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Contents

Summary

The development of offshore wind farms (OWF's) plays an important role in the Dutch energy transition to comply with the European aim to be climate neutral by 2050. There are however also concerns about the impact of (offshore) wind farms on biodiversity and protected species like bats, who are found at sea during migration, and in some cases during foraging trips from the mainland. In the Netherlands, the impact of offshore wind farm development on legally protected species and the potential effects on the ecosystem is investigated in a central and long-term research programme; Wozep (Wind op zee ecologisch programma).

At the North Sea several species of bats have been recorded of which Nathusius' pipistrelle (Pipistrellus nathusii) is the most commonly observed species. Nathusius' pipistrelle is known to migrate from the breeding areas in eastern Europe towards their wintering areas in southern and western Europe. Some of the bats go as far as the UK and thus have to cross the North Sea during their migration. For these reasons this species is the priority species in studying the impact of the Dutch offshore wind development on bats within Wozep. The Wozep bat research programme includes various (sub)projects, all of which are aimed to fill important knowledge gaps and answer the overall research question: what is the relevance of the (presumed) mortality due to offshore wind farms for bats, in particular for Nathusius' pipistrelle population(s) crossing the southern North Sea. To investigate bat migratory movements at a larger scale offshore passive acoustic monitoring and telemetry research using the Motus Wildlife system are used. Motus is a system that uses automated radio telemetry, specifically designed to track the movements of smaller animals, such as bats and birds. In order to do so, the system uses a network of stationary automated receiving stations.

The current report shows the results of a telemetry study aiming to assess the percentage of bats departing over sea off the North-Noord Holland coast in autumn. The choice of this study area was related to the existing wind farms at the time the project started in 2017. From the start of the project a network of receivers on land was developed step by step. Starting in Noord Holland, the network increased every year and currently it extends along the coast from Westkapelle to Ameland in the Netherlands and from Landguard to Caister-at-Sea in the UK. Having a dense enough network is a pre-requisite for successfully being able to follow flight paths of the bats that were tagged in this study in the years 20218 – 2022. Due to the high receiver coverage in the northwestern parts of Noord Holland only this area was considered suitable to investigate the number of departures over sea.

Bats were initially mainly trapped from bat boxes and at a later stage also mist nets and harp traps were used to increase the number of captures. A total of 409 Nathusius' pipistrelles was tagged within the study area over the years, including 205 females (50.1%) and 204 males (49.9%). For all of the tracked individuals flight path estimation was conducted by using floating averages to smooth the tracked lines. The flights of 262 individuals detected during their last night in the study area were considered suitable for speed and heading calculations. Of those, 57% of the movements were classified as directional (migratory) flights and 43% as local flights. Most of the documented migratory movements concerned females (both adult and juvenile), as well as juvenile males. Adult males, which defend mating territories during the autumn migration season, appeared to be mostly sedentary, as expected.

A relatively small percentage (6 - 10%) of bats departs over sea directly from the study area, whereas most bats (69%) are heading in a southerly direction. Therefore, from the perspective of the study area, the coastal route - is preferred over the route over sea. This preference may well be explained by the risk bats face to cross an ecological barrier like the North Sea. An additional 7% heads north and 14% east.

Bats initially following the coast may decide at a later stage to depart over sea. We observed some individuals probably departing onto sea further south along the coast. Therefore, the overall percentage of 6-10% of bats -tagged in the study area- departing over sea must be regarded as a conservative estimate.

Not all of the individuals departing over sea involve bats heading towards the UK as overseas movements parallel to the coast and subsequent continuation along the coast were also observed. Increased bat presence during the autumn migration in the Dutch North Sea therefore can be expected in areas between Noord Holland and Norfolk, as well as in areas relatively close to shore (up to c. 25 km). On land, increased migratory bat presence can be expected along the coast.

1 Introduction

1.1 Background

The EU aims to be climate neutral by 2050, meaning an economy with net-zero greenhouse gas emissions. The development of offshore wind farms (OWF's) plays an important role in the Dutch energy transition to comply with this European target. With the finalization of the Windfarm Hollandse Kust (noord) in 2023, a total of 4.5 GW has been realized[1]. By the end of 2030, the Netherlands wants to achieve approximately 21 GW of installed offshore wind energy capacity and the government is taking into account that offshore wind energy should be able to grow even further after that [2], depending on future energy demand.

Despite the environmental gain, there are concerns about the impact of OWF's on biodiversity and protected species like bats, which are found at sea during migration, and in some cases during foraging trips from the mainland (Ahlén et al. 2009, Brabant et al. 2021, Hüppop & Hill 2016, Lagerveld et al. 2014, 2021, 2023, Lagerveld & Mostert 2023). Wind farms on land are known to cause mortality amongst bats due to collisions (Johnson et al. 2003, Bach & Rahmel 2004, Kunz et al. 2007, Arnett et al. 2008, Rydell et al. 2010, Cryan et al. 2014, Thaxter et al. 2017) and possibly barotrauma (Grodsky et al. 2011, Rollins et al. 2012, Lawson et al. 2020), affecting both migratory and local populations (Lehnert et al. 2014). It is estimated that in Germany about 250,000 bats are killed annually in wind farms on land (Voigt et al. 2015) whilst 600,000 bat fatalities have been reported in one year in the USA (Hayes 2013). In temperate regions most fatalities concern migratory species and occur during late summer and autumn (Rydell et al. 2010, Voigt et al. 2015, Frick et al. 2017, Rodrigues 2018). The location of wind farms is an important determinant of the mortality rate (Rydell et al. 2010). Next to a well-chosen location to minimize impacts, the number of fatalities can furthermore be reduced by operational measures. Effective mitigation has been achieved by limiting the production time of wind turbines by switching them off during periods when bats are most active (Adams et al. 2021, Arnett et al. 2011, Peste et al. 2015). As bats forage in a similar way around offshore wind turbines as they do around wind turbines on land (Ahlén et al. 2009), it seems likely that fatalities also occur at sea. Yet, there are no reliable estimates on bat fatalities offshore as observational studies to assess the fatality risk as well flight behaviour in OWF's have not been conducted so far.

1.2 Main species of interest

Several species of bat have been recorded at the North Sea , including Nathusius' pipistrelle *Pipistrellus nathusii*, Common pipistrelle *Pipistrellus pipistrellus*, Common noctule *Nyctalus noctula*, Leisler's bat *Nyctalus leislreri*, Particoloured bat *Vespertilio murinus*, Northern bat *Eptesicus nilssonii* and Serotine bat *Eptesicus serotinus* (Boshamer & Bekker 2008, Brabant et al. 2021, Hüppop & Hill 2016, Lagerveld et al. 2014, 2021, 2023, Lagerveld & Mostert 2023). As 81% of the observed bats in the German Bight (Hüppop & Hill 2016), 76% of the stranded individuals at offshore platforms (Boshamer & Bekker 2008) and 92% of the acoustic recordings in the Dutch Southern North Sea refer to Nathusius' pipistrelle (Lagerveld et al 2023), this species is regarded as the priority species when it comes to the impact of off shore wind developments in the Netherlands.

The breeding areas of Nathusius pipistrelle are located in central and eastern Europe, in particular around the Baltic Sea. Populations in central Europe are sedentary or migrate over short distances (Sachanowicz et al. 2019), while eastern populations perform long-distance migrations (Hutterer et al. 2005). After the breeding season (May-July), females and their offspring migrate predominantly to their wintering areas in southern and western Europe, including the Netherlands, Belgium, France and the United Kingdom (Mitchell-Jones et

[1] Plannen windenergie op zee 2023 voltooid: laatste windpark klaar voor gebruik
[2] Kamerbrief windenergie op zee 2030-2050

al. 1999, Russ et al. 2001). To date, the longest known distance covered during migration is from Russia to France, a distance of 2486 km (Vasenkov et al. 2022). During the autumn migration (August – October) mating takes place along the way where adult males defend territories and advertise to attract passing females (Jahelkova & Horacek 2011). Some males also migrate to wintering areas at lower latitudes, while others stay and winter in the same area (Pētersons 2004, Sachanowicz et al. 2019).

Most of the species' seasonal movements occur over terrestrial habitats, but migration also takes place over sea (Ahlén et al. 2009, Bach et al 2022, Brabant et al. 2021; Hutterer et al. 2015, Hüppop & Hill 2016, Ijäs et al 2017, Lagerveld et al. 2014, 2021, 2023, Mitchell-Jones et al. 1999, Pētersons 2004, Russ et al. 2001 Rydell et al. 2014).

1.3 Wozep bat research programme

To expand the knowledge base on the ecological impact of offshore wind farms at the North Sea, the ministry of Economic affairs and climate (EZK) commissioned Rijkswaterstaat in 2016 to initiate a central and long-term research programme: Wozep (Wind op zee ecologisch programma). Within Wozep the ecological impacts of sea-based wind farms on legally protected species and the potential effects on the ecosystem of large offshore wind farms is investigated. The program focuses mainly on protected species and habitats, in line with the Nature Conservation Act.

The Wozep bat research programme includes various (sub)projects, all of which are aimed to fill important knowledge gaps and eventually answer the overall research question: what is the relevance of the (presumed) mortality due to offshore wind farms for bats, in particular for Nathusius' pipistrelle population(s) crossing the southern North Sea. To be able to answer that question, information is needed on the population size of the relevant (sub)populations migrating over sea, behavioural research at a larger scale (cf. their occurrence in space and time over sea) and behavioural research at the scale of the offshore wind turbine (cf, the fatality risk during an encounter with an offshore wind turbine).

Within the programme, two methods have been applied to study bat behaviour at a larger scale: passive acoustic monitoring using a network of 14 acoustic detectors at the Dutch North Sea and telemetry research using the MOTUS Wildlife Tracking System. Passive acoustic monitoring took place from 2015 – 2020 (cf. Lagerveld et al. 2017a, 2021, 2023). The acoustic monitoring revealed that most migratory movements in autumn occur from mid-August until late October and most bats in the Dutch North Sea occur off the coast of the province of Noord Holland (Lagerveld et al. 2023). North Sea crossings during the autumn migration frequently last longer than one night; the day is spent roosting at an offshore structure. The strongest migration occurs during nights with tailwinds from east-northeast (ENE) , but bats are also recorded offshore with low to moderate headwinds or crosswinds. Bat presence decreased between the full moon and the last quarter and increased just before the new moon (Lagerveld et al. 2023). Based on the precautionary principle, mitigation measures have been issued for the Dutch offshore wind farms to protect bats during the autumn migration period (Staatscourant 2016, 2022).

The current report show the results of the telemetry project aiming to assess the percentage of bats departing over sea off the North-Noord Holland coast in autumn. The results of this study could, in combination with the population size of the relevant (sub)population(s), possibly indicate which part of the population(s) is potentially at risk due to offshore wind farms that are built west of the coast of Noord Holland. Currently there is a rough estimate on the number of Nathusius' pipistrelles migrating over the southern North Sea. It was estimated that approximately 40,000 individuals (bandwidth 100 – 1,000,000) may migrate over the southern North Sea, with most migrants departing from the Dutch and Belgian coast (approximately 18,000 and 14,000 individuals, respectively). Migration from Germany and Denmark towards the UK is considered less extensive, approximately 6,000 and 2,000 individuals, respectively (Limpens et al. 2017).

1.4 Approach

In 2016 a feasibility study was conducted in which the Motus Wildlife Tracking System was tested to track bats during their migration (Lagerveld et al 2017b). In addