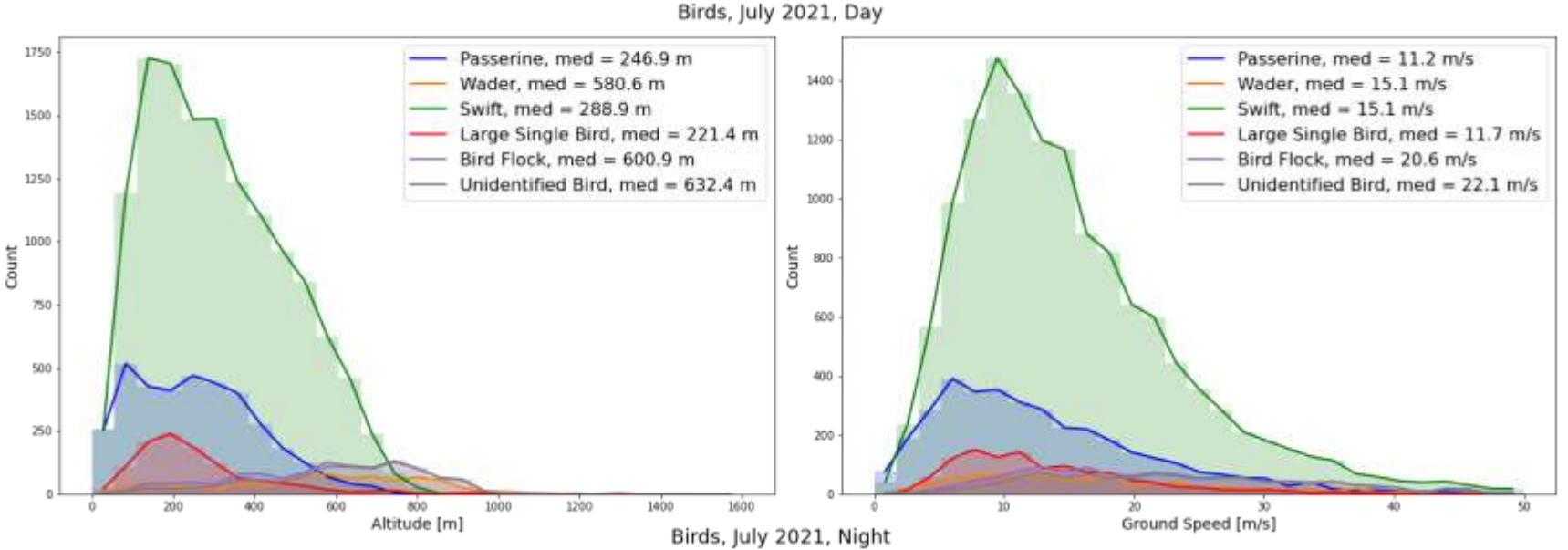

Bird Direction, June 2021, Day
Average speed: 18.12 ms^{-1}
N
N-W
W
E
S-W
S-E
S

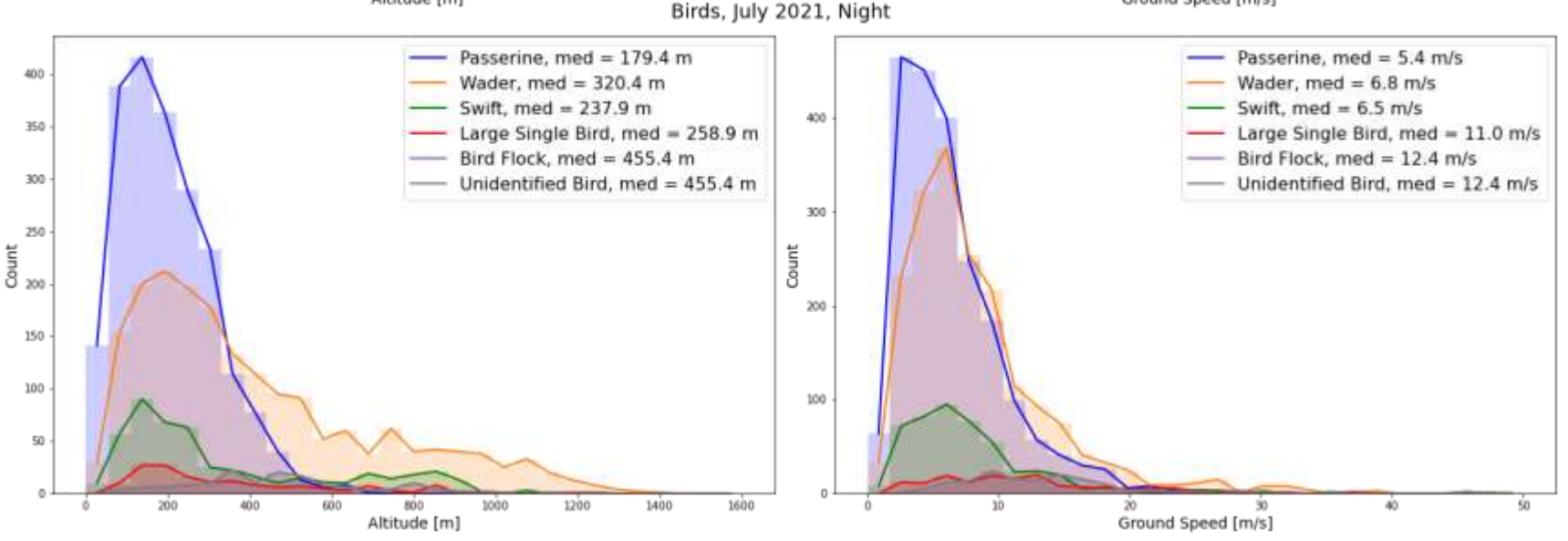

Bird Direction, June 2021, Night
Average speed: 9.89 ms^{-1}
N
N-W
W
E
S-W
S-E
S

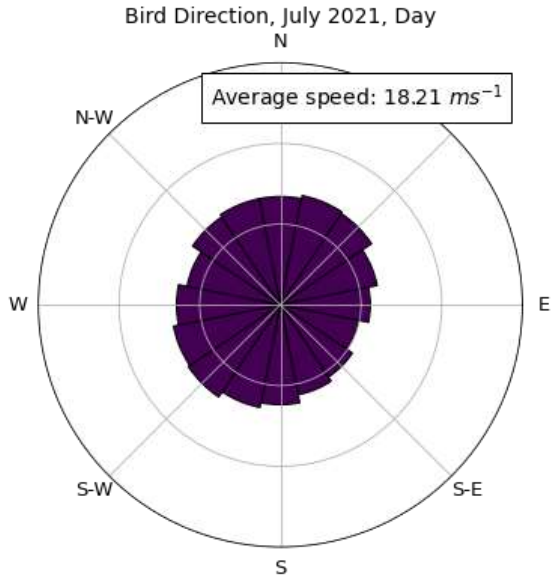

Insect Direction, June 2021, Day
Average speed: 6.58 ms^{-1}
N
N-W
W
E
S-W
S-E
S

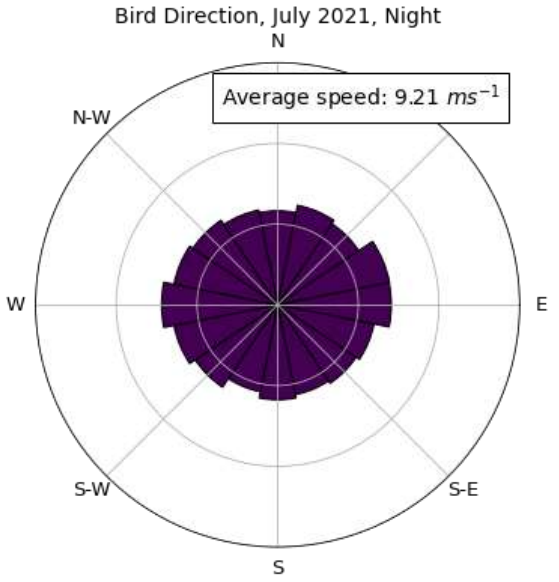

Insect Direction, June 2021, Night
Average speed: 7.08 ms^{-1}
N
N-W
W
E
S-W
S-E
S

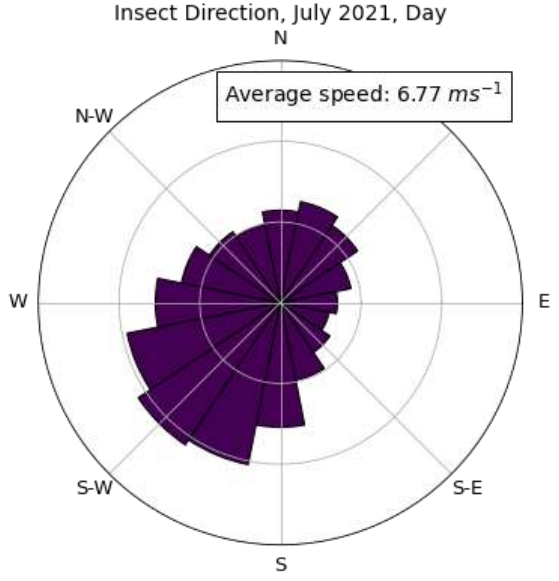

Birds + Insects, July 2021, Day
All Birds, med = 459.9 m
Insects, med = 192.9 m
Count
Altitude [m]
All Birds, med = 16.2 m/s
Insects, med = 6.1 m/s
Count
Ground Speed [m/s]
Birds + Insects, July 2021, Night
All Birds, med = 311.4 m
Insects, med = 215.4 m
Count
Altitude [m]
All Birds, med = 7.4 m/s
Insects, med = 6.6 m/s
Count
Ground Speed [m/s]

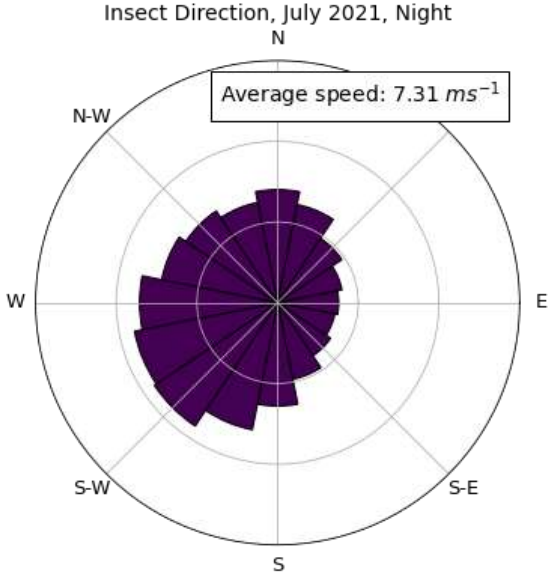

Birds, July 2021, Day
Passerine, med = 246.9 m
Wader, med = 580.6 m
Swift, med = 288.9 m
Large Single Bird, med = 221.4 m
Bird Flock, med = 600.9 m
Unidentified Bird, med = 632.4 m
Count
Altitude [m]
Passerine, med = 11.2 m/s
Wader, med = 15.1 m/s
Swift, med = 15.1 m/s
Large Single Bird, med = 11.7 m/s
Bird Flock, med = 20.6 m/s
Unidentified Bird, med = 22.1 m/s
Count
Ground Speed [m/s]

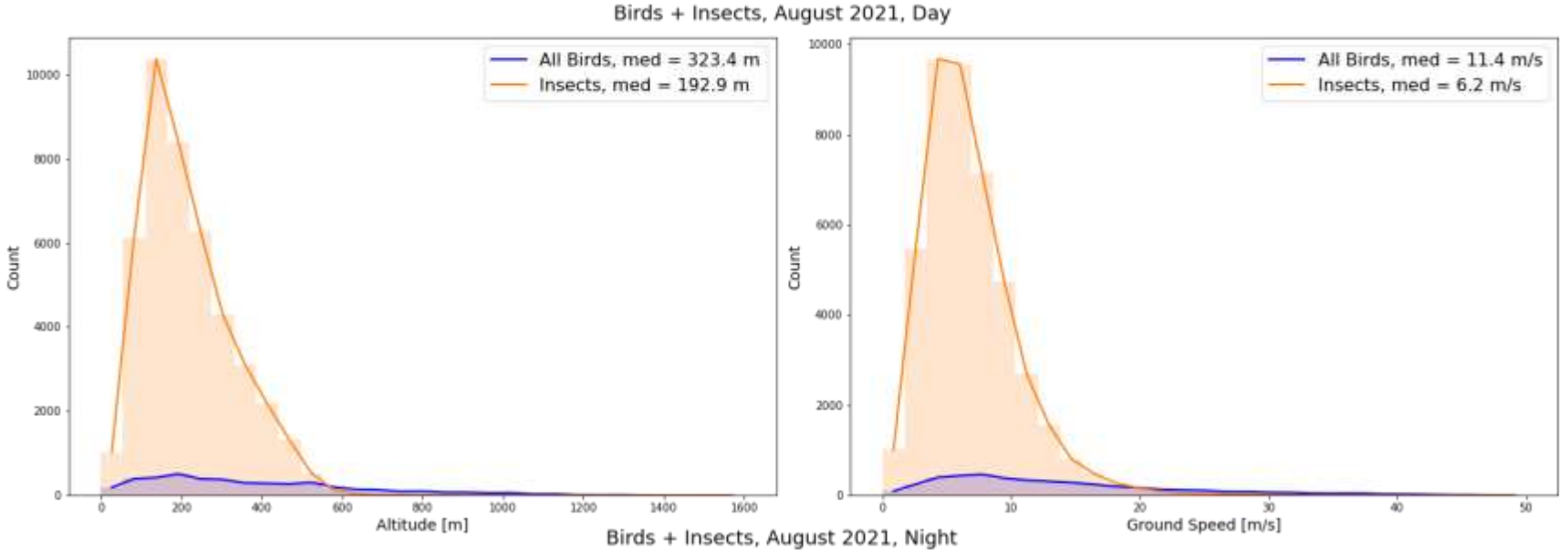

Birds, July 2021, Night
Passerine, med = 179.4 m
Wader, med = 320.4 m
Swift, med = 237.9 m
Large Single Bird, med = 258.9 m
Bird Flock, med = 455.4 m
Unidentified Bird, med = 455.4 m
Count
Altitude [m]
Passerine, med = 5.4 m/s
Wader, med = 6.8 m/s
Swift, med = 6.5 m/s
Large Single Bird, med = 11.0 m/s
Bird Flock, med = 12.4 m/s
Unidentified Bird, med = 12.4 m/s
Count
Ground Speed [m/s]

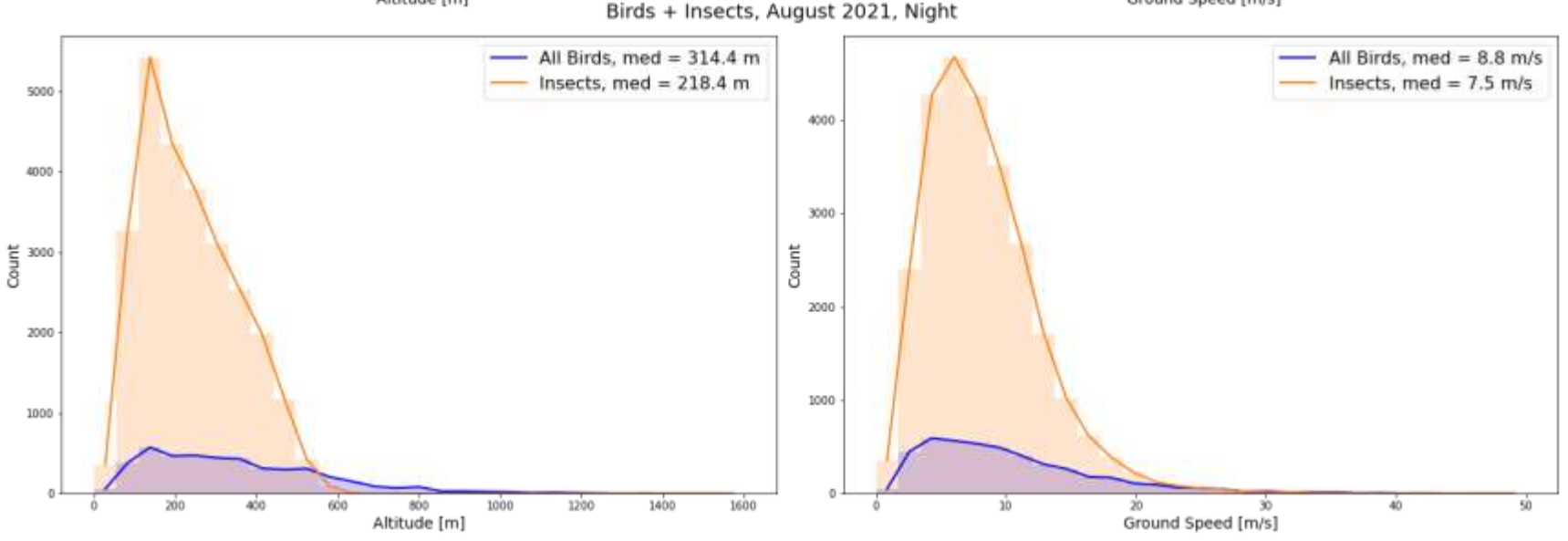

Bird Direction, July 2021, Day
Average speed: 18.21 ms^{-1}
N
N-W
W
E
S-W
S-E
S

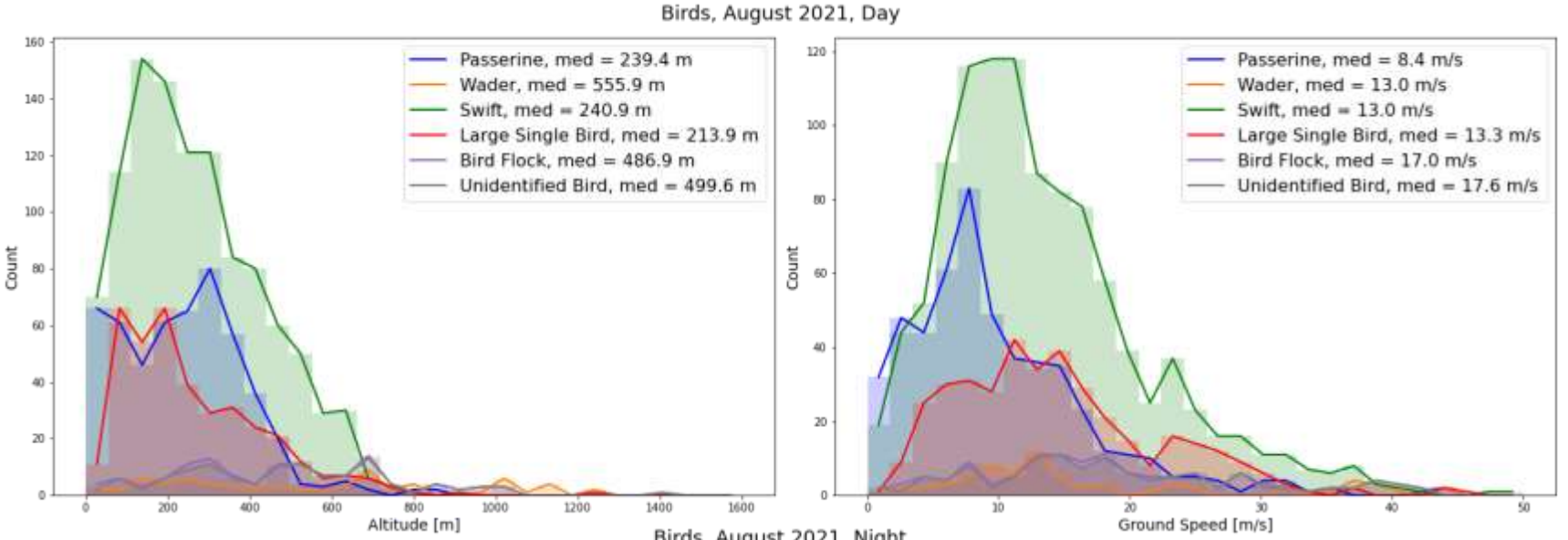

Bird Direction, July 2021, Night
Average speed: 9.21 ms^{-1}
N
N-W
W
E
S-W
S-E
S

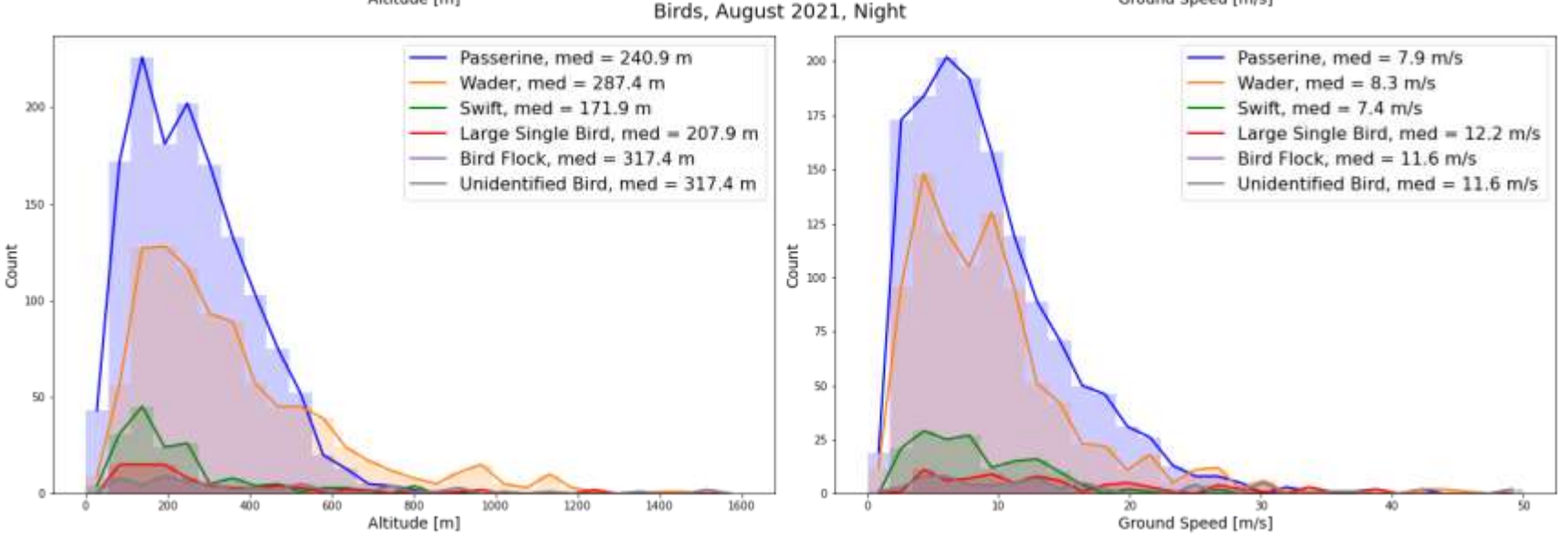

Insect Direction, July 2021, Day
Average speed: 6.77 ms^{-1}
N
N-W
W
E
S-W
S-E
S

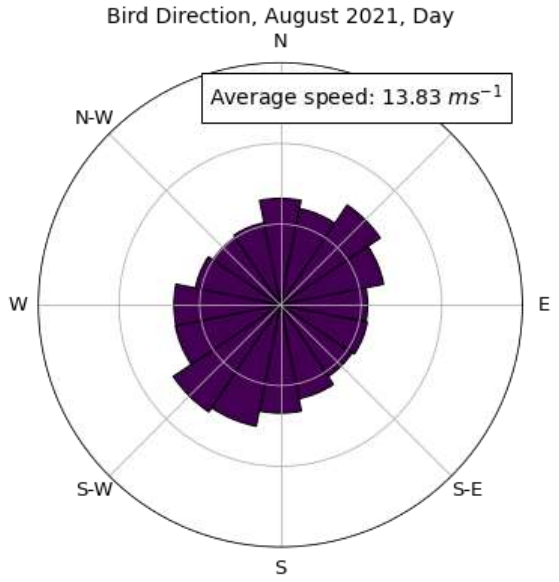

Insect Direction, July 2021, Night
Average speed: 7.31 ms^{-1}
N
N-W
W
E
S-W
S-E
S

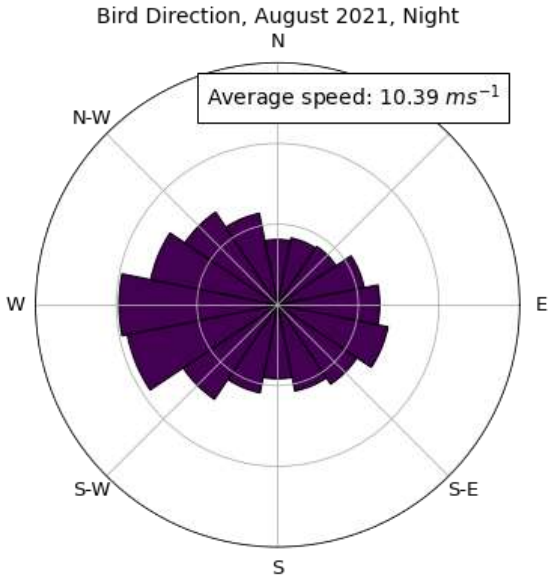

Birds + Insects, August 2021, Day
All Birds, med = 323.4 m
Insects, med = 192.9 m
Count
Altitude [m]
All Birds, med = 11.4 m/s
Insects, med = 6.2 m/s
Count
Ground Speed [m/s]

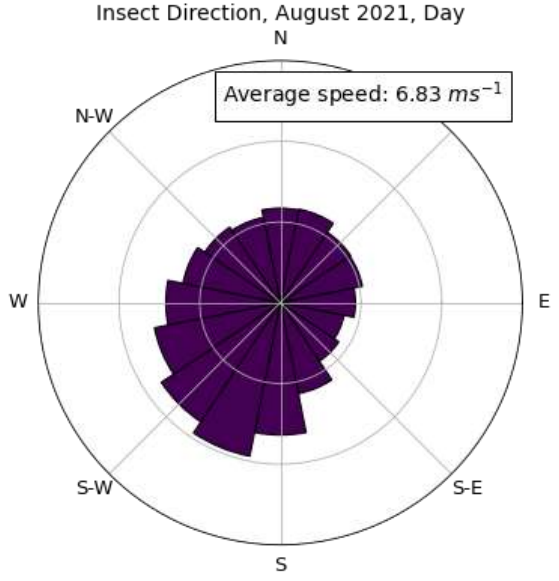

Birds + Insects, August 2021, Night
All Birds, med = 314.4 m
Insects, med = 218.4 m
Count
Altitude [m]
All Birds, med = 8.8 m/s
Insects, med = 7.5 m/s
Count
Ground Speed [m/s]

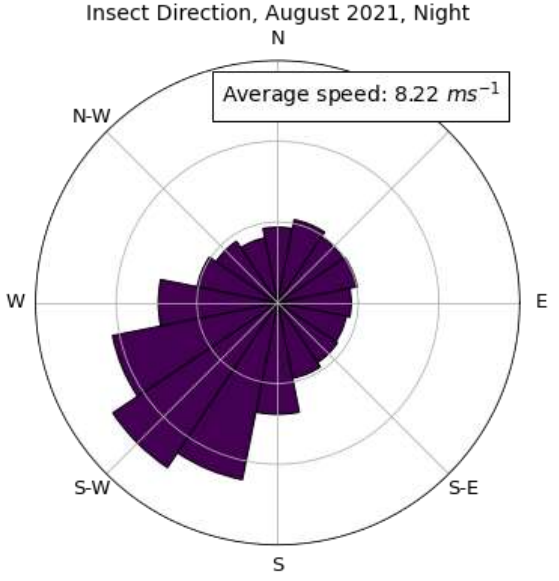

Birds, August 2021, Day
Passerine, med = 239.4 m
Wader, med = 555.9 m
Swift, med = 240.9 m
Large Single Bird, med = 213.9 m
Bird Flock, med = 486.9 m
Unidentified Bird, med = 499.6 m
Count
Altitude [m]
Passerine, med = 8.4 m/s
Wader, med = 13.0 m/s
Swift, med = 13.0 m/s
Large Single Bird, med = 13.3 m/s
Bird Flock, med = 17.0 m/s
Unidentified Bird, med = 17.6 m/s
Count
Ground Speed [m/s]


Birds, August 2021, Night
Passerine, med = 240.9 m
Wader, med = 287.4 m
Swift, med = 171.9 m
Large Single Bird, med = 207.9 m
Bird Flock, med = 317.4 m
Unidentified Bird, med = 317.4 m
Count
Altitude [m]
Passerine, med = 7.9 m/s
Wader, med = 8.3 m/s
Swift, med = 7.4 m/s
Large Single Bird, med = 12.2 m/s
Bird Flock, med = 11.6 m/s
Unidentified Bird, med = 11.6 m/s
Count
Ground Speed [m/s]

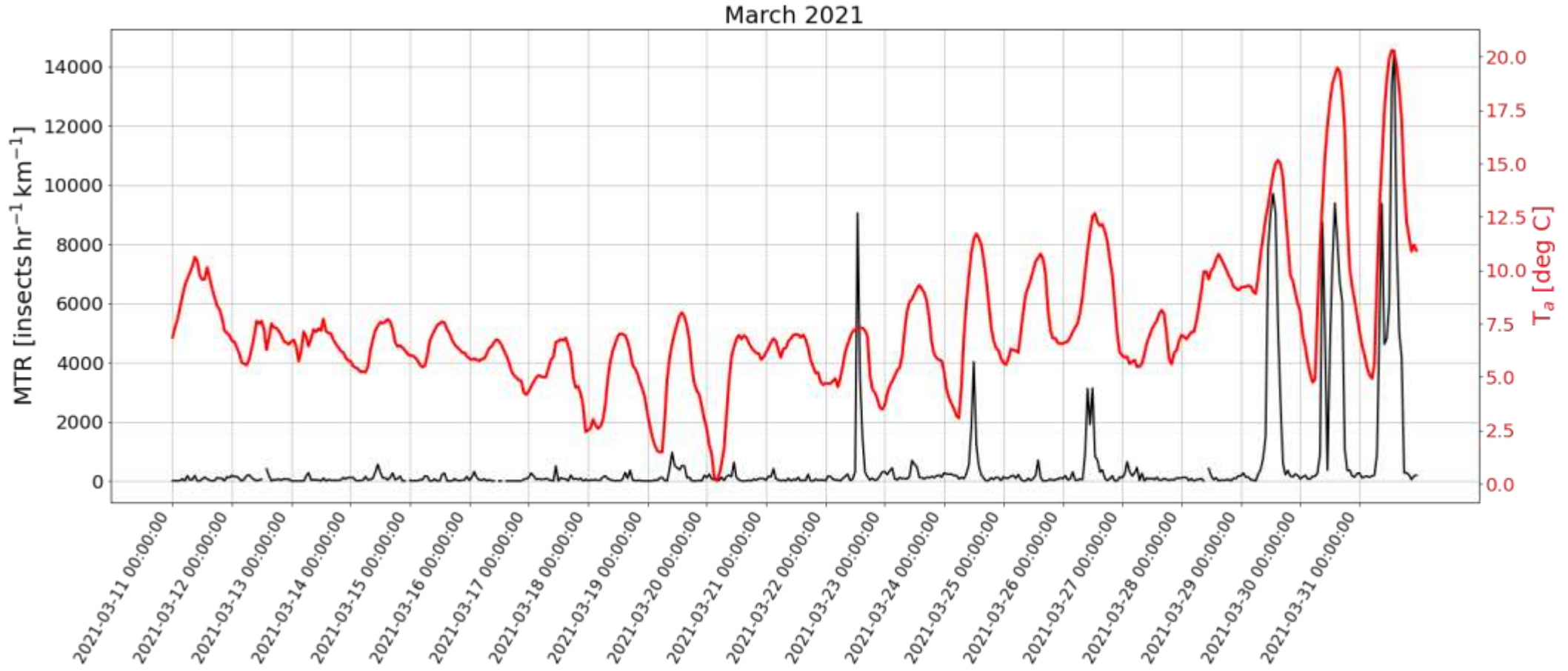

Bird Direction, August 2021, Day
Average speed: 13.83 ms^{-1}
N
N-W
W
E
S-W
S-E
S

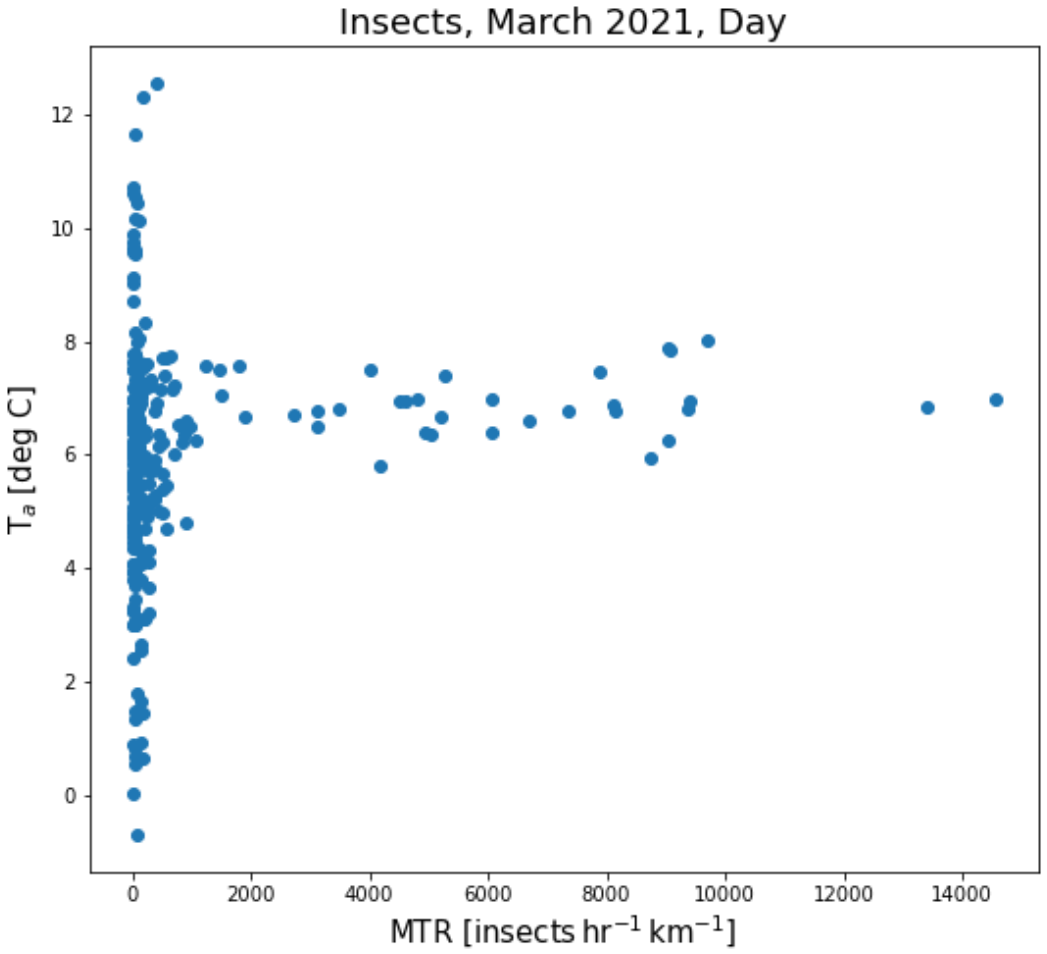

Bird Direction, August 2021, Night
Average speed: 10.39 ms^{-1}
N
N-W
W
E
S-W
S-E
S

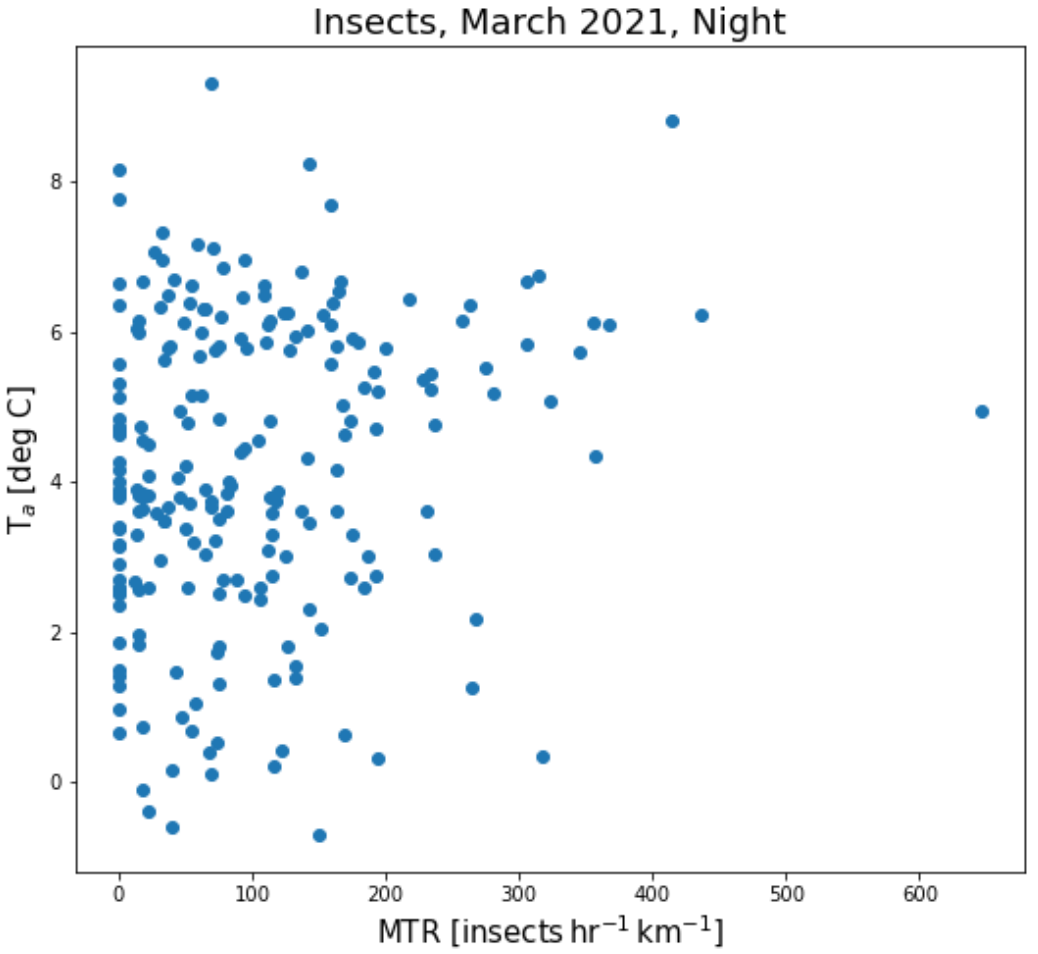

Insect Direction, August 2021, Day
Average speed: 6.83 ms^{-1}
N
N-W
W
E
S-W
S-E
S

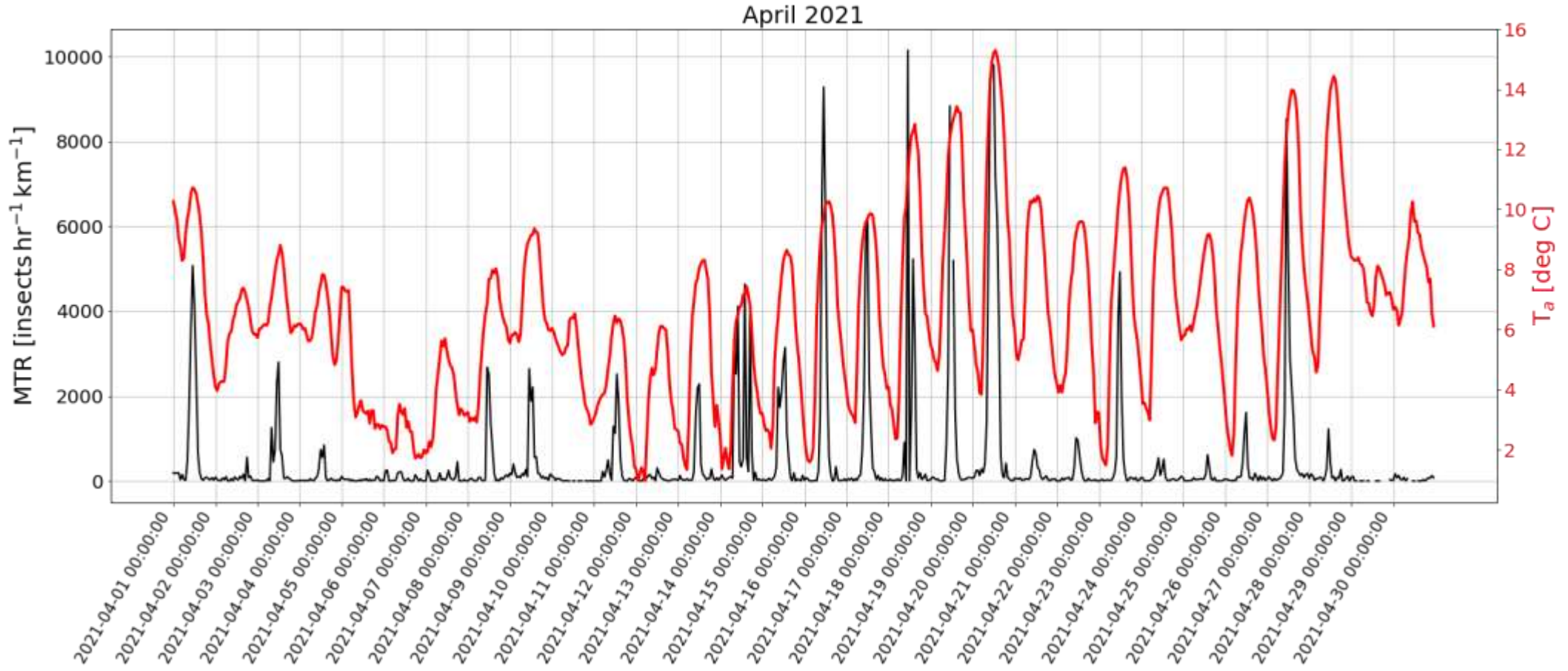

Insect Direction, August 2021, Night
Average speed: 8.22 ms^{-1}
N
N-W
W
E
S-W
S-E
S

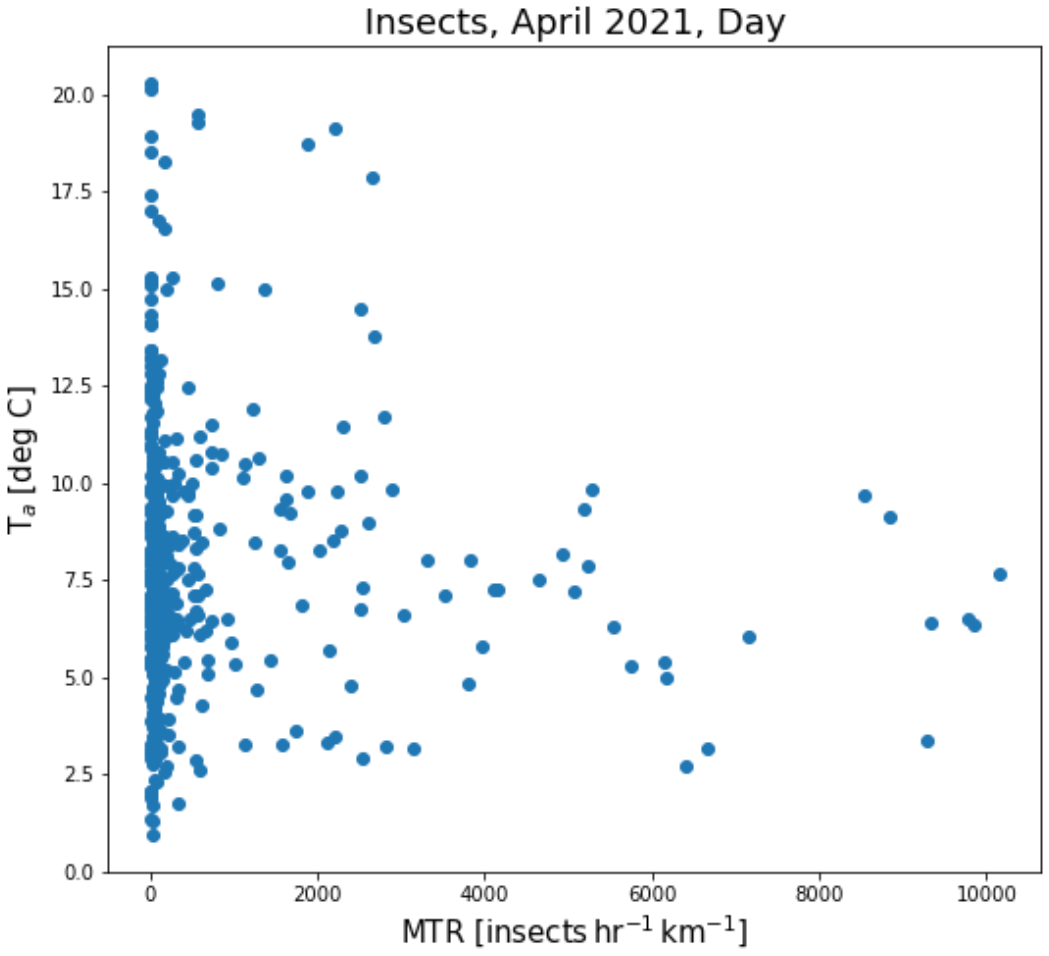
- In the following, air temperature @ 2m [deg C] is analyzed in relation to insects' MTR [individuals km-1 hr-1]
- March to July 2021
- Time series of MTR and air temperature for each month
- Scatter plots of MTR versus air temperature for each month and for day and night, separately

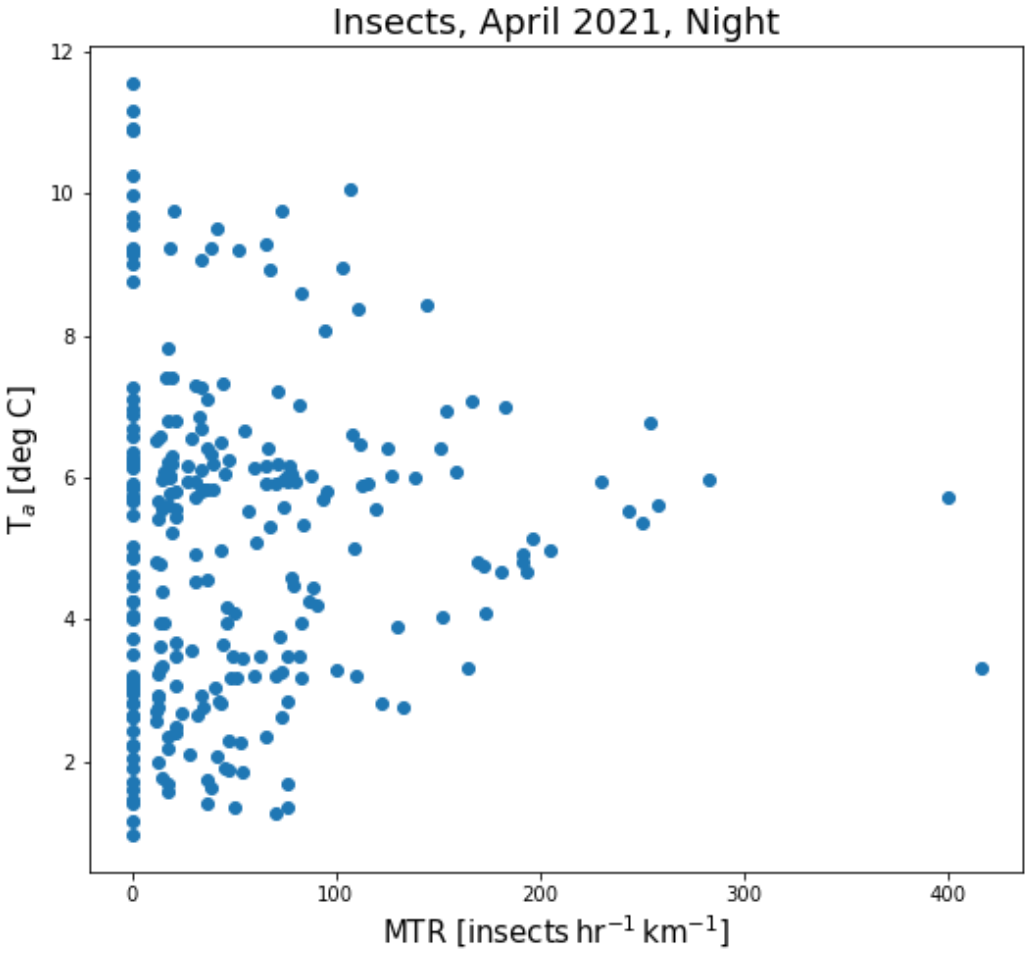

March 2021
MTR [insects hr^{-1} km^{-1}]
T_a [deg C]
0
2000
4000
6000
8000
10000
12000
14000
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
2021-03-11 00:00:00
2021-03-12 00:00:00
2021-03-13 00:00:00
2021-03-14 00:00:00
2021-03-15 00:00:00
2021-03-16 00:00:00
2021-03-17 00:00:00
2021-03-18 00:00:00
2021-03-19 00:00:00
2021-03-20 00:00:00
2021-03-21 00:00:00
2021-03-22 00:00:00
2021-03-23 00:00:00
2021-03-24 00:00:00
2021-03-25 00:00:00
2021-03-26 00:00:00
2021-03-27 00:00:00
2021-03-28 00:00:00
2021-03-29 00:00:00
2021-03-30 00:00:00
2021-03-31 00:00:00

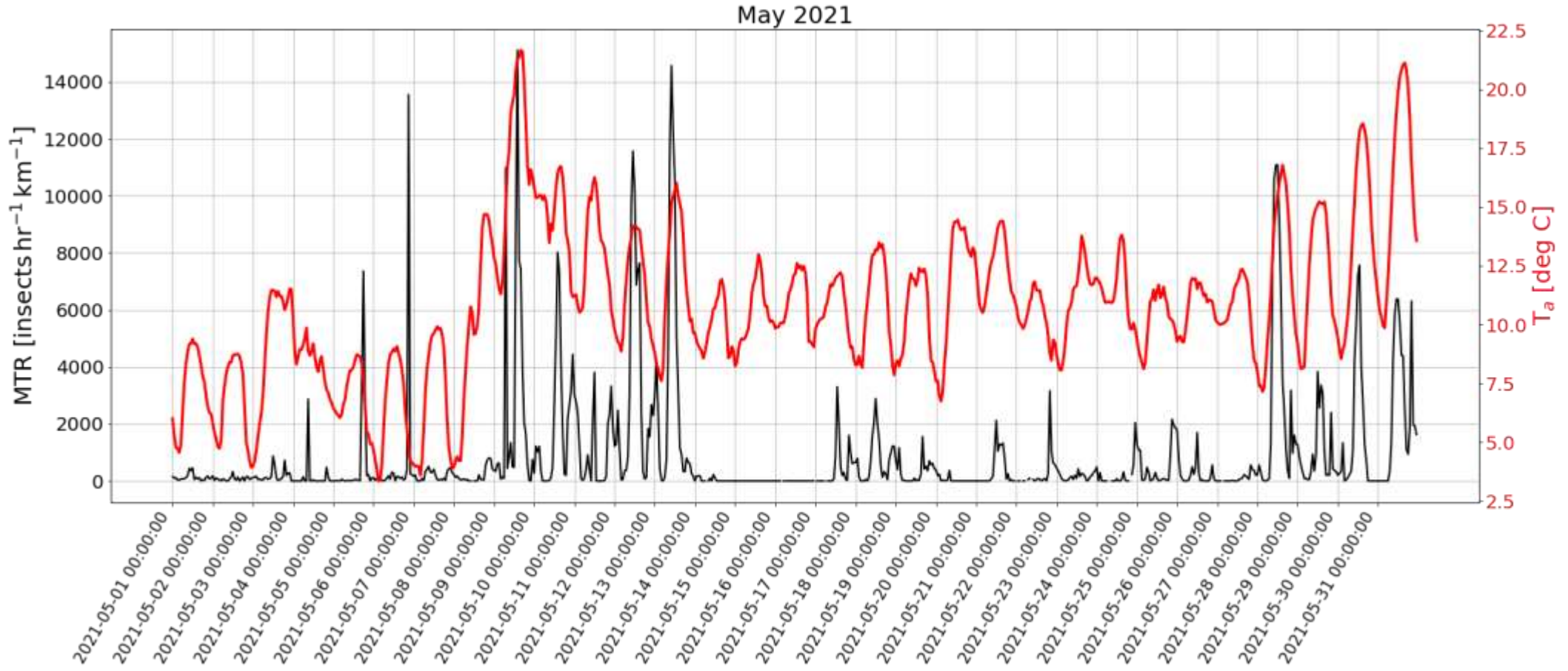

Insects, March 2021, Day
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
0
2
4
6
8
10
12
0
2000
4000
6000
8000
10000
12000
14000

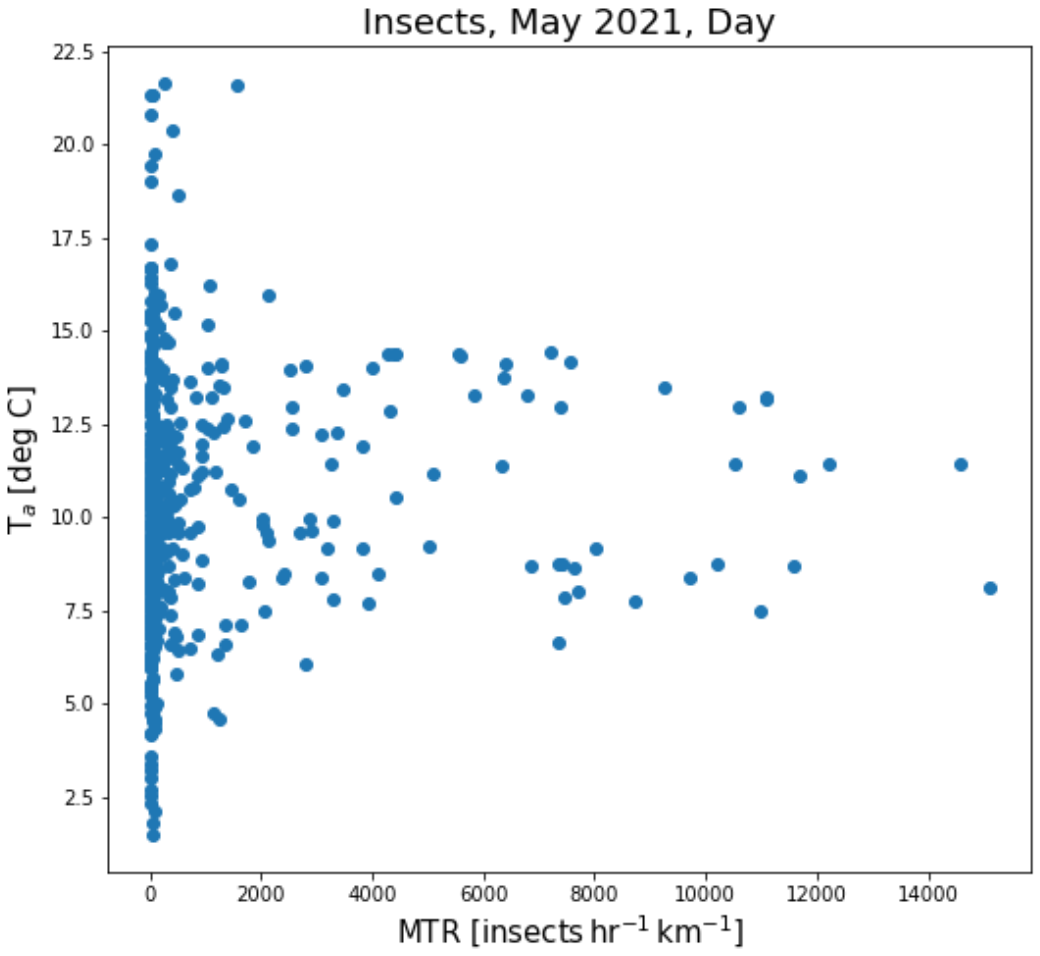

Insects, March 2021, Night
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
0
2
4
6
8
0
100
200
300
400
500
600

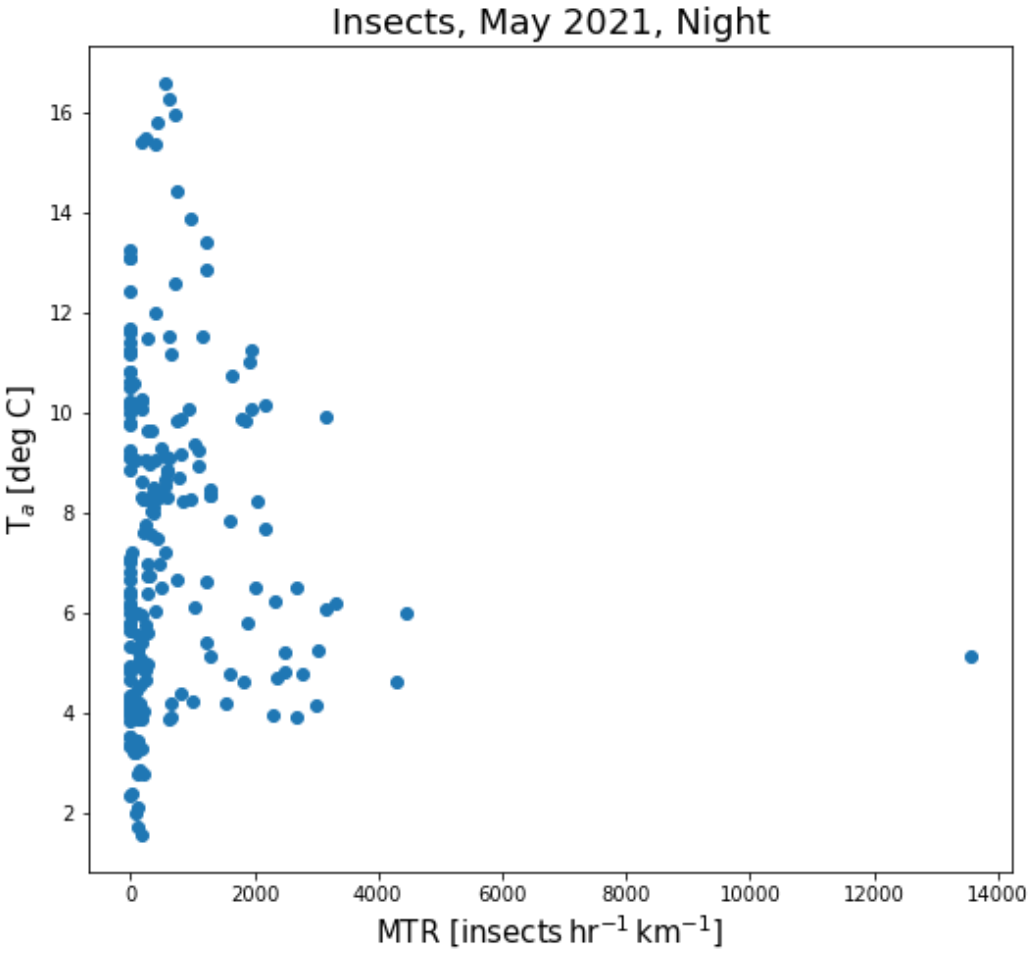

April 2021
MTR [insects hr^{-1} km^{-1}]
T_a [deg C]
0
2000
4000
6000
8000
10000
2
4
6
8
10
12
14
16
2021-04-01 00:00:00
2021-04-02 00:00:00
2021-04-03 00:00:00
2021-04-04 00:00:00
2021-04-05 00:00:00
2021-04-06 00:00:00
2021-04-07 00:00:00
2021-04-08 00:00:00
2021-04-09 00:00:00
2021-04-10 00:00:00
2021-04-11 00:00:00
2021-04-12 00:00:00
2021-04-13 00:00:00
2021-04-14 00:00:00
2021-04-15 00:00:00
2021-04-16 00:00:00
2021-04-17 00:00:00
2021-04-18 00:00:00
2021-04-19 00:00:00
2021-04-20 00:00:00
2021-04-21 00:00:00
2021-04-22 00:00:00
2021-04-23 00:00:00
2021-04-24 00:00:00
2021-04-25 00:00:00
2021-04-26 00:00:00
2021-04-27 00:00:00
2021-04-28 00:00:00
2021-04-29 00:00:00
2021-04-30 00:00:00

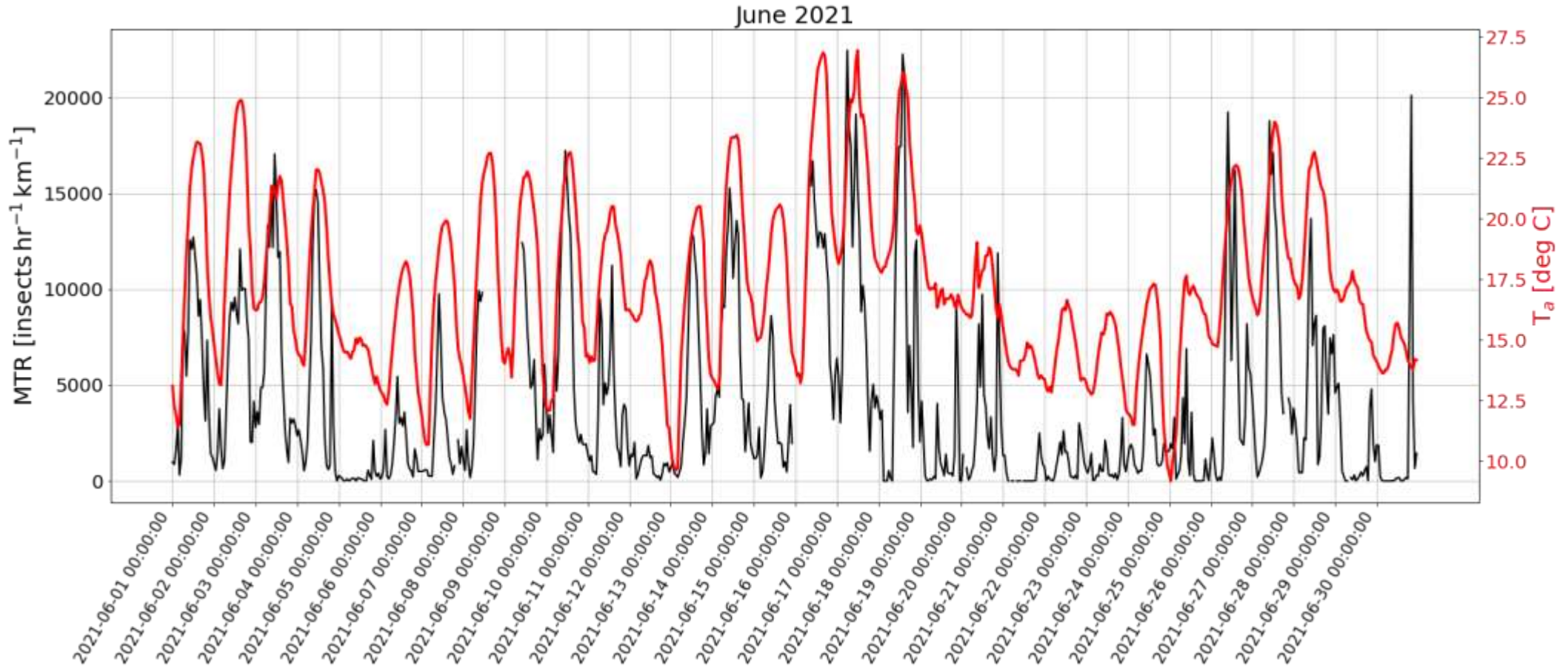

Insects, April 2021, Day
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
0
2000
4000
6000
8000
10000

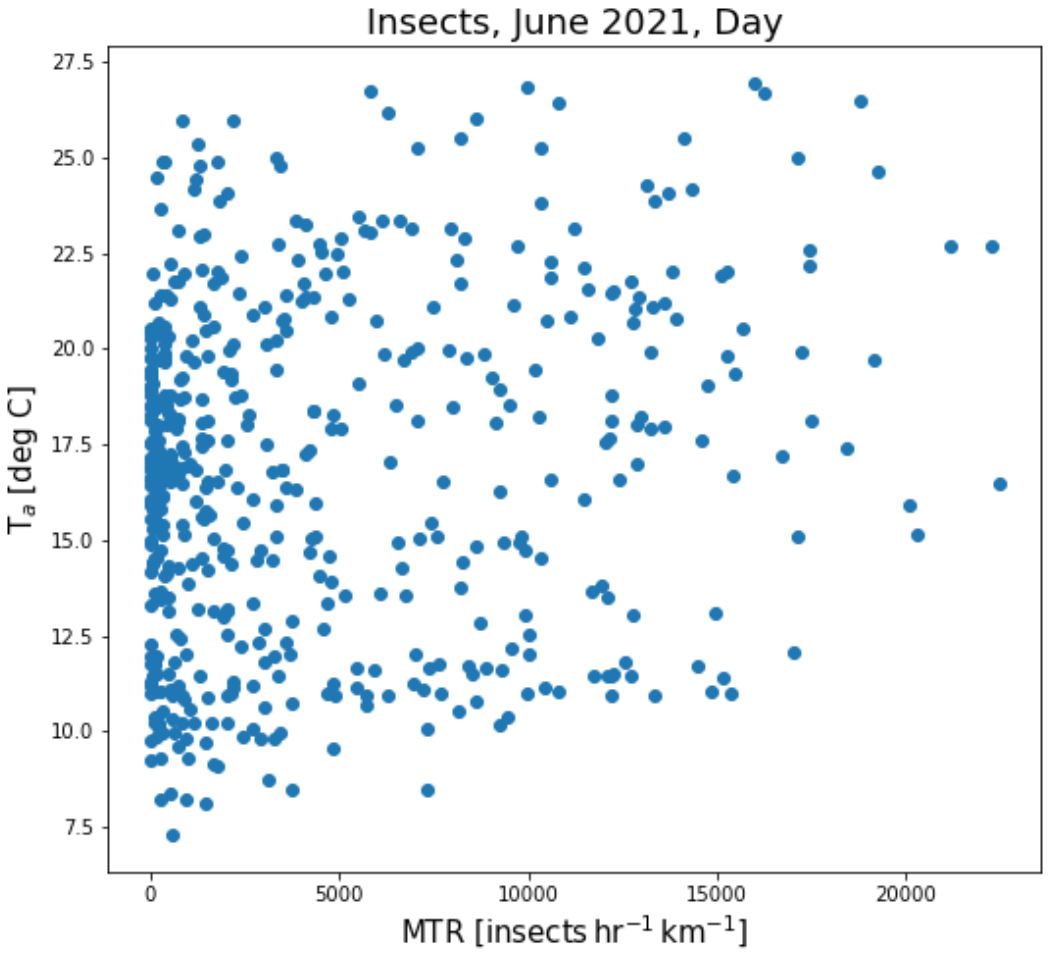

Insects, April 2021, Night
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
2
4
6
8
10
12
0
100
200
300
400

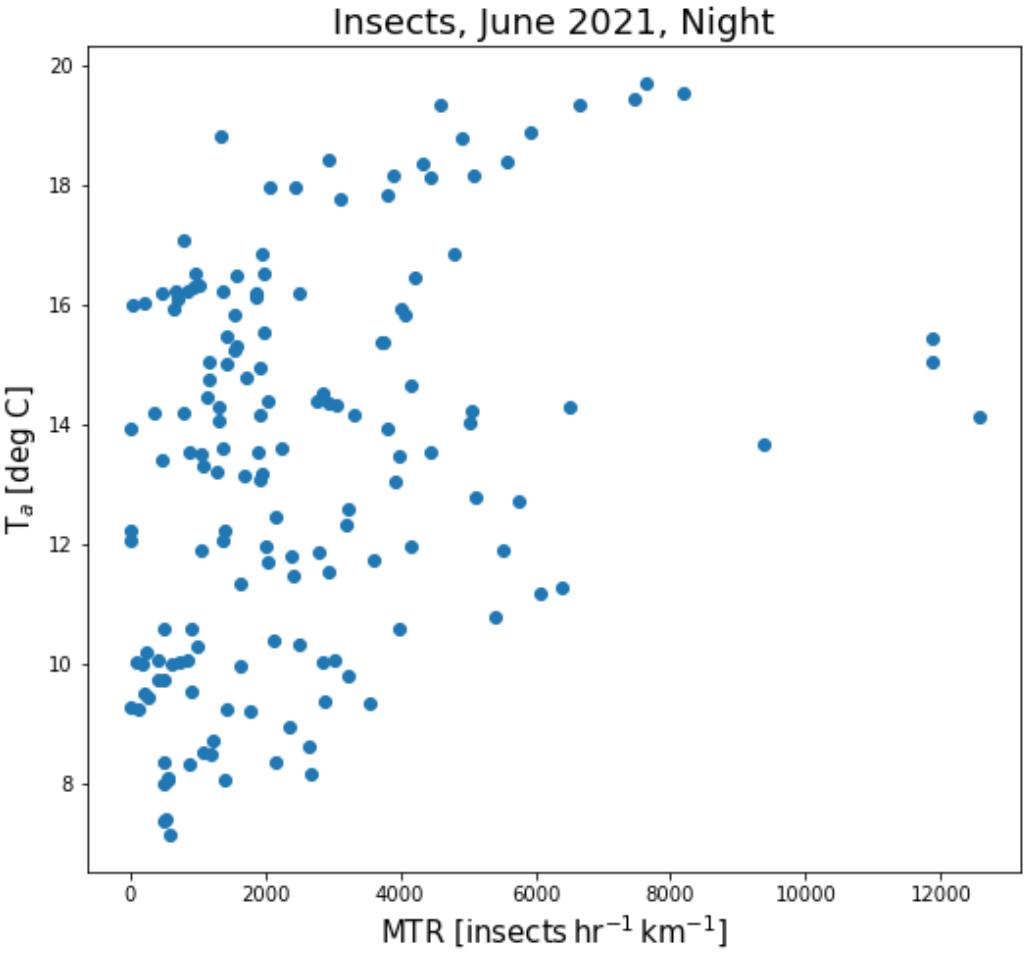

May 2021
MTR [insects hr^{-1} km^{-1}]
T_a [deg C]
0
2000
4000
6000
8000
10000
12000
14000
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
2021-05-01 00:00:00
2021-05-02 00:00:00
2021-05-03 00:00:00
2021-05-04 00:00:00
2021-05-05 00:00:00
2021-05-06 00:00:00
2021-05-07 00:00:00
2021-05-08 00:00:00
2021-05-09 00:00:00
2021-05-10 00:00:00
2021-05-11 00:00:00
2021-05-12 00:00:00
2021-05-13 00:00:00
2021-05-14 00:00:00
2021-05-15 00:00:00
2021-05-16 00:00:00
2021-05-17 00:00:00
2021-05-18 00:00:00
2021-05-19 00:00:00
2021-05-20 00:00:00
2021-05-21 00:00:00
2021-05-22 00:00:00
2021-05-23 00:00:00
2021-05-24 00:00:00
2021-05-25 00:00:00
2021-05-26 00:00:00
2021-05-27 00:00:00
2021-05-28 00:00:00
2021-05-29 00:00:00
2021-05-30 00:00:00
2021-05-31 00:00:00

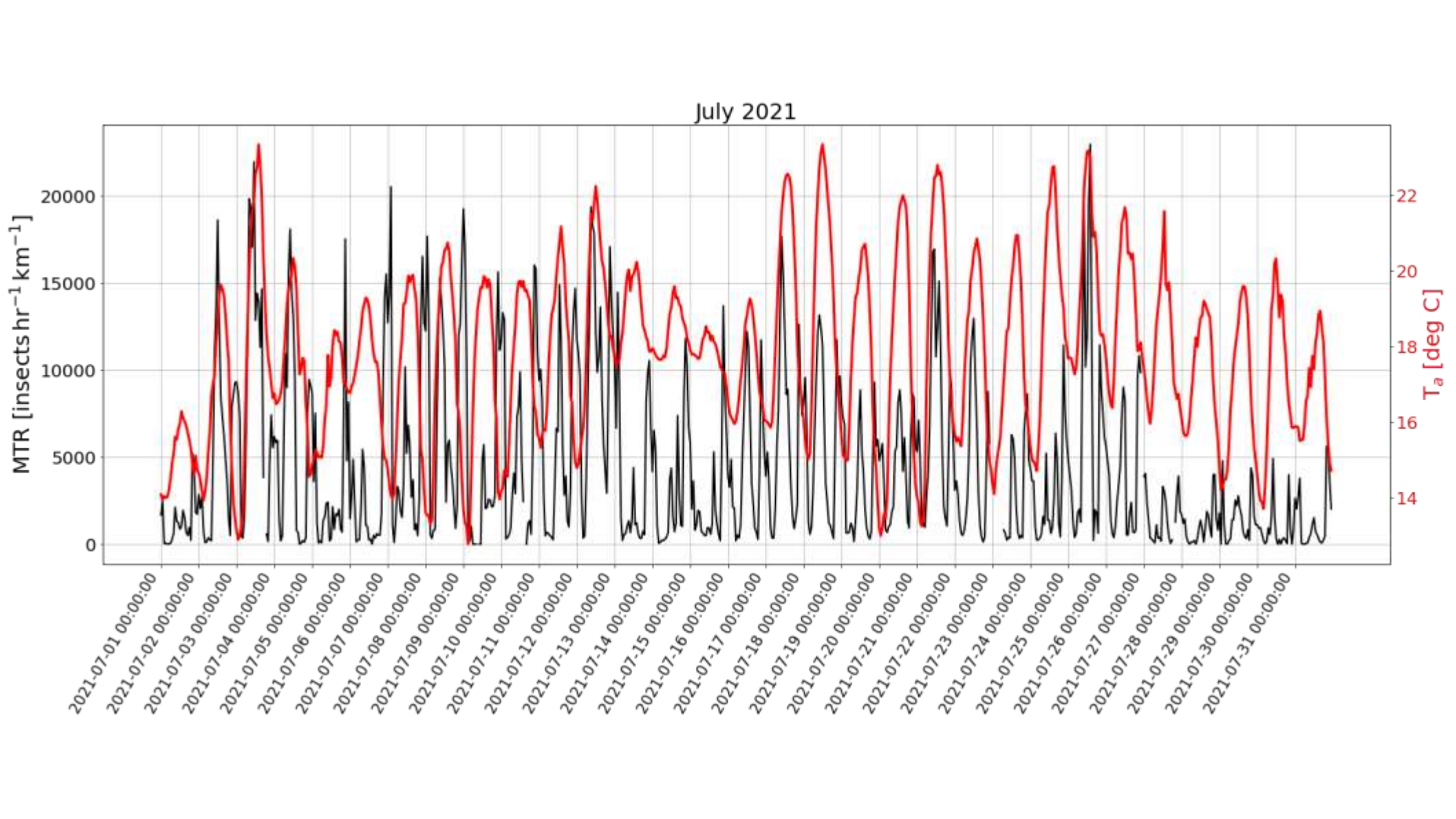

Insects, May 2021, Day
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0
2000
4000
6000
8000
10000
12000
14000


Insects, May 2021, Night
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
16
14
12
10
8
6
4
2
0
2000
4000
6000
8000
10000
12000
14000


June 2021
MTR [insects hr^{-1} km^{-1}]
T_a [deg C]
0
5000
10000
15000
20000
10.0
12.5
15.0
17.5
20.0
22.5
25.0
27.5
2021-06-01 00:00:00
2021-06-02 00:00:00
2021-06-03 00:00:00
2021-06-04 00:00:00
2021-06-05 00:00:00
2021-06-06 00:00:00
2021-06-07 00:00:00
2021-06-08 00:00:00
2021-06-09 00:00:00
2021-06-10 00:00:00
2021-06-11 00:00:00
2021-06-12 00:00:00
2021-06-13 00:00:00
2021-06-14 00:00:00
2021-06-15 00:00:00
2021-06-16 00:00:00
2021-06-17 00:00:00
2021-06-18 00:00:00
2021-06-19 00:00:00
2021-06-20 00:00:00
2021-06-21 00:00:00
2021-06-22 00:00:00
2021-06-23 00:00:00
2021-06-24 00:00:00
2021-06-25 00:00:00
2021-06-26 00:00:00
2021-06-27 00:00:00
2021-06-28 00:00:00
2021-06-29 00:00:00
2021-06-30 00:00:00


Insects, June 2021, Day
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
0
5000
10000
15000
20000


Insects, June 2021, Night
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
20
18
16
14
12
10
8
0
2000
4000
6000
8000
10000
12000


July 2021
MTR [insects hr^{-1} km^{-1}]
T_a [deg C]
0
5000
10000
15000
20000
14
16
18
20
22
2021-07-01 00:00:00
2021-07-02 00:00:00
2021-07-03 00:00:00
2021-07-04 00:00:00
2021-07-05 00:00:00
2021-07-06 00:00:00
2021-07-07 00:00:00
2021-07-08 00:00:00
2021-07-09 00:00:00
2021-07-10 00:00:00
2021-07-11 00:00:00
2021-07-12 00:00:00
2021-07-13 00:00:00
2021-07-14 00:00:00
2021-07-15 00:00:00
2021-07-16 00:00:00
2021-07-17 00:00:00
2021-07-18 00:00:00
2021-07-19 00:00:00
2021-07-20 00:00:00
2021-07-21 00:00:00
2021-07-22 00:00:00
2021-07-23 00:00:00
2021-07-24 00:00:00
2021-07-25 00:00:00
2021-07-26 00:00:00
2021-07-27 00:00:00
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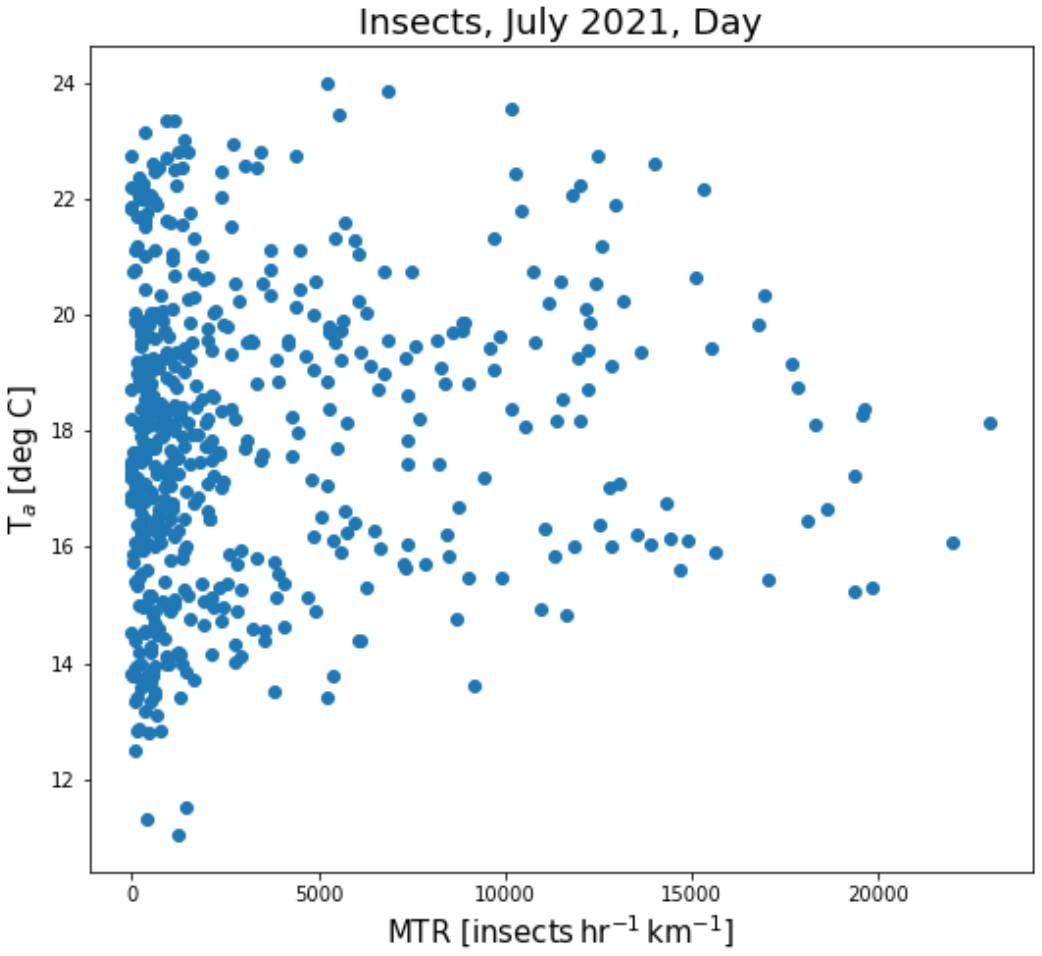
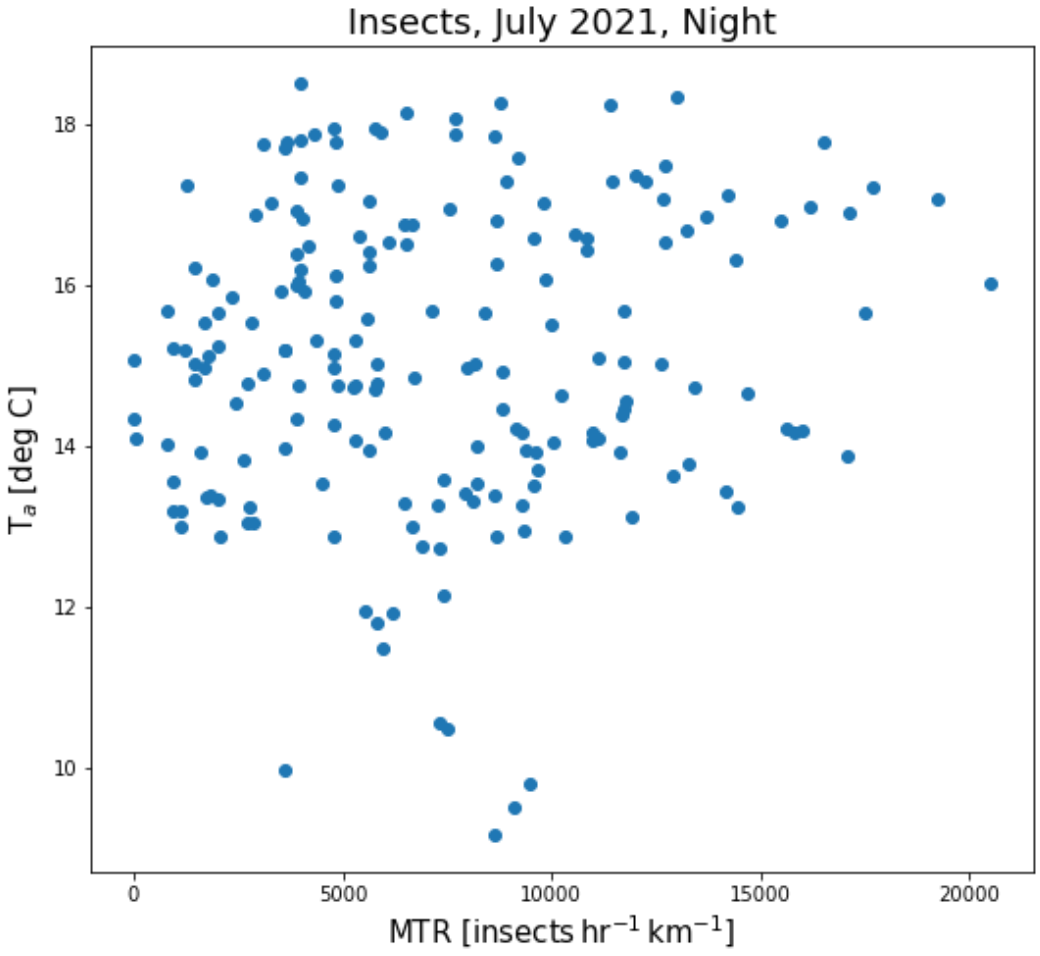
2021-07-29 00:00:00
2021-07-30 00:00:00
2021-07-31 00:00:00


Insects, July 2021, Day
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
24
22
20
18
16
14
12
0
5000
10000
15000
20000


Insects, July 2021, Night
T_a [deg C]
MTR [insects hr^{-1} km^{-1}]
18
16
14
12
10
0
5000
10000
15000
20000