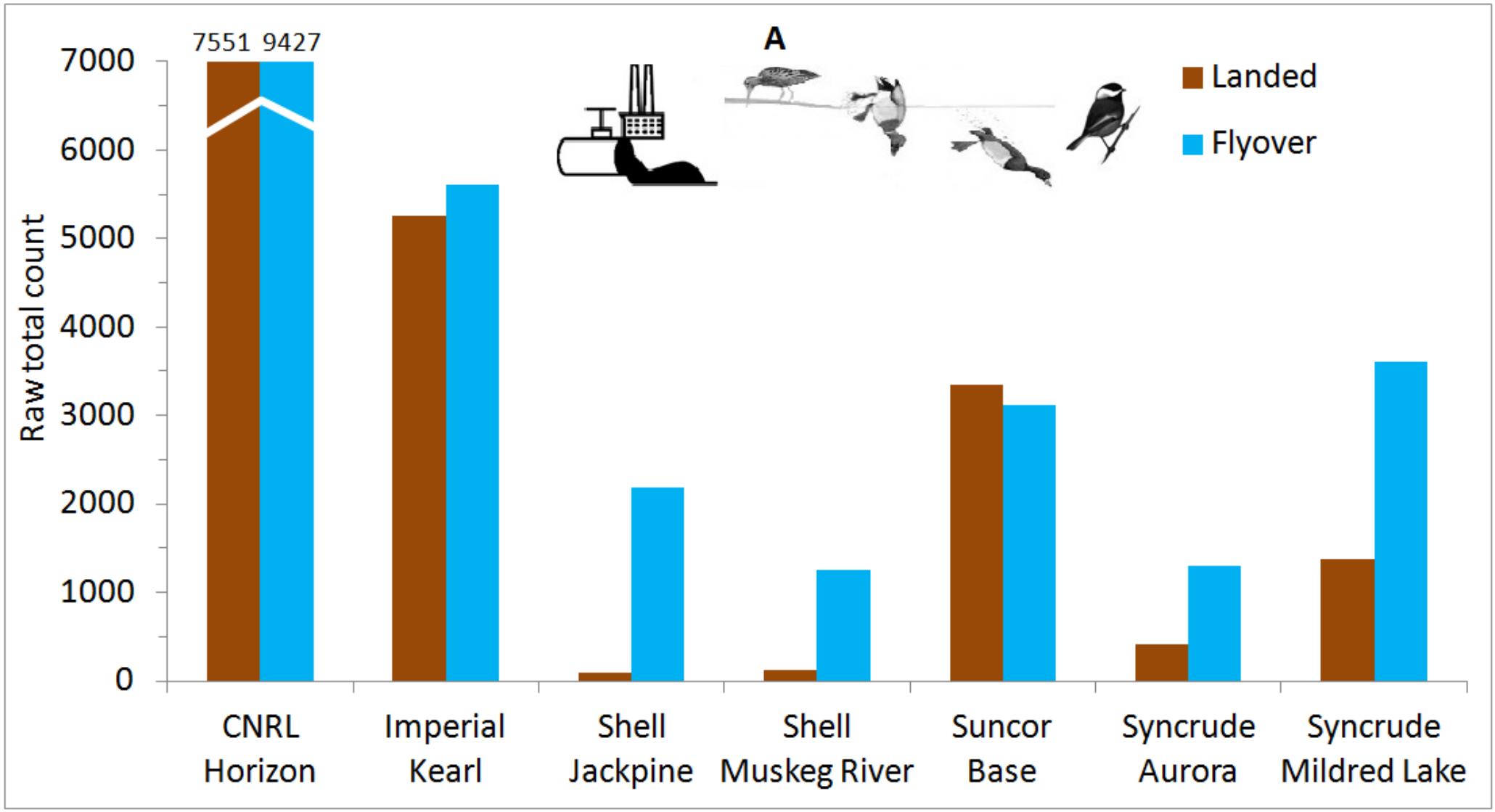
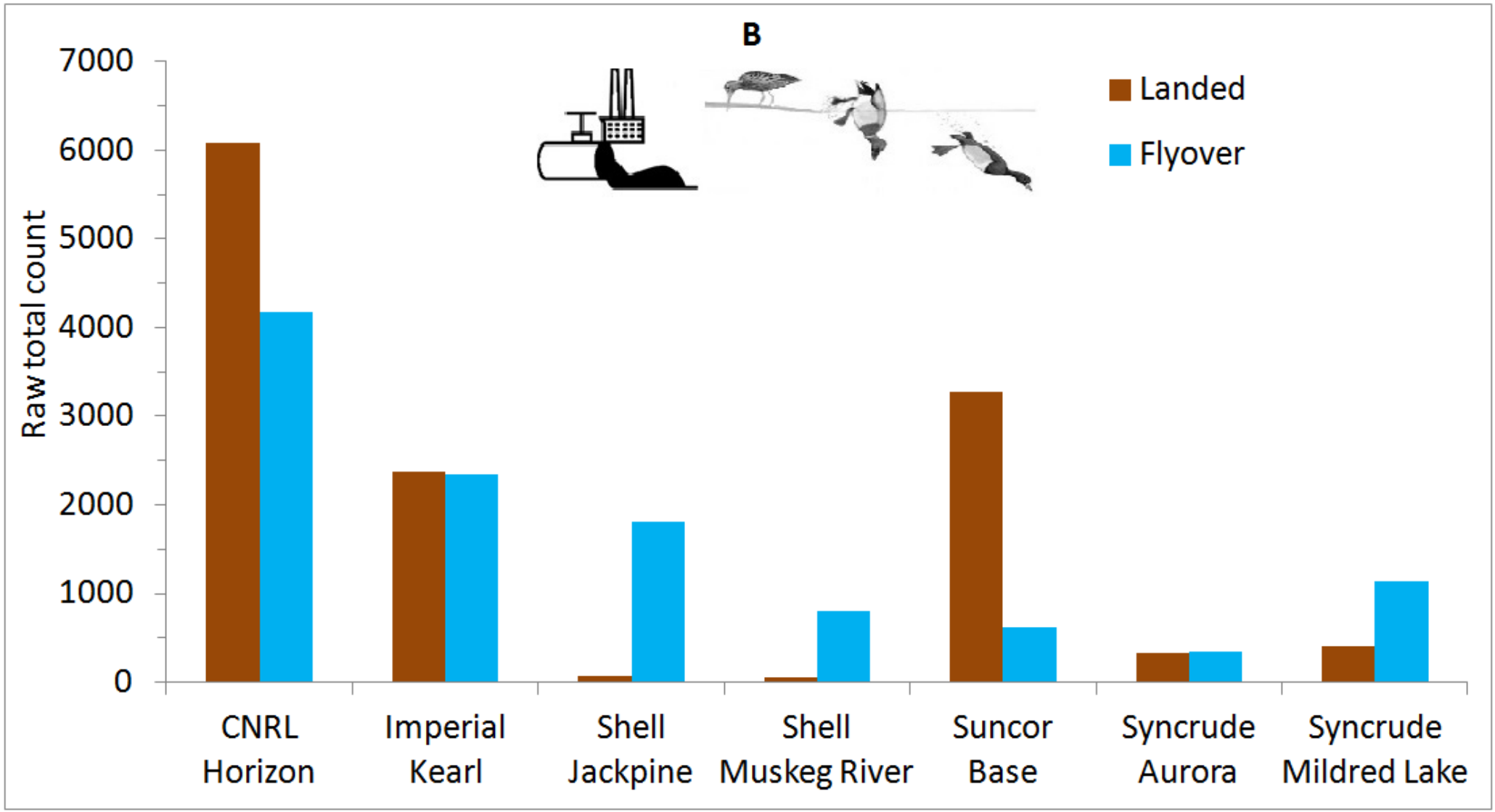
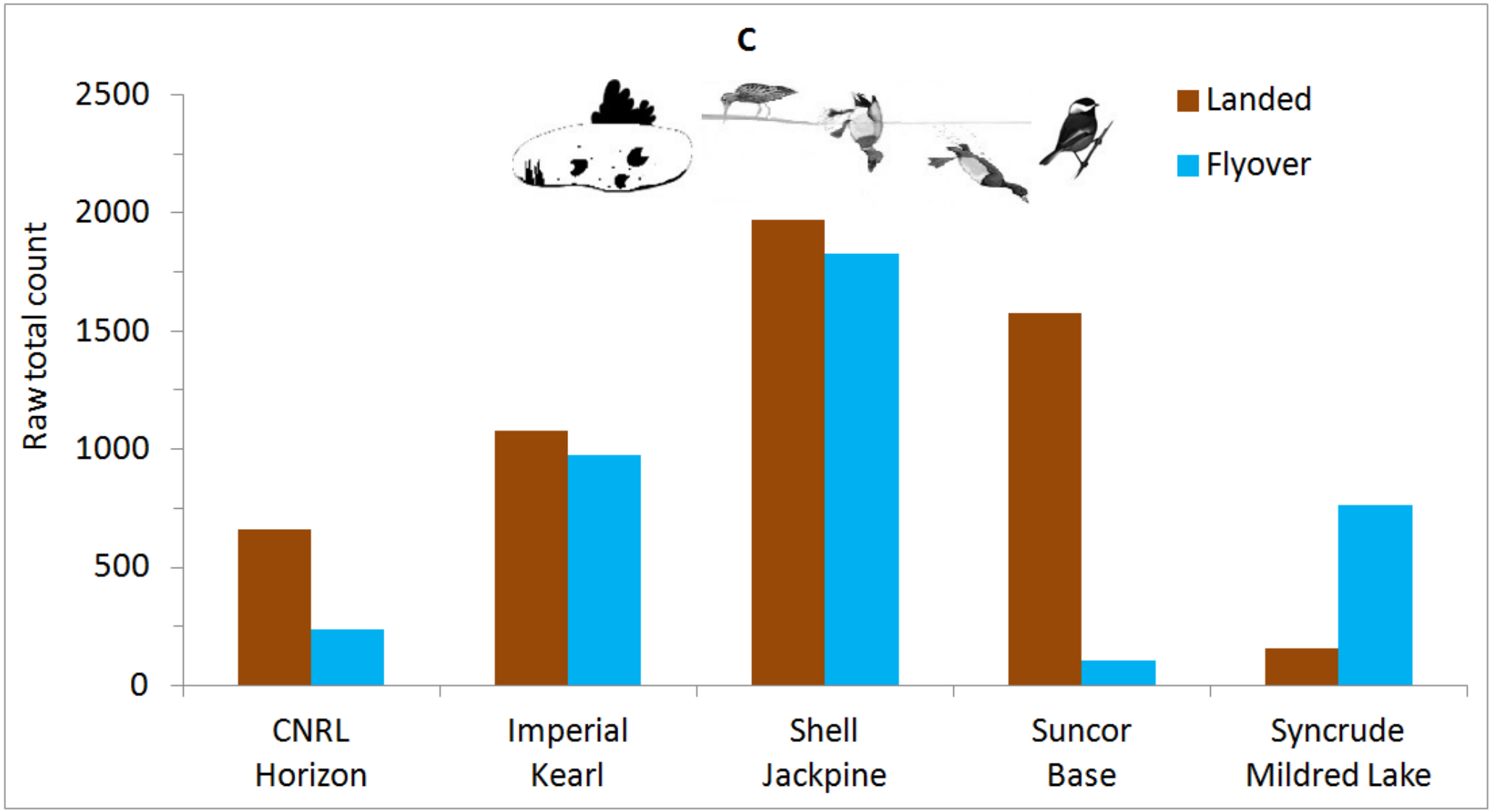
Figure 3 Number of birds flying over *vs.* landed

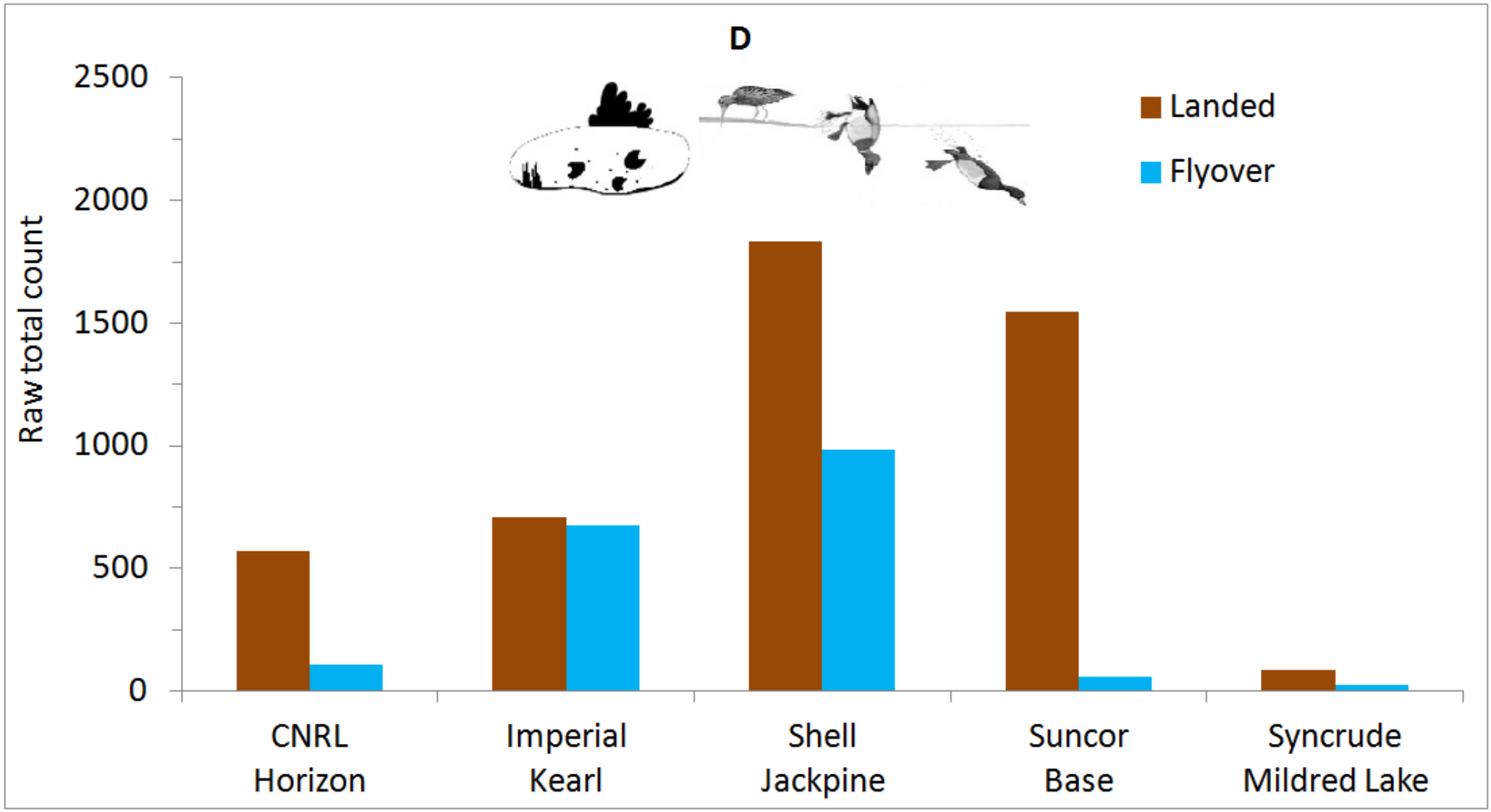
Total number of birds detected flying over *vs.* landed for each operator. Results are tallied separately for process-affected water ponds (Panels A and B) and for freshwater ponds (Panels C and D) and for all guilds (Panels A and C) and for only those in the three foraging guilds targeted by the monitoring program (i.e., birds that dabble, dive, or wade; Panels B and D).

RAW

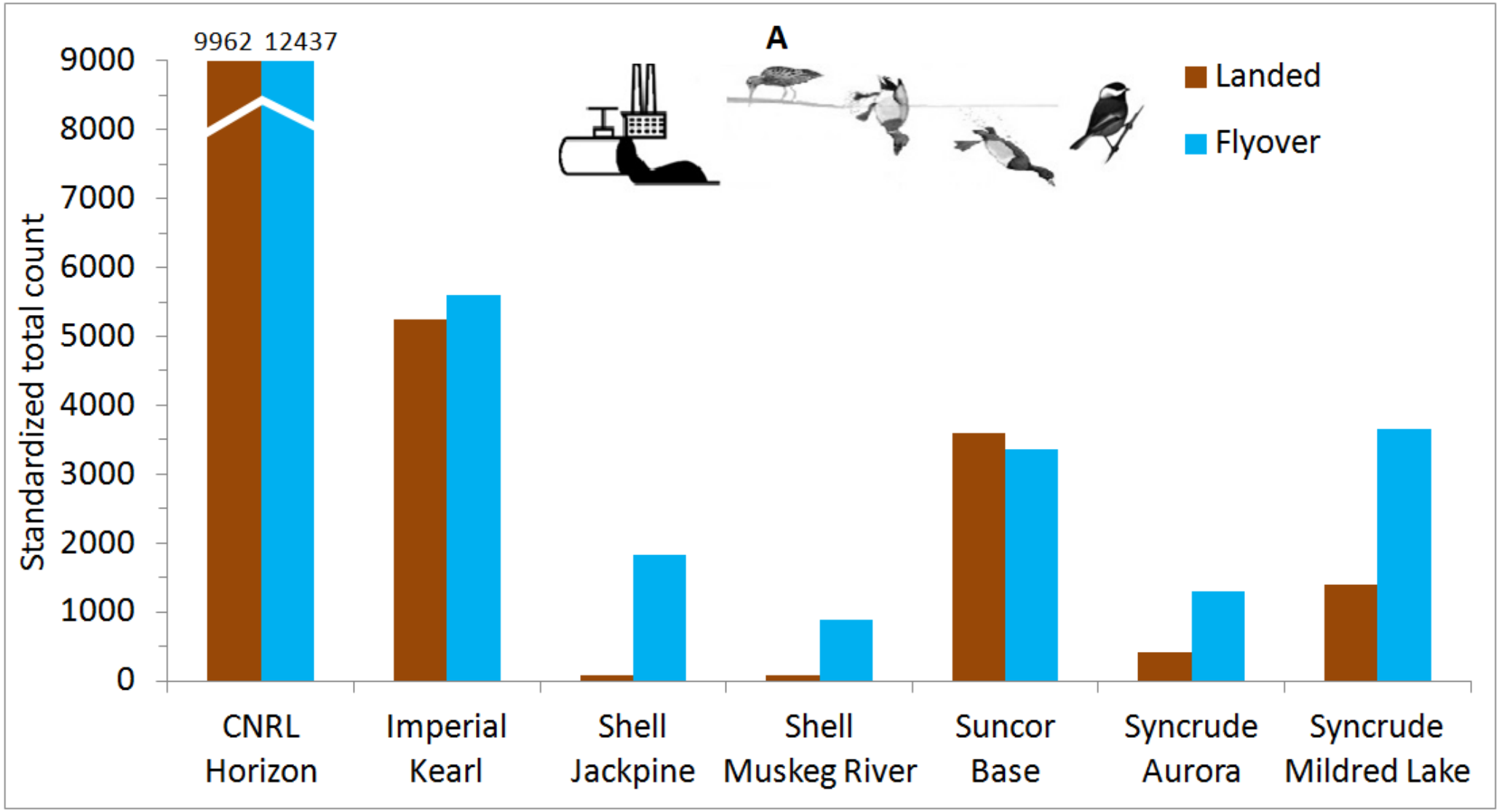


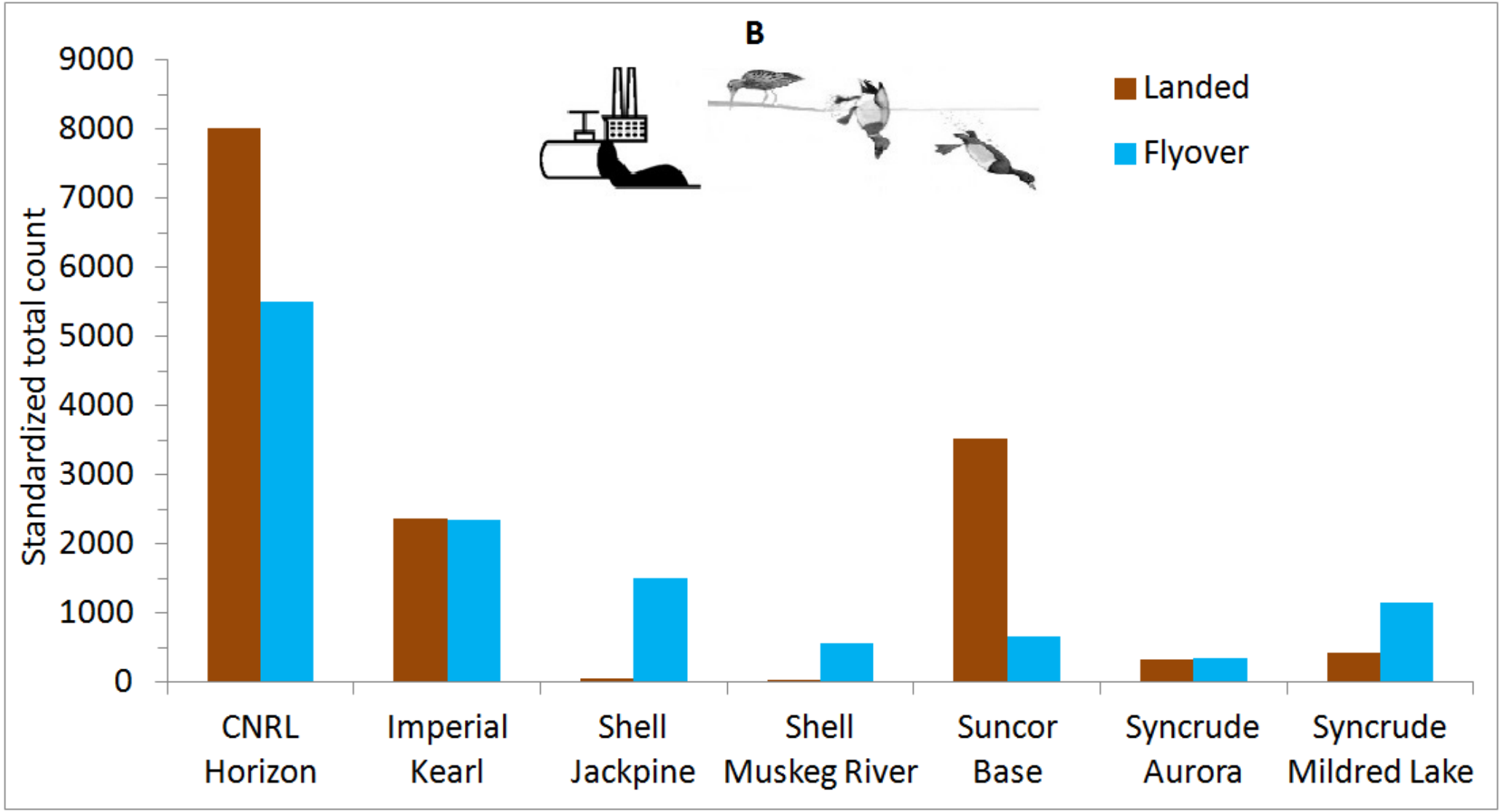

B
Landed
Flyover
Raw total count
7000
6000
5000
4000
3000
2000
1000
0
CNRL Horizon
Imperial Kearl
Shell Jackpine
Shell Muskeg River
Suncor Base
Syncrude Aurora
Syncrude Mildred Lake


C
Landed
Flyover
Raw total count
2500
2000
1500
1000
500
0
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake


D
Landed
Flyover
Raw total count
2500
2000
1500
1000
500
0
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake

STANDARDIZED TO DESIGNATED NUMBER OF SPATIAL AND TEMPORAL SAMPLES




B
Landed
Flyover
Standardized total count
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
CNRL Horizon
Imperial Kearl
Shell Jackpine
Shell Muskeg River
Suncor Base
Syncrude Aurora
Syncrude Mildred Lake

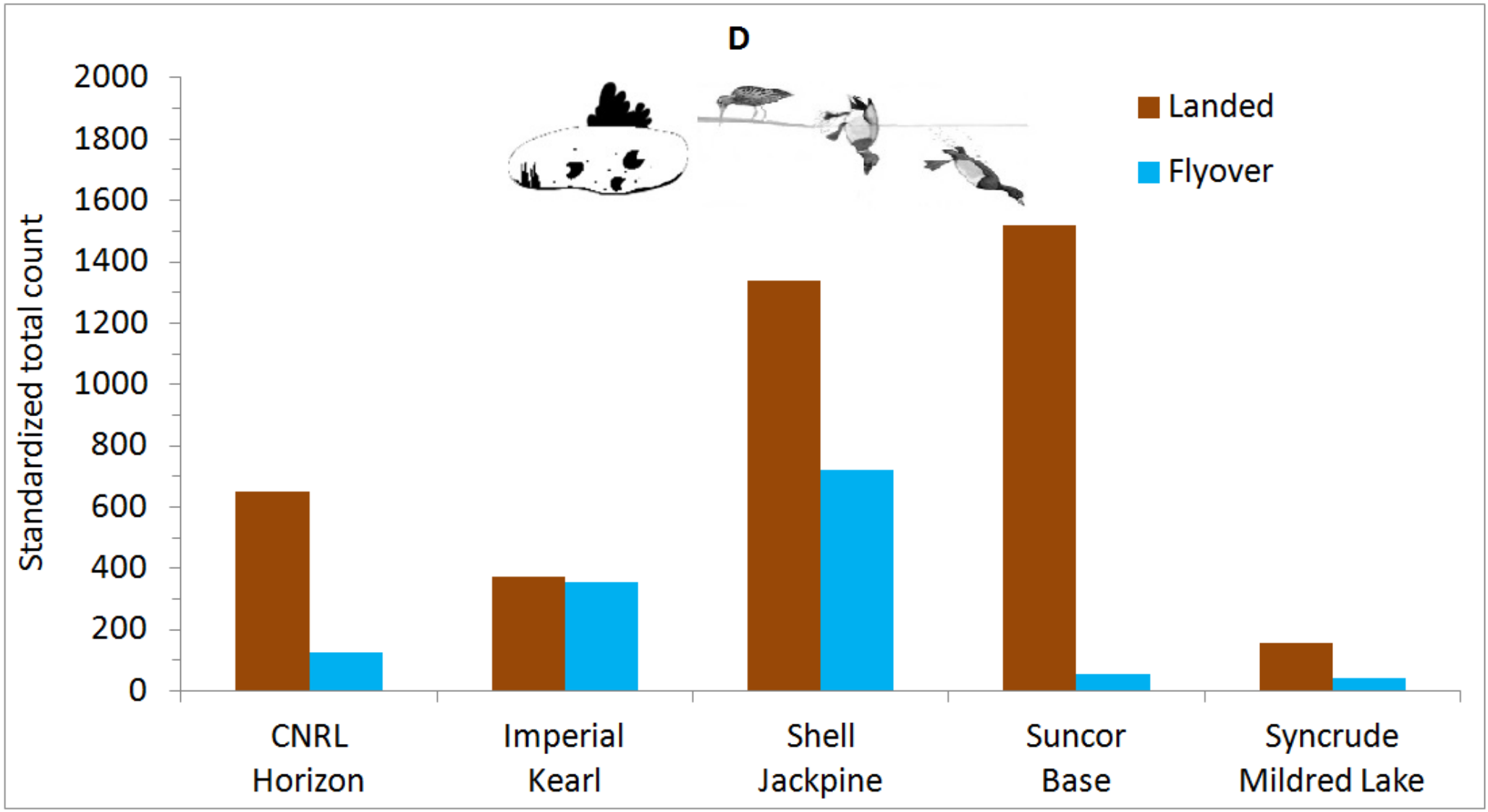
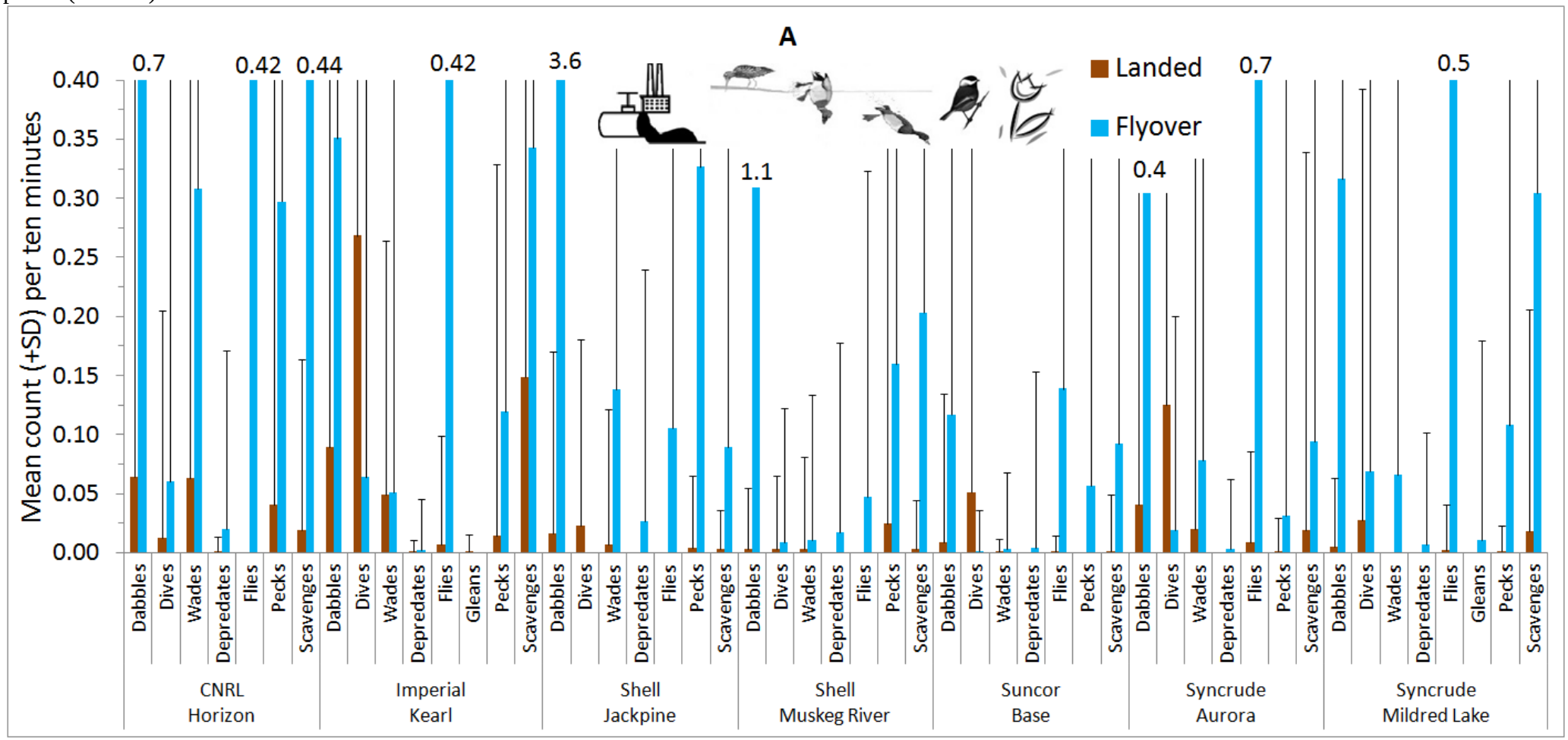
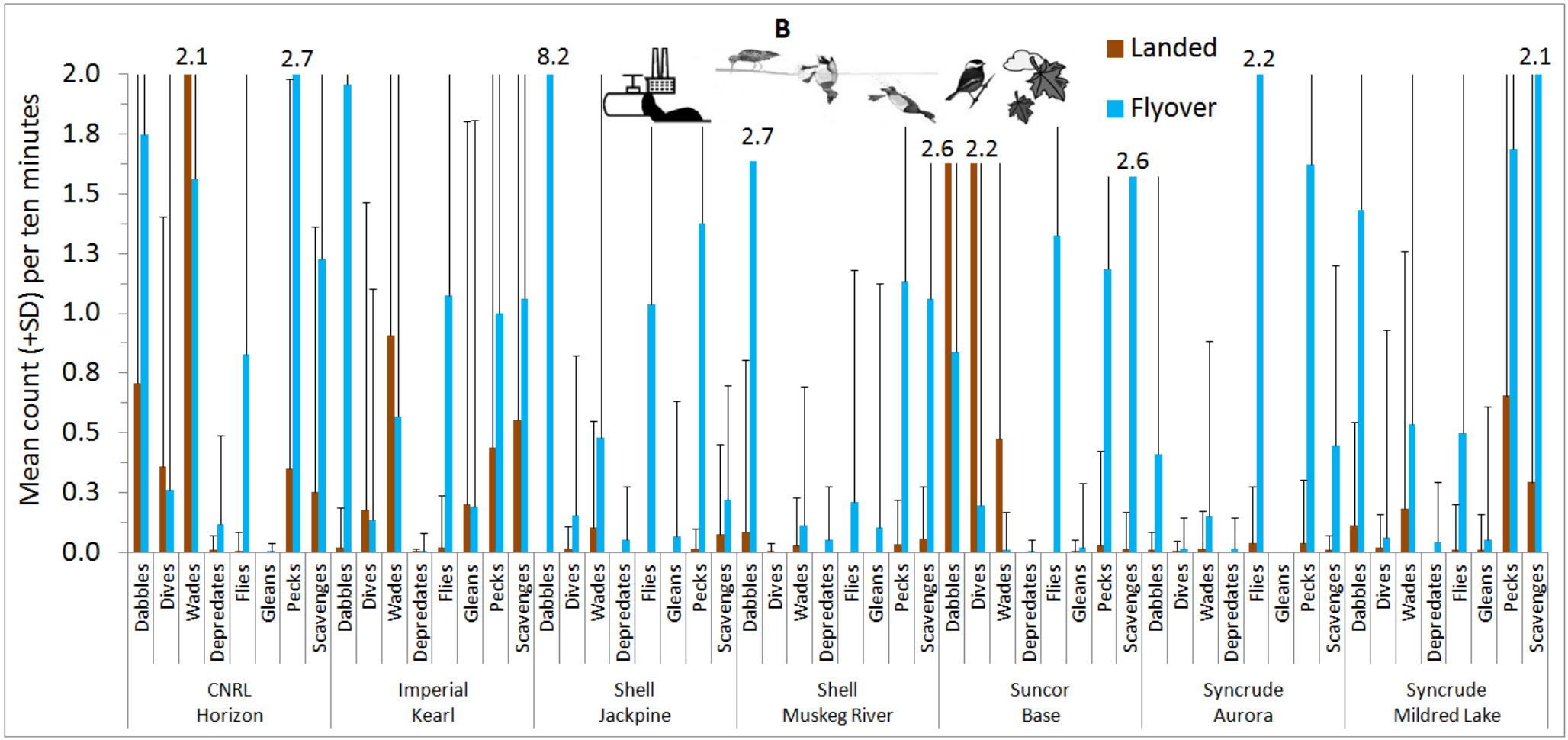
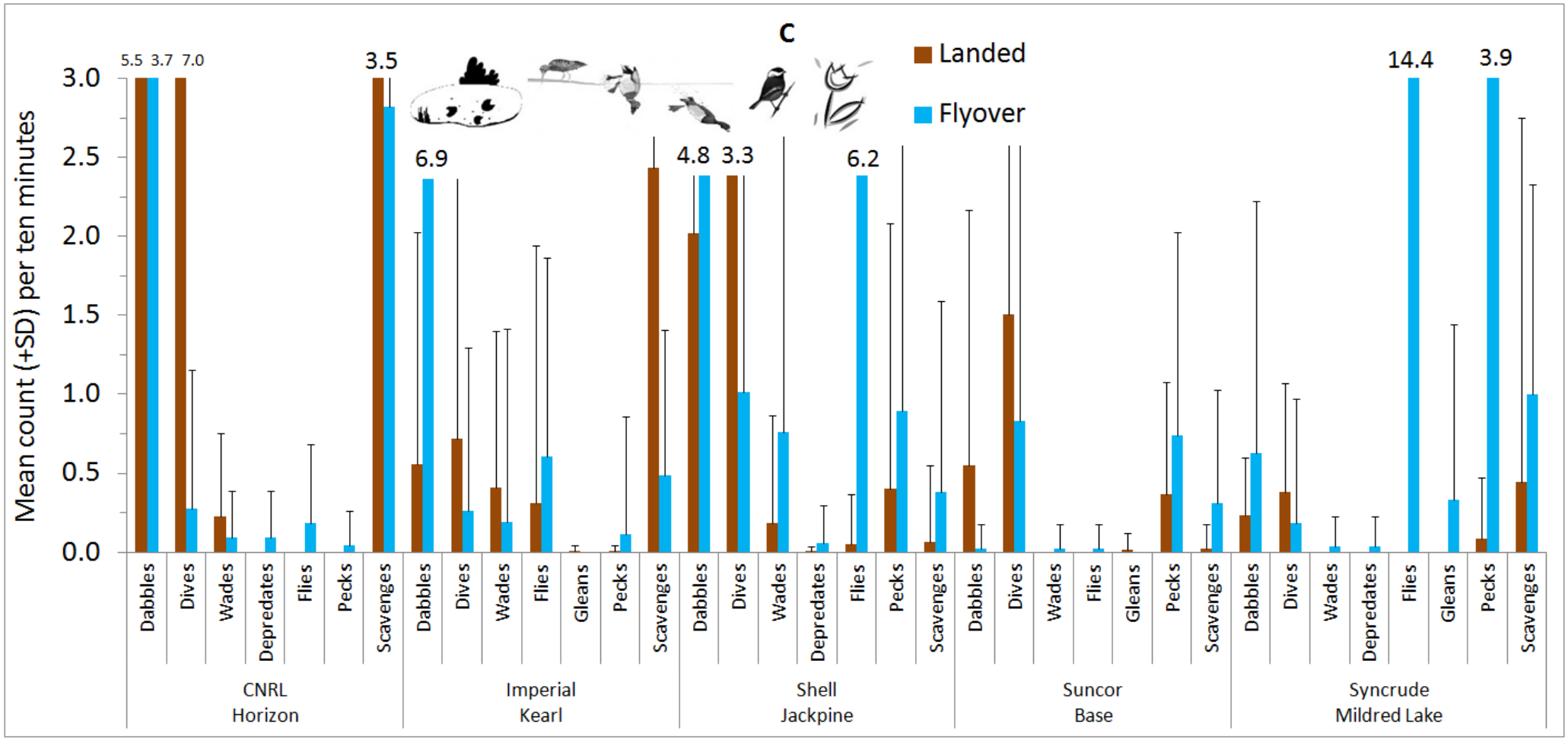

D
Landed
Flyover
Standardized total count
2000
1800
1600
1400
1200
1000
800
600
400
200
0
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake

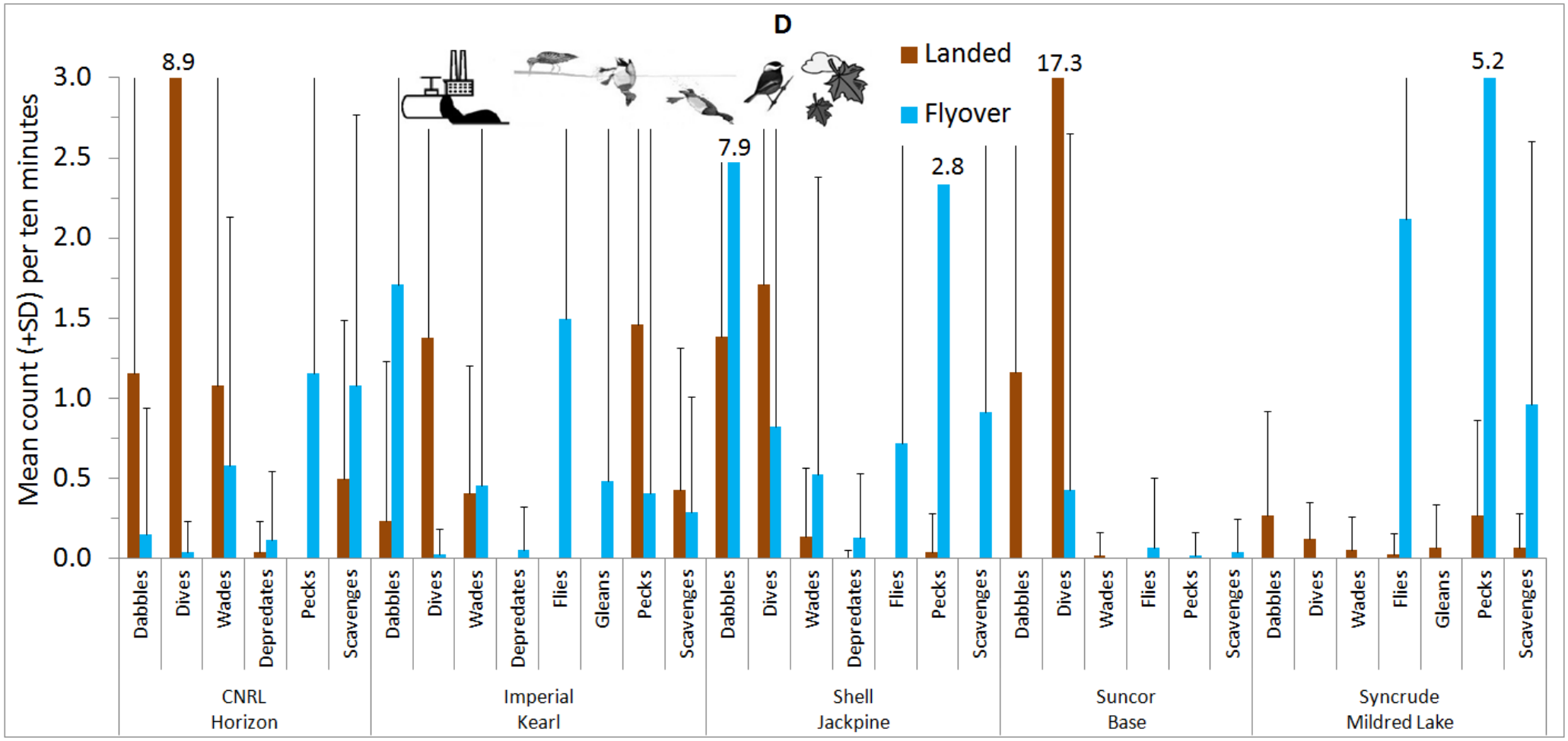
Figure 4 Bird detections by foraging mode

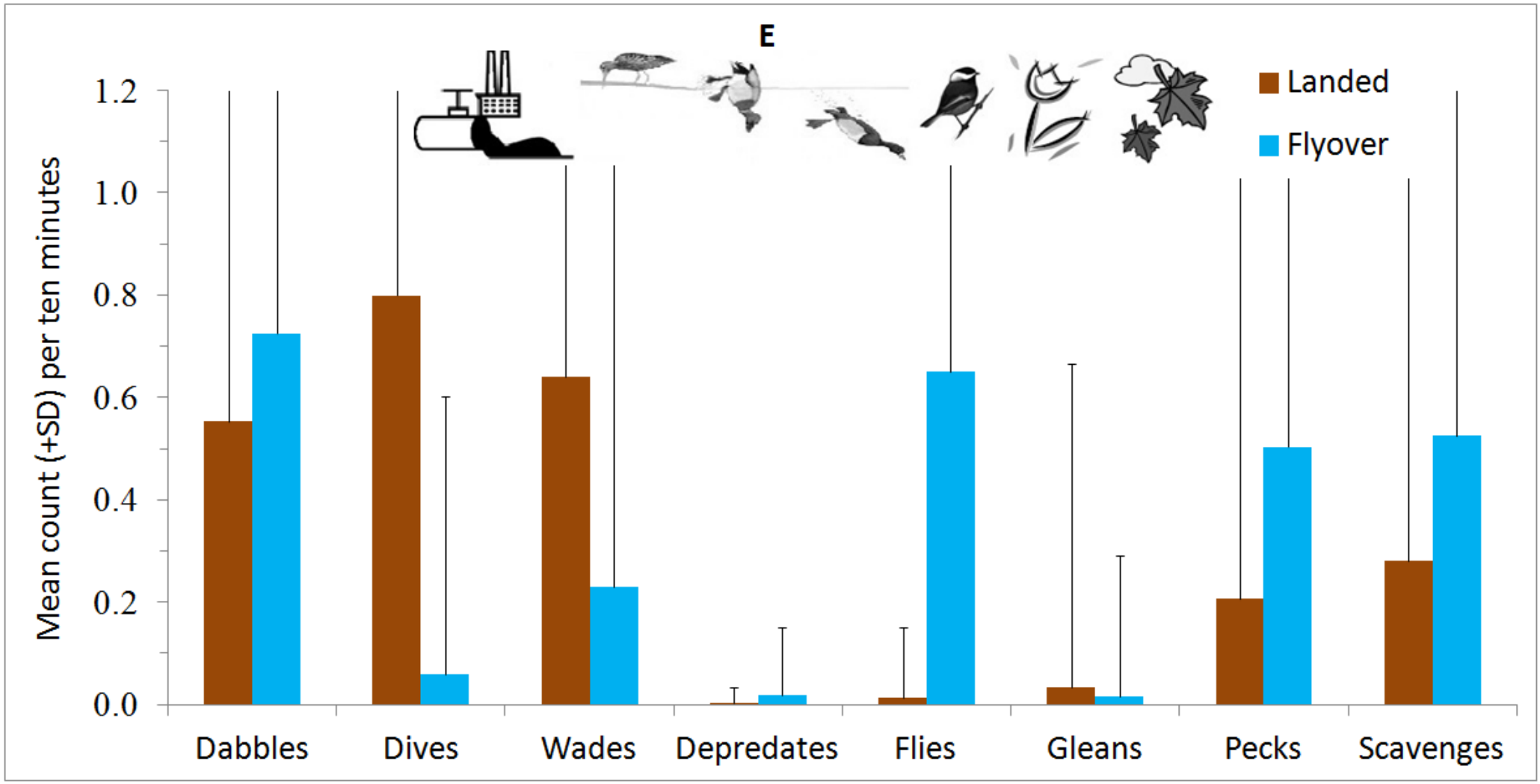
Mean number of birds (+ SD) detected per 10 minutes for birds categorized by their primary mode of foraging during standardized monitoring sessions for each of process-affected ponds (Panels A and B) and freshwater ponds (Panels C and D) and for each of spring (Panels A and C) and fall (Panels B and D). The average detection rate of birds across all operators for both seasons is shown for each guild separately for process-affected ponds (Panel E) and freshwater ponds (Panel F).




B
Landed
Flyover
Mean count (+SD) per ten minutes
2.0
1.8
1.5
1.3
1.0
0.8
0.5
0.3
0.0
2.1
2.7
8.2
2.7
2.6
2.2
2.6
2.2
2.1
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges
CNRL Horizon
Imperial Kearl
Shell Jackpine
Shell Muskeg River
Suncor Base
Syncrude Aurora
Syncrude Mildred Lake


C
Landed
Flyover
Mean count (+SD) per ten minutes
3.0
2.5
2.0
1.5
1.0
0.5
0.0
5.5 3.7 7.0
3.5
6.9
4.8 3.3
6.2
14.4
3.9
Dabbles
Dives
Wades
Depredates
Flies
Pecks
Scavenges
Gleans
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake


D
Landed
Flyover
Mean count (+SD) per ten minutes
3.0
2.5
2.0
1.5
1.0
0.5
0.0
8.9
7.9
2.8
17.3
5.2
Dabbles
Dives
Wades
Depredates
Pecks
Scavenges
Flies
Gleans
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake


E
Landed
Flyover
Mean count (+SD) per ten minutes
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges

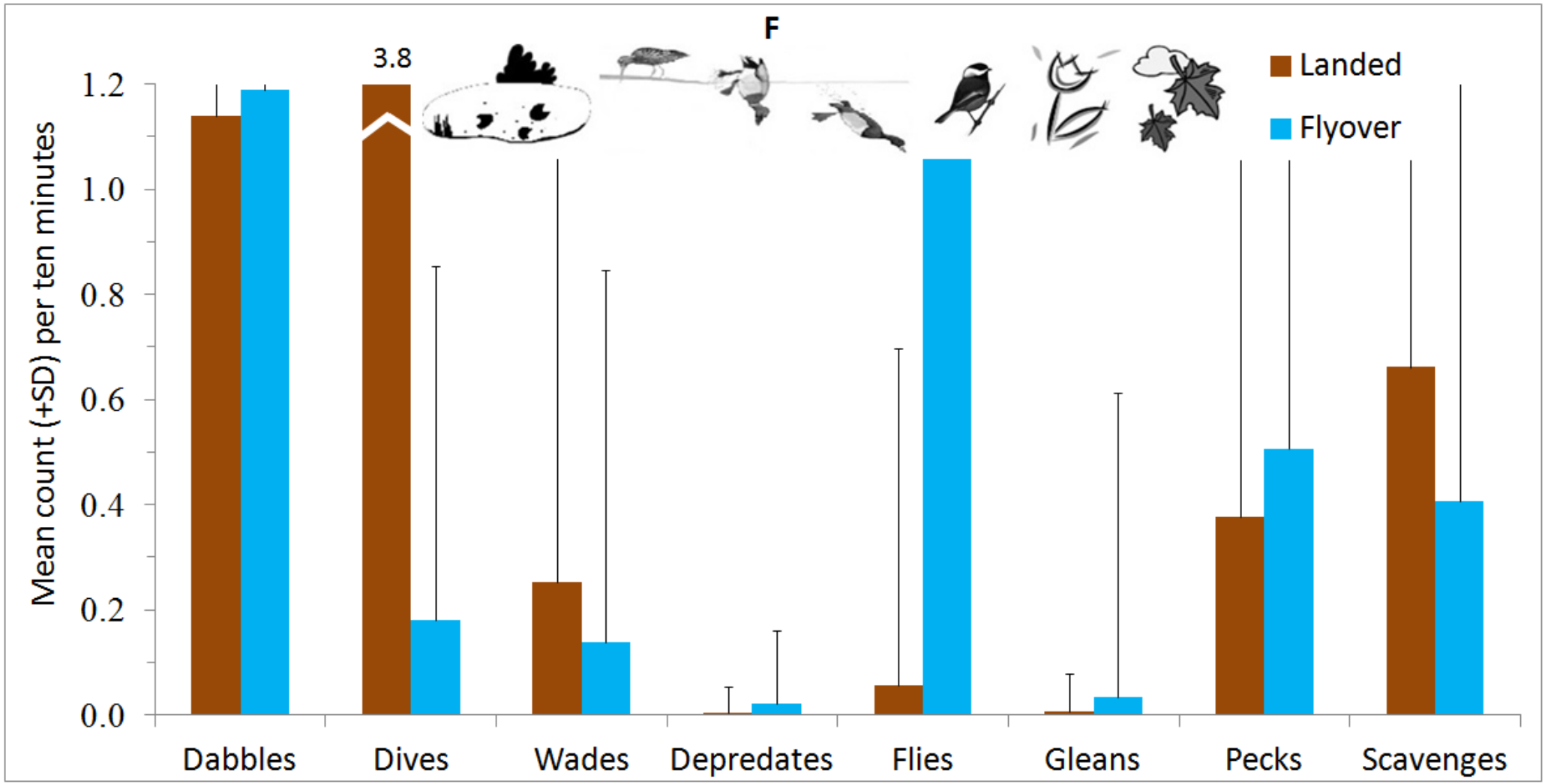
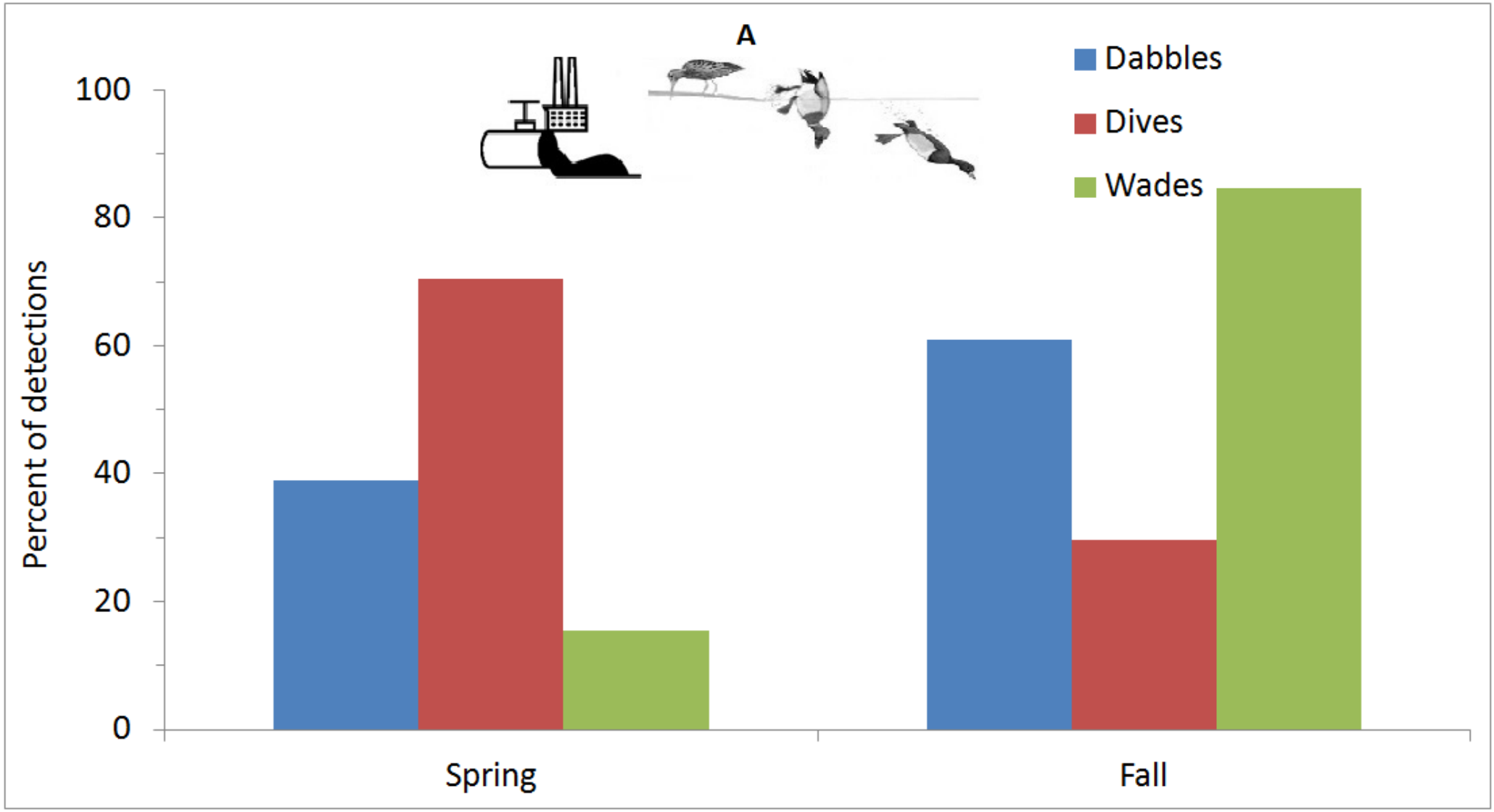

F
3.8
Landed
Flyover
Mean count (+SD) per ten minutes
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges

Figure 5 Bird detections by season for target guilds

Detections of landed birds by season at process-affected ponds for the target foraging guilds of birds that dabble, dive, or wade expressed as a percentage of total (Panel A), and the total number of detections (Panel B).



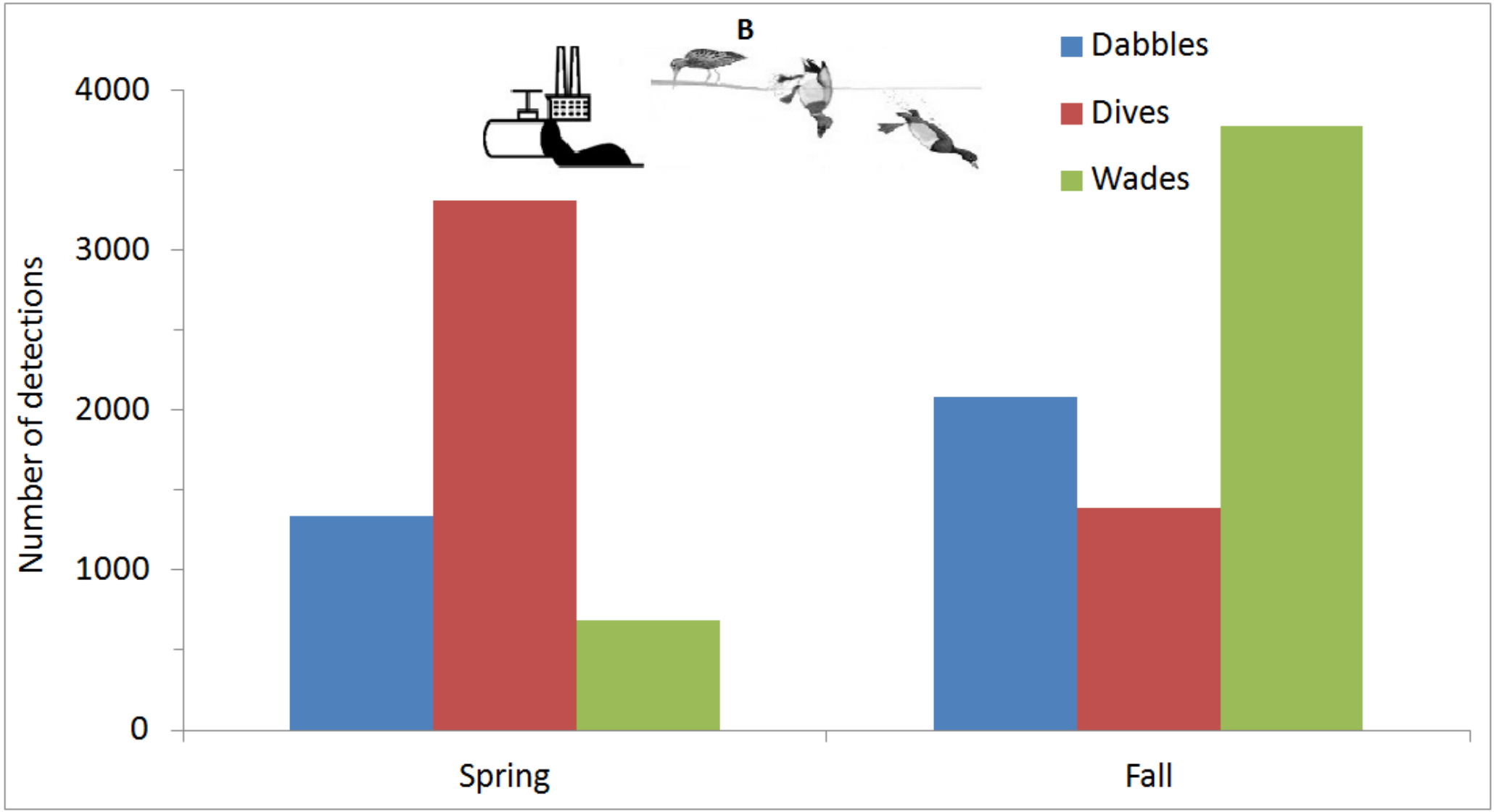
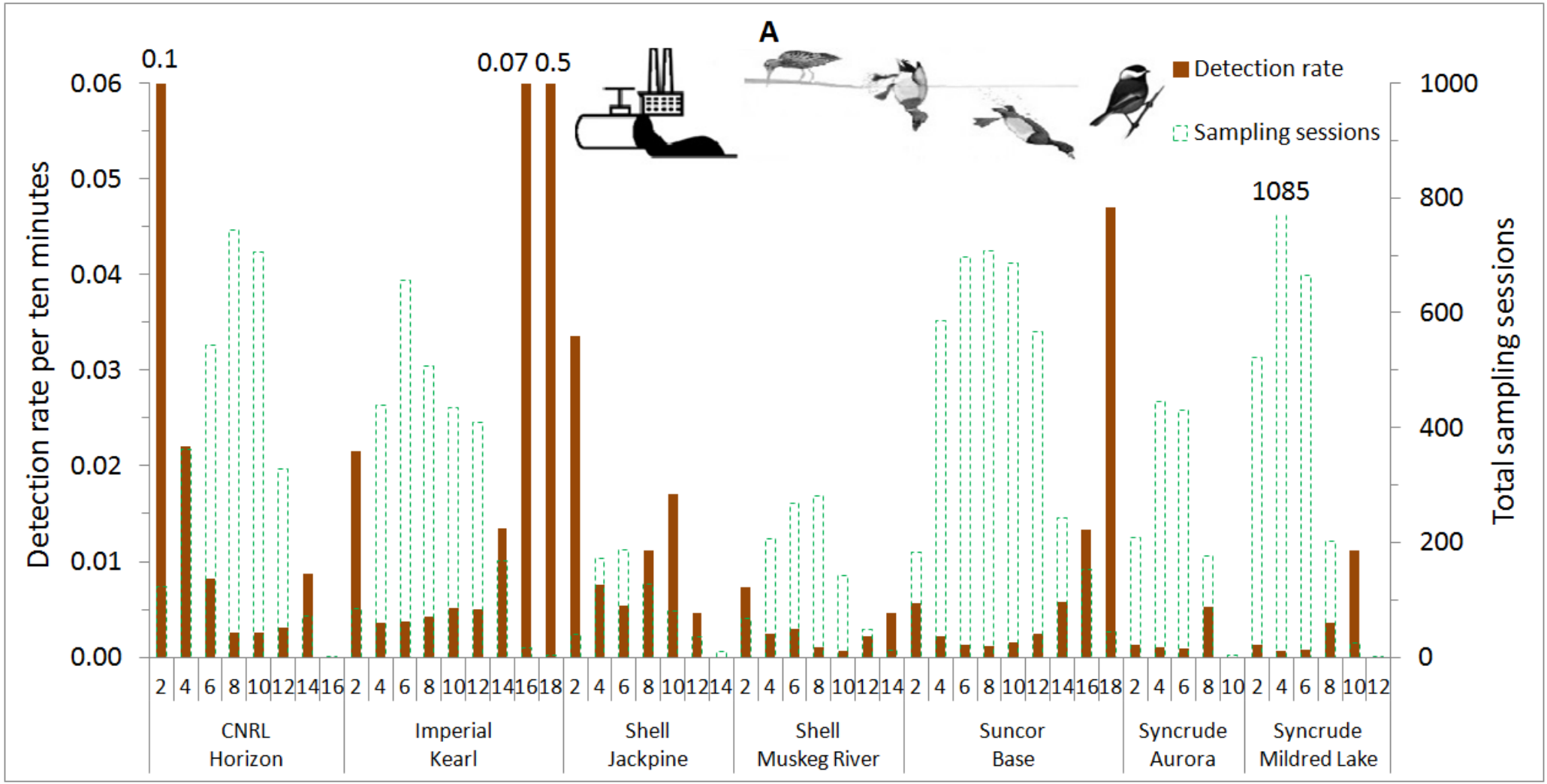
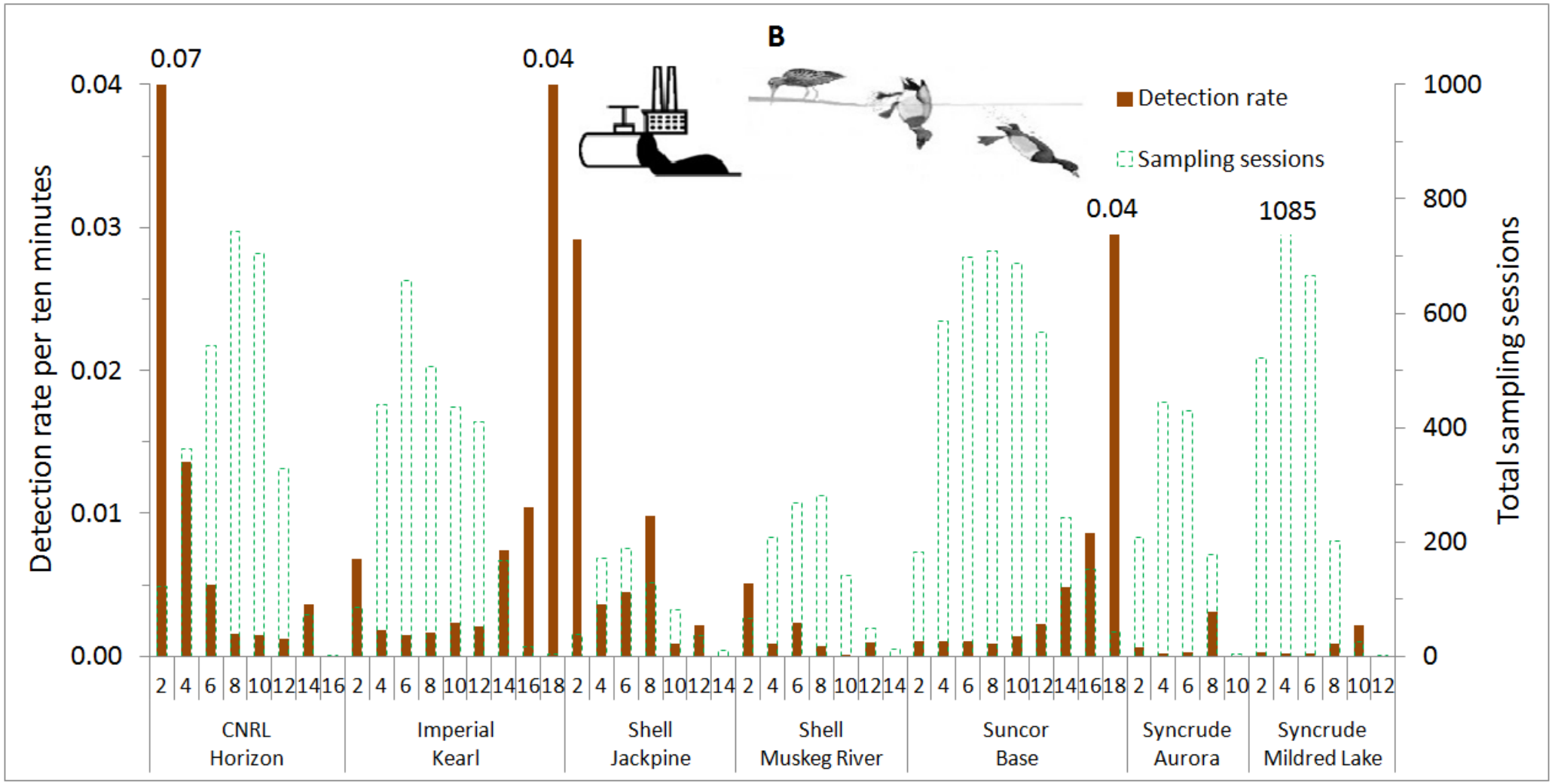
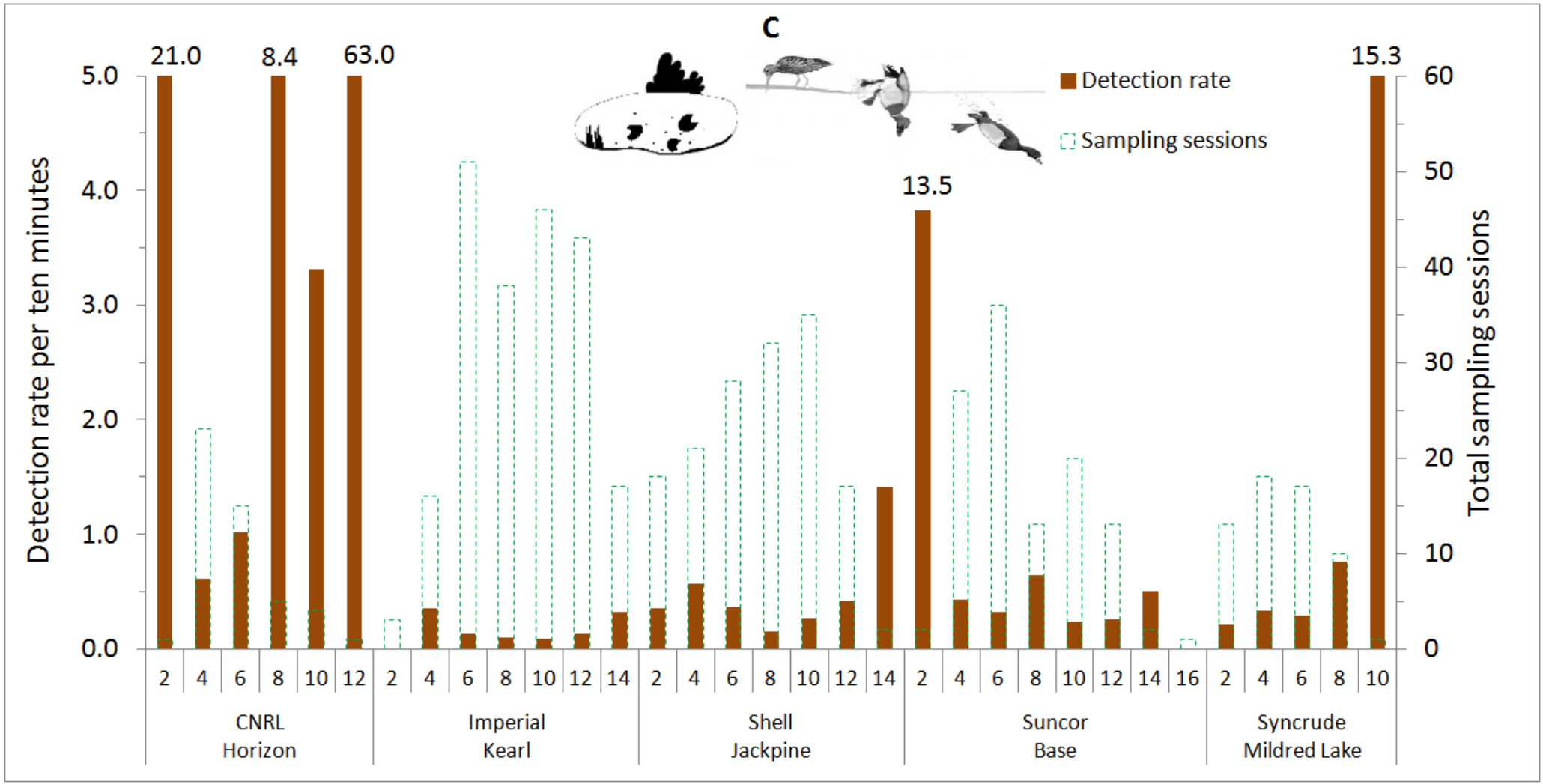

B
Dabbles
Dives
Wades
4000
3000
2000
1000
0
Number of detections
Spring
Fall

Figure 6 Bird detections by operator and hour since sunrise

Rate of bird detections (standardized to 10 minute observation sessions and corrected for the number of visits), in each 2-hour time block since sunrise, for ponds containing process-affected water (Panels A and B) and freshwater (Panels C and D), and for all guilds (Panels A and C) and for target guilds (Panels B and D). The number of sampling sessions in each time block is given on the secondary y-axis.




B
0.07
0.04
0.04
1085
Detection rate
Sampling sessions
Detection rate per ten minutes
Total sampling sessions
0.00
0.01
0.02
0.03
0.04
0
200
400
600
800
1000
2 4 6 8 10 12 14 16
2 4 6 8 10 12 14 16 18
2 4 6 8 10 12 14
2 4 6 8 10 12 14
2 4 6 8 10 12 14 16 18
2 4 6 8 10
2 4 6 8 10 12
CNRL Horizon
Imperial Kearl
Shell Jackpine
Shell Muskeg River
Suncor Base
Syncrude Aurora
Syncrude Mildred Lake


C
Detection rate
Sampling sessions
Detection rate per ten minutes
Total sampling sessions
21.0
8.4
63.0
13.5
15.3
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake

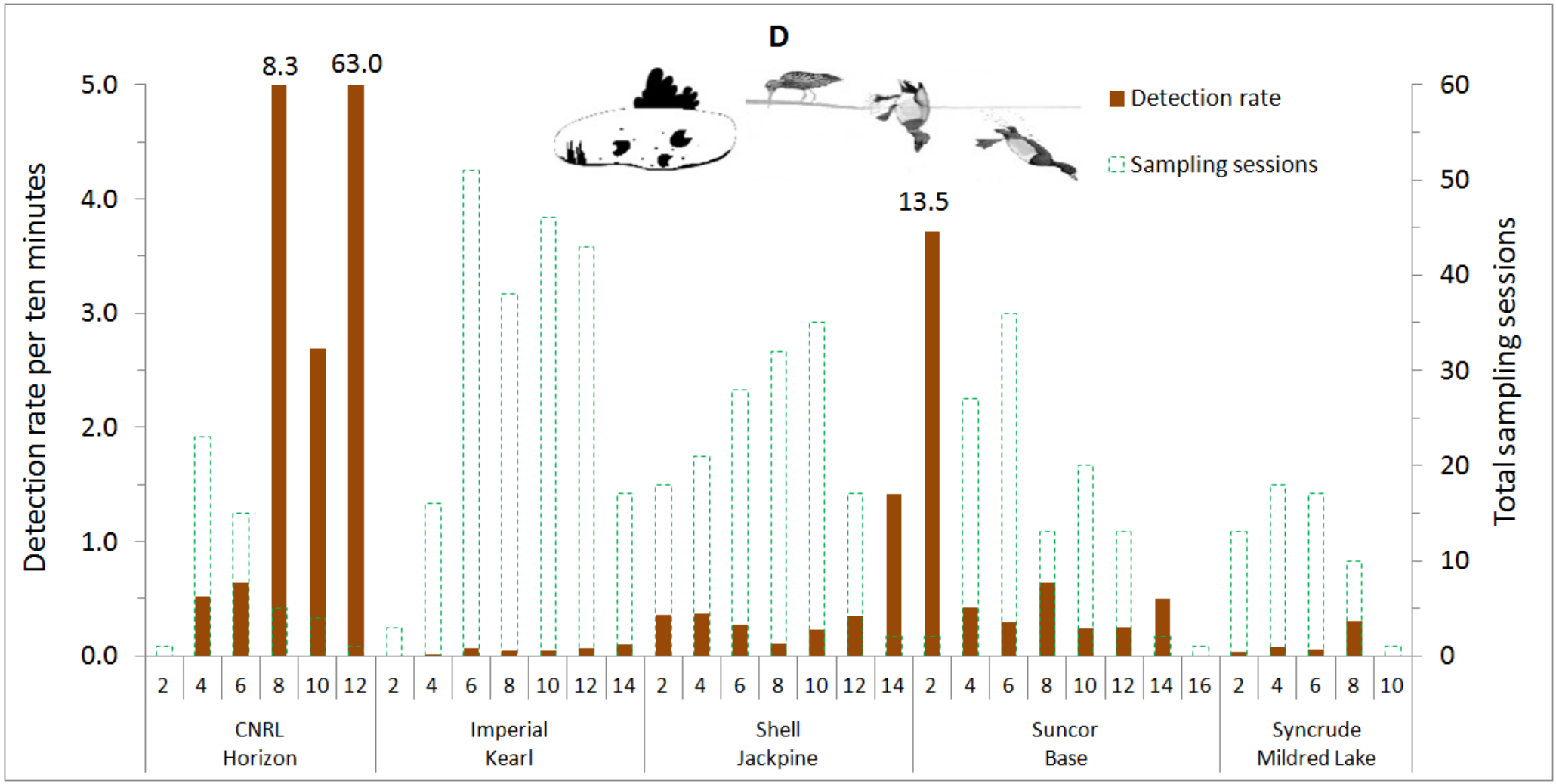
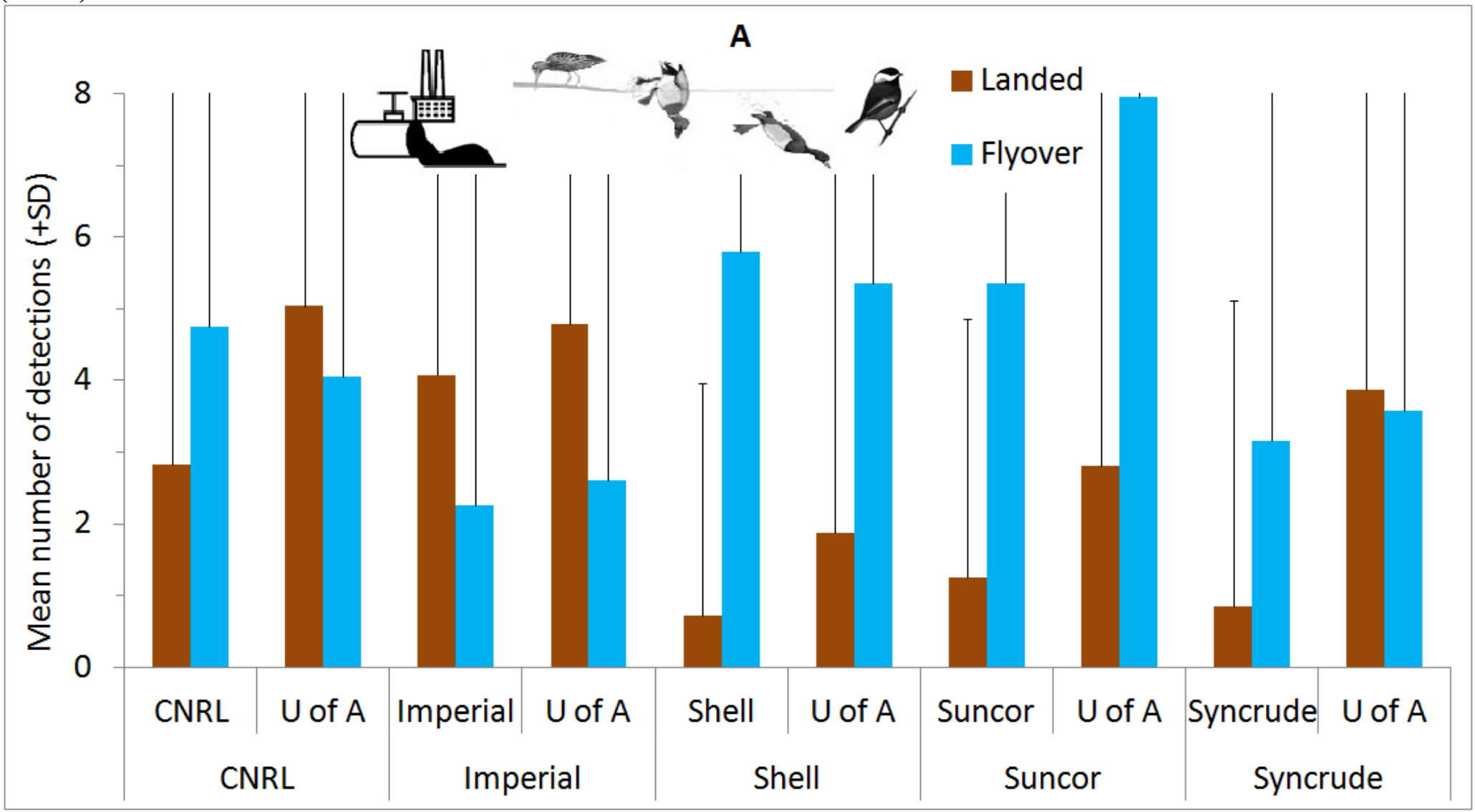

D
8.3
63.0
13.5
Detection rate
Sampling sessions
Detection rate per ten minutes
Total sampling sessions
5.0
4.0
3.0
2.0
1.0
0.0
60
50
40
30
20
10
0
2 4 6 8 10 12 2 4 6 8 10 12 14 2 4 6 8 10 12 14 2 4 6 8 10 12 14 16 2 4 6 8 10
CNRL Horizon
Imperial Kearl
Shell Jackpine
Suncor Base
Syncrude Mildred Lake

Figure 7 Detections per session for industry vs. U of A observers

Mean number of birds from all guilds recorded per observation session for spring and fall seasons combined during simultaneous observation sessions by each of industry and U of A observers. Results are tallied separately for landings and flyovers and for process-affected water ponds (Panel A) and freshwater ponds (Panel B).



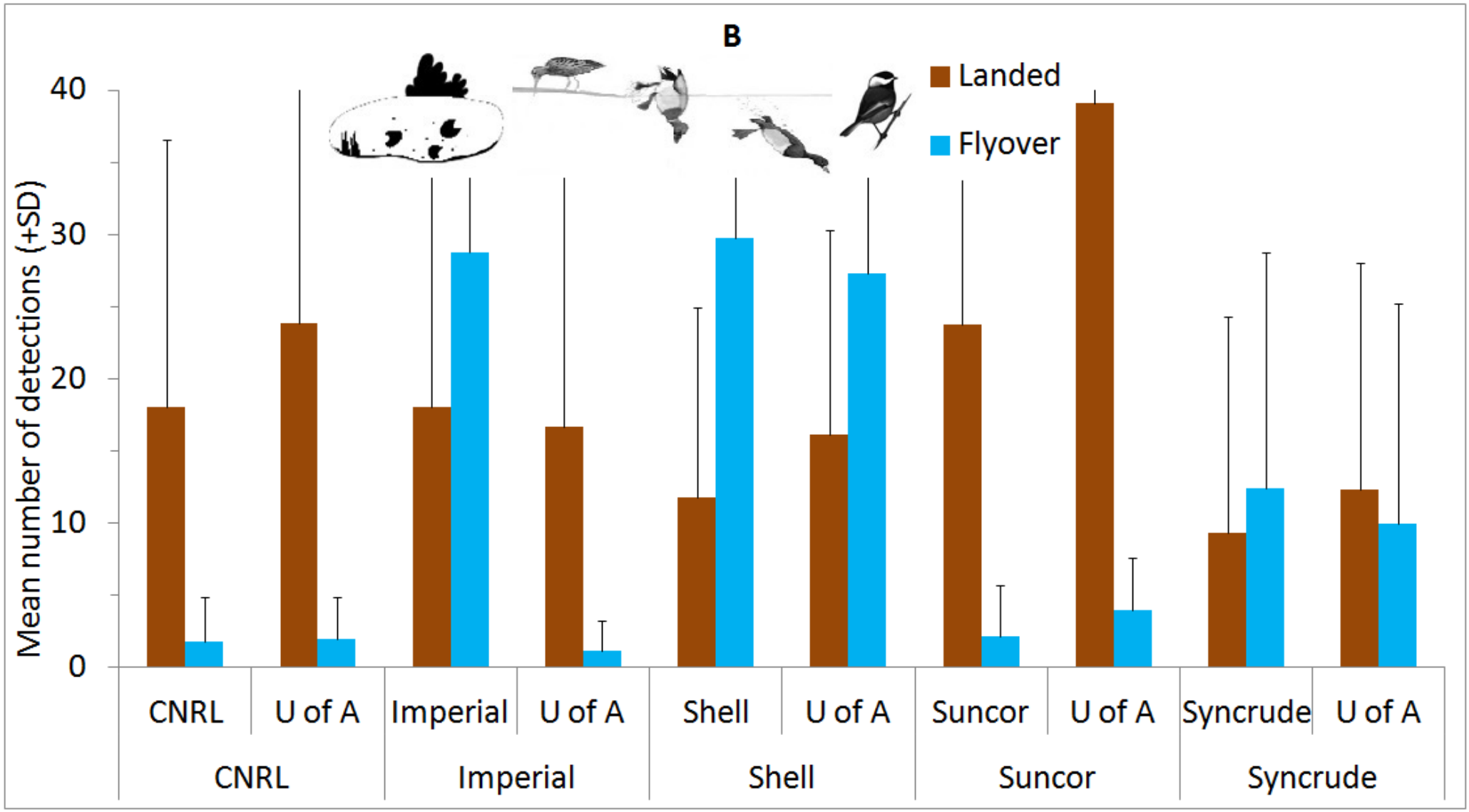
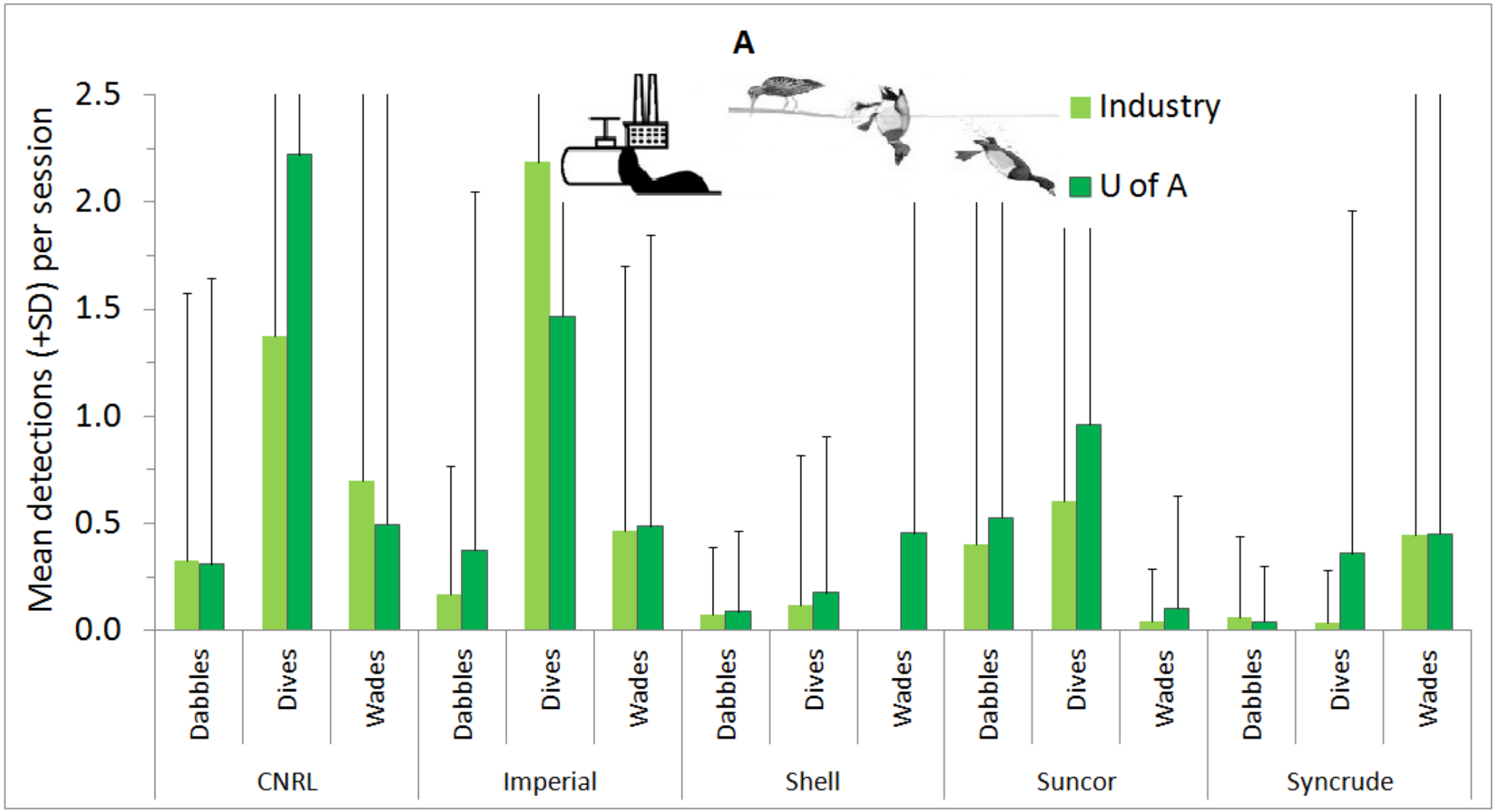
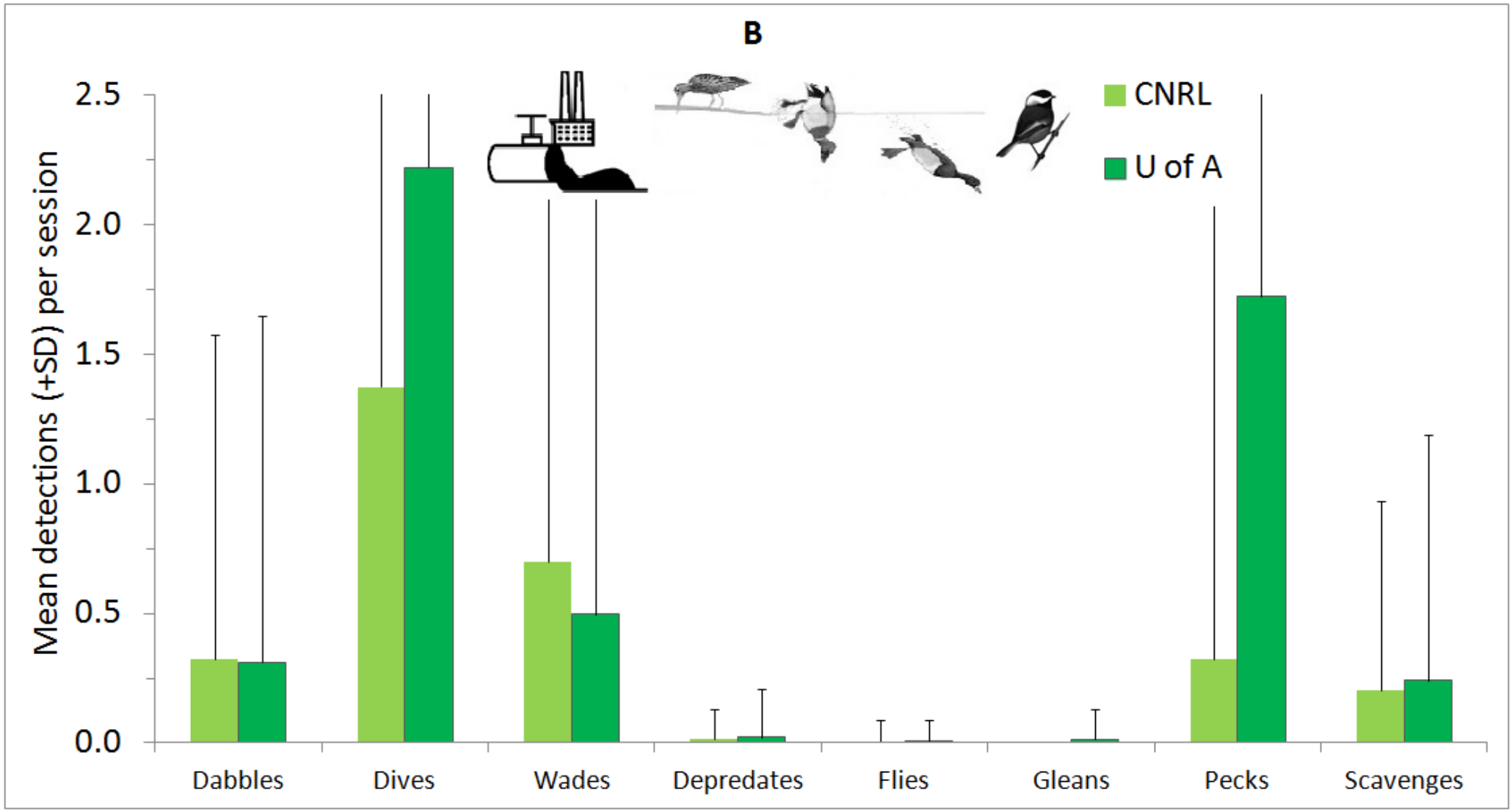
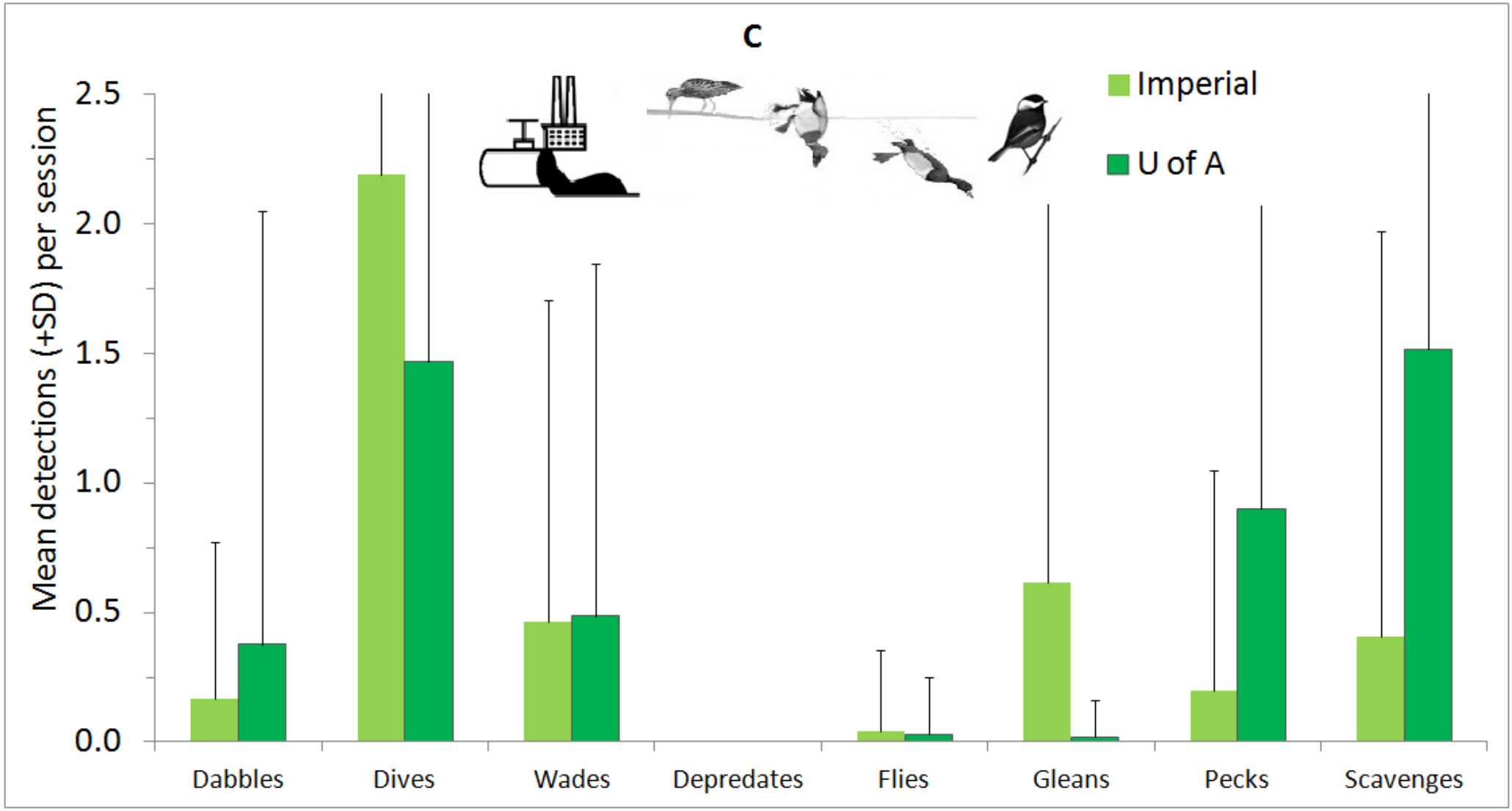

B
Landed
Flyover
Mean number of detections (+SD)
0
10
20
30
40
CNRL
U of A
Imperial
U of A
Shell
U of A
Suncor
U of A
Syncrude
U of A
CNRL
Imperial
Shell
Suncor
Syncrude

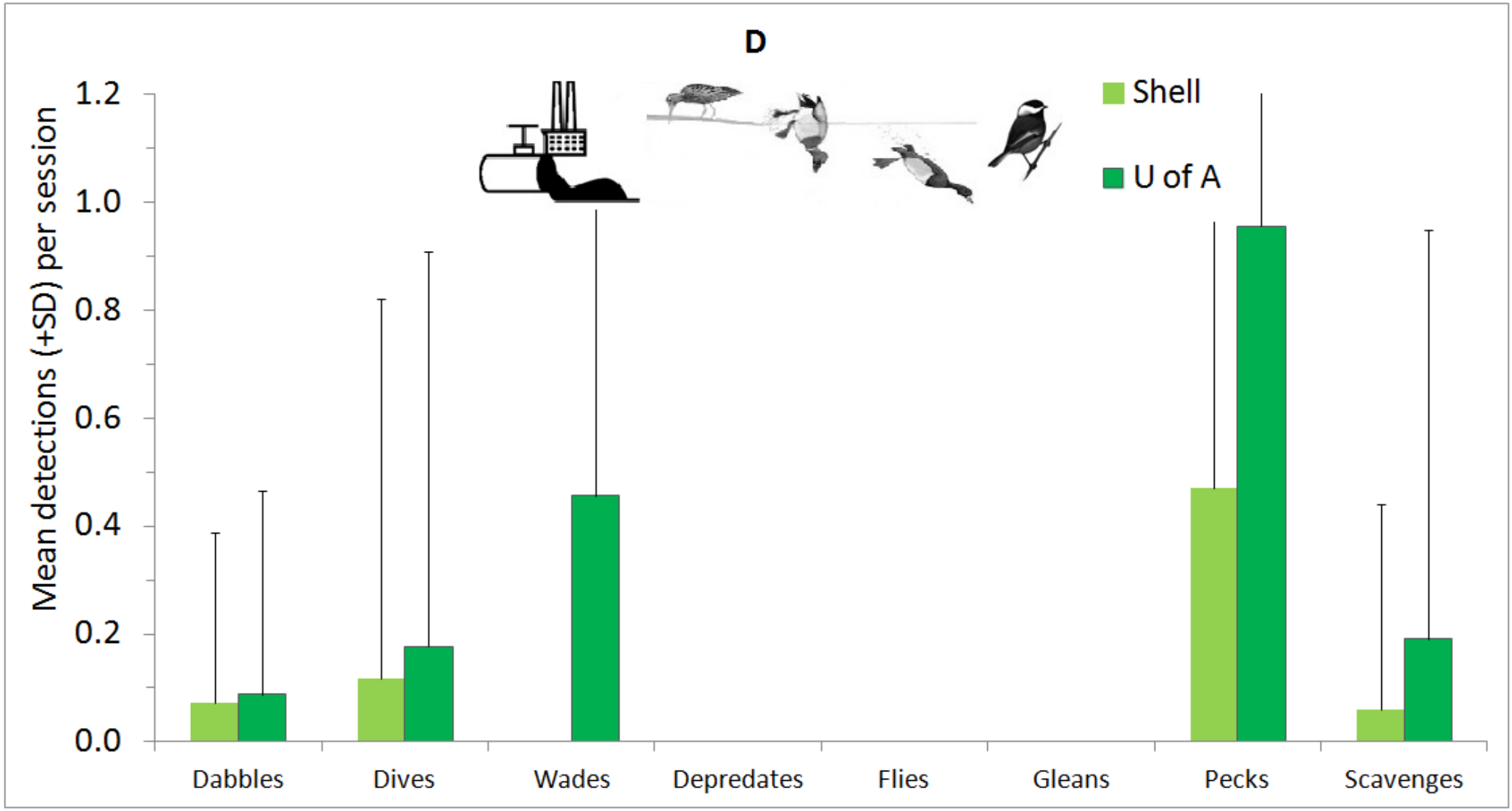
Figure 8 Counts by guild for industry vs. U of A observers at process-affected ponds

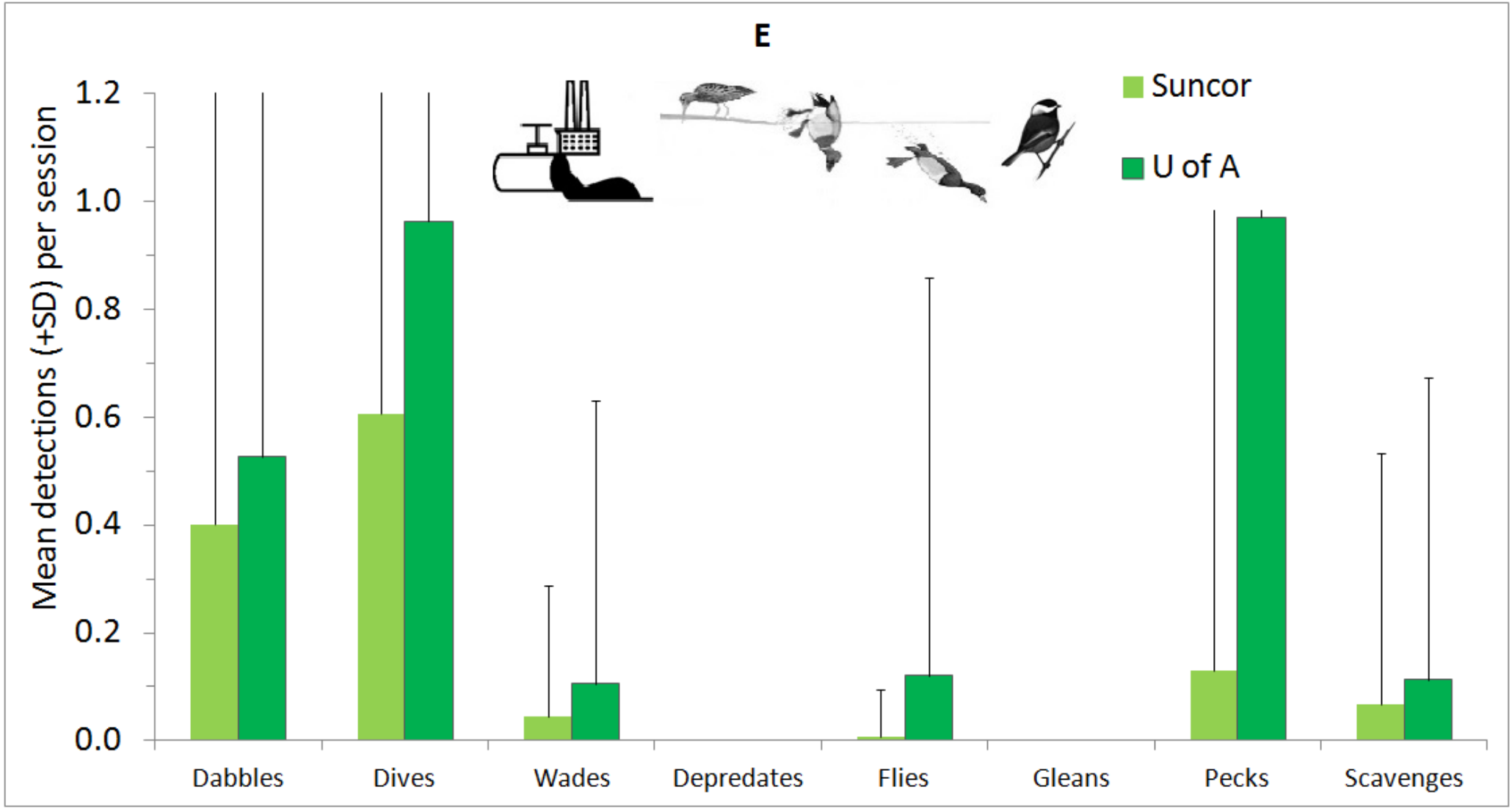
Mean number of landed birds of target guilds recorded during paired observation sessions at process affected ponds for spring and fall seasons combined by each of industry and U of A observers. The number of visits for each operator is provided in the text. Results are presented for the three target guilds and five operators combined (Panel A) and for each operator and all guilds (Panels B-F).




B
CNRL
U of A
Mean detections (+SD) per session
2.5
2.0
1.5
1.0
0.5
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges


C
Imperial
U of A
Mean detections (+SD) per session
2.5
2.0
1.5
1.0
0.5
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges


D
Shell
U of A
Mean detections (+SD) per session
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges


E
Suncor
U of A
Mean detections (+SD) per session
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges

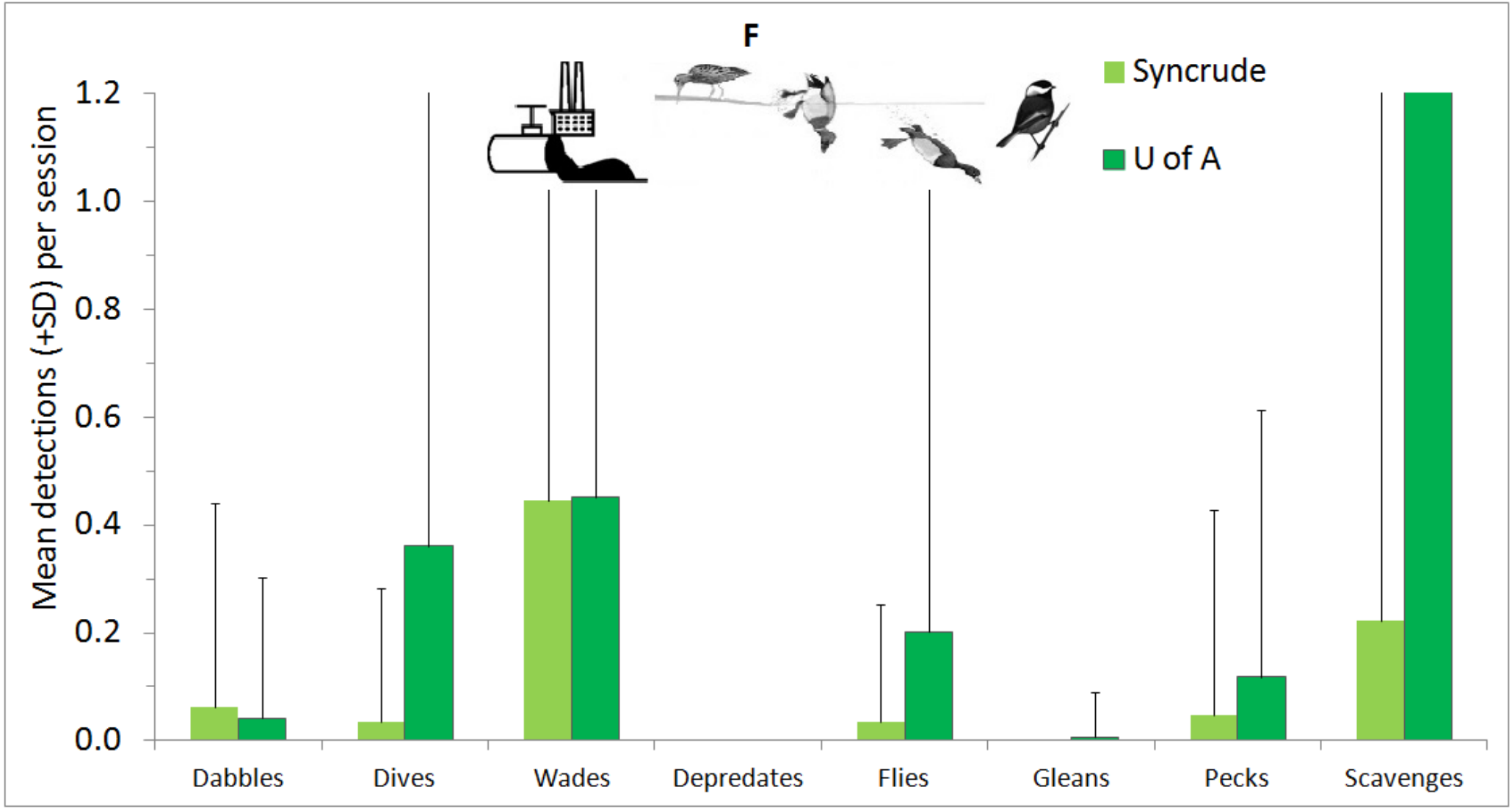

F
Syncrude
U of A
Mean detections (+SD) per session
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Dabbles
Dives
Wades
Depredates
Flies
Gleans
Pecks
Scavenges

Figure 9 Number of mortalities of oiled birds and non-oiled target birds by guild

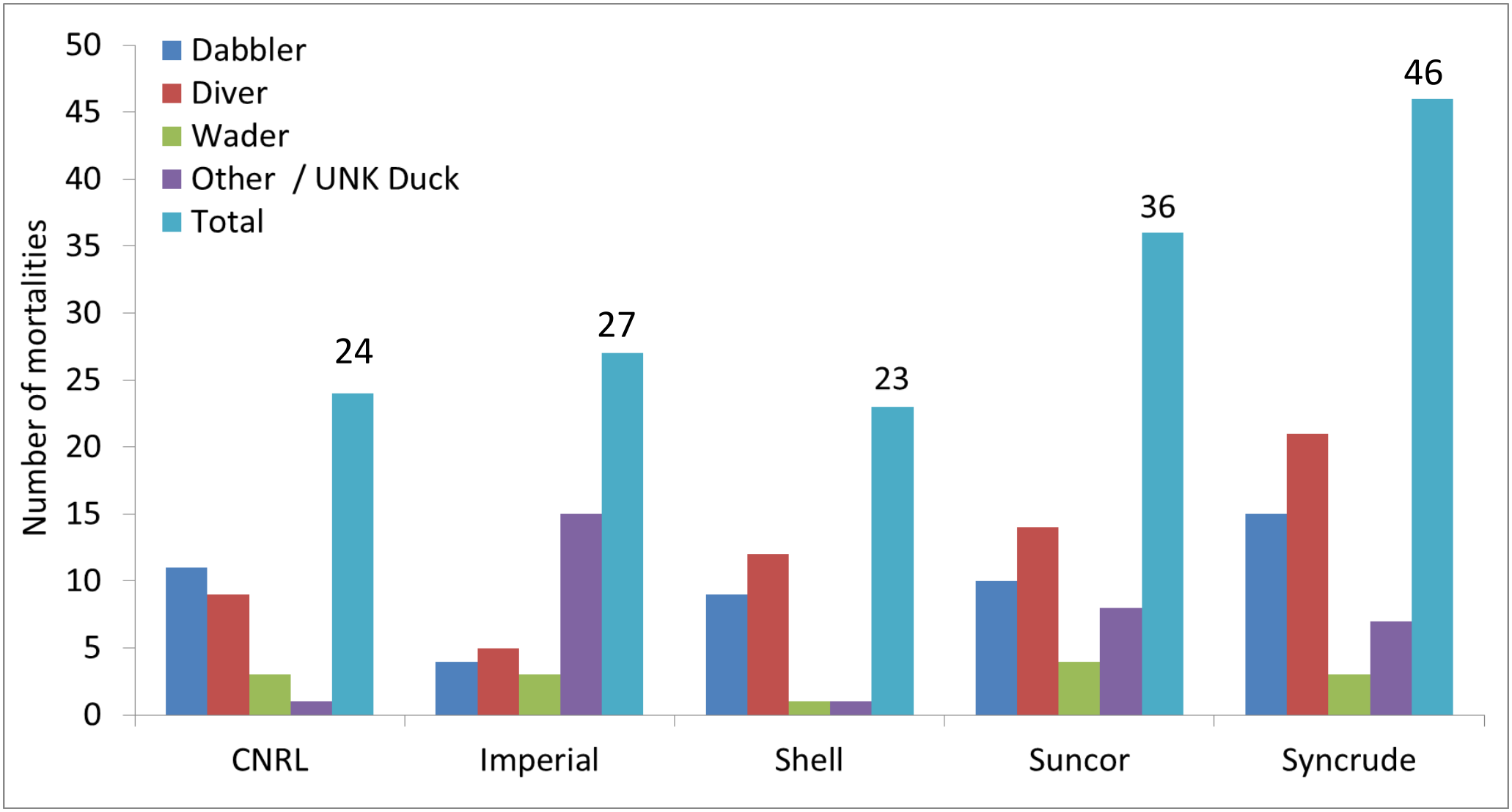


Figure 10 Number of mortalities of oiled birds and non-oiled target birds by species with risk status

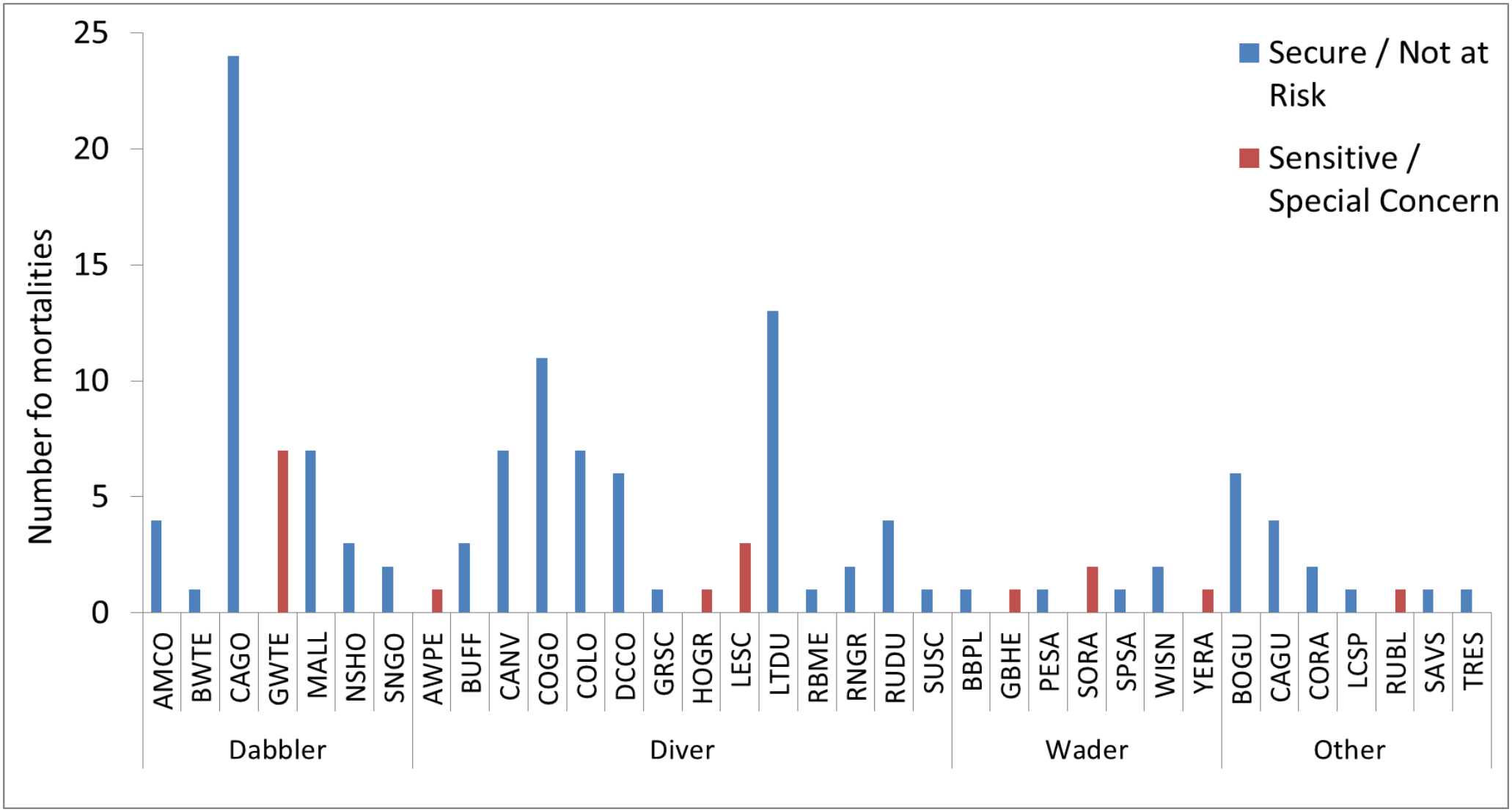


Figure 11 Number of mortalities of oiled birds and non-oiled target birds found per month by guild

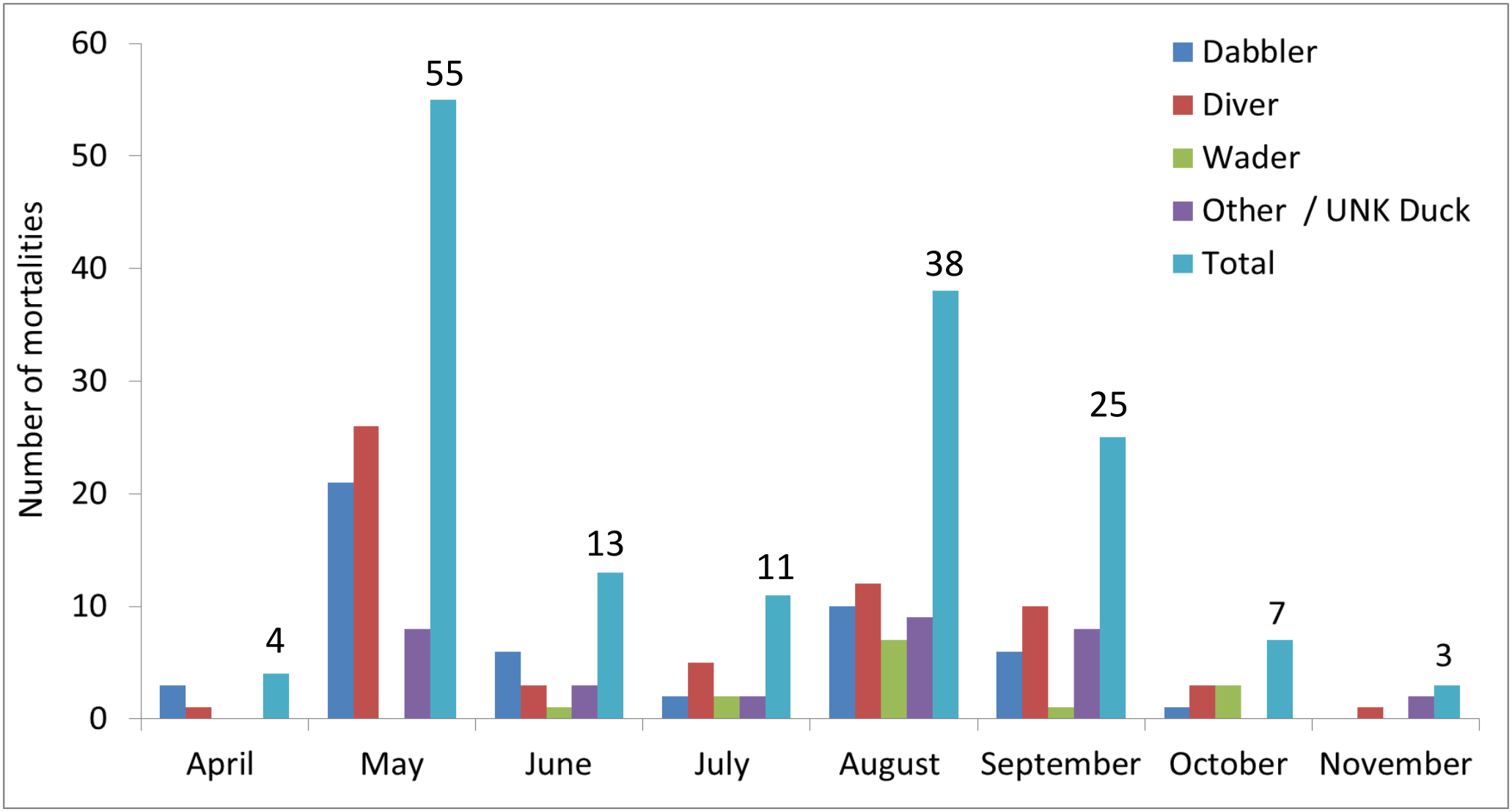


Figure 12 State of oiled birds and non-oiled target birds when found that resulted in mortalities

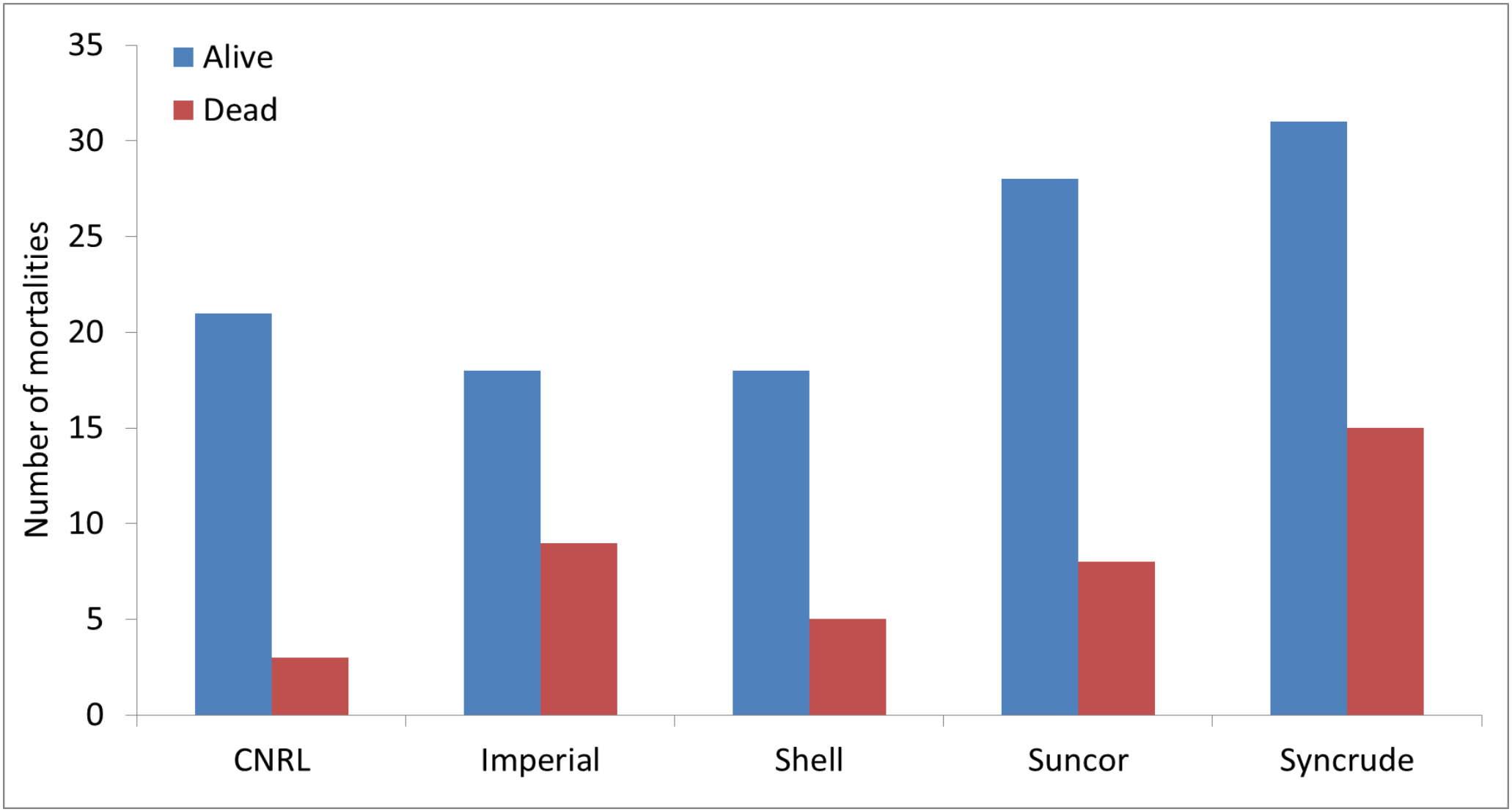


Figure 13 Number of mortalities of oiled birds and non-oiled target birds found incidentally vs. during mortality searches

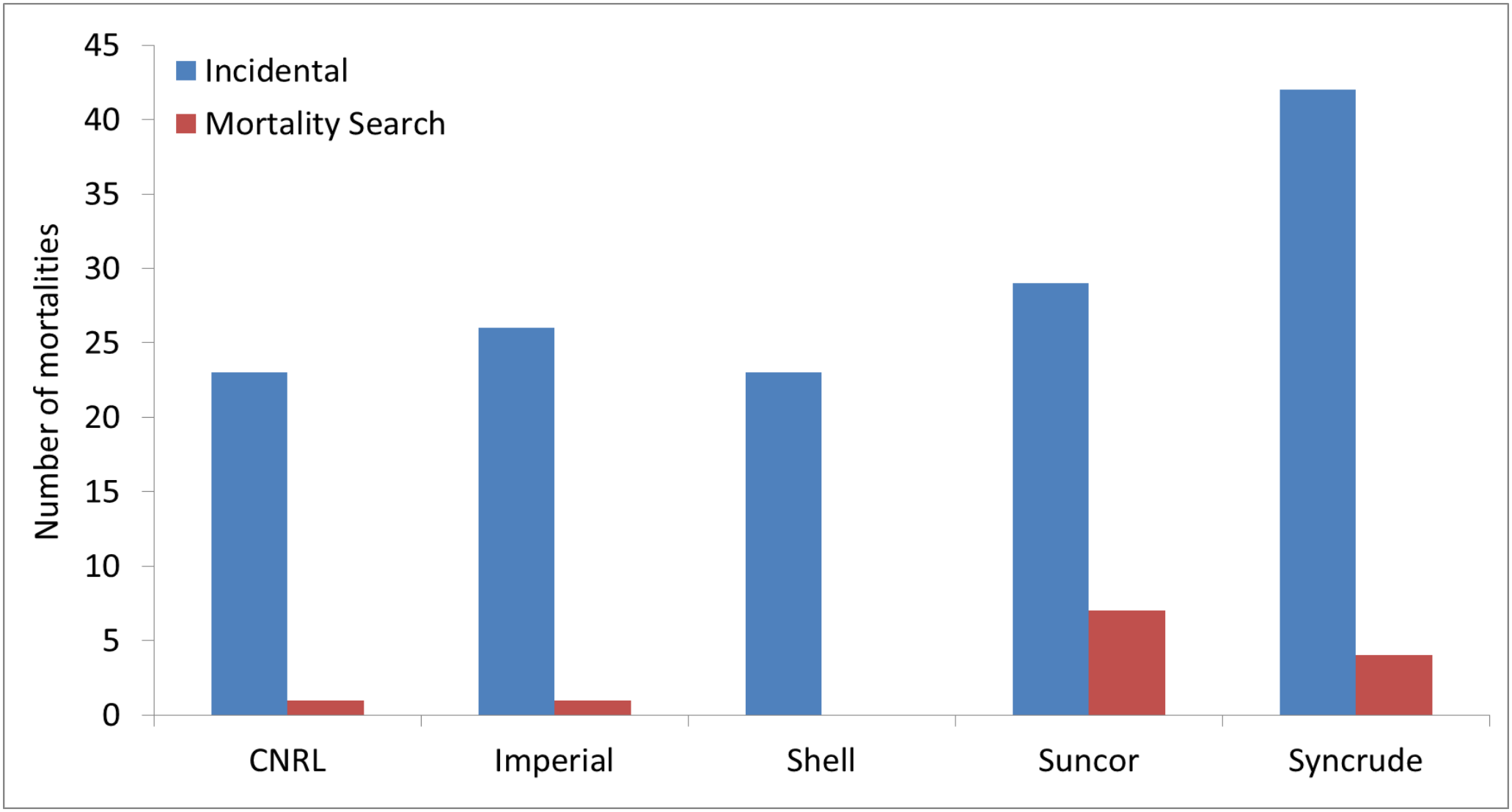


Figure 14 Time spent searching for dead birds using the boating, walking, and driving search methods by operator.

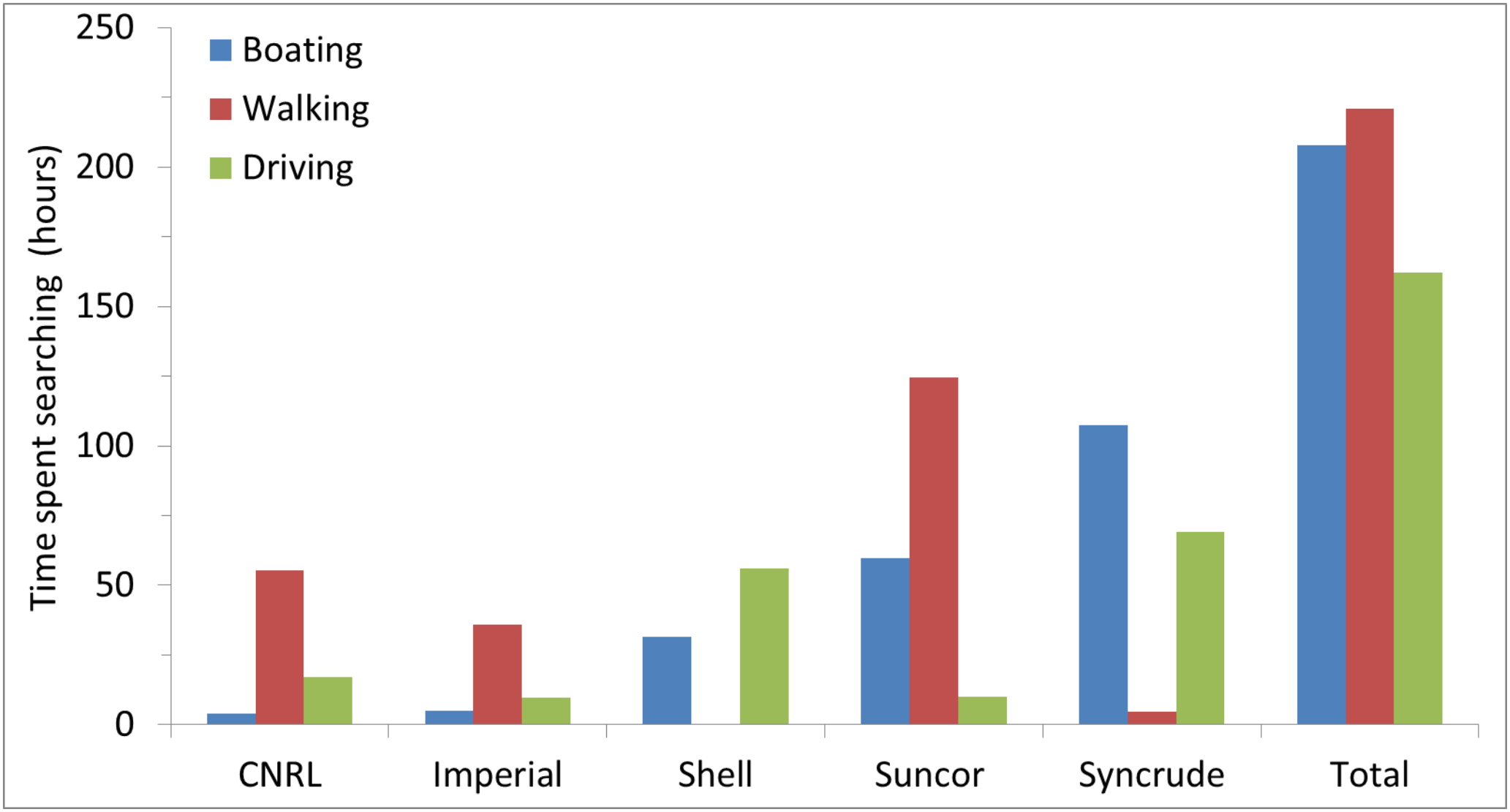


Figure 15 Number of birds found that resulted in mortalities using the boating, walking, and driving search methods by operator.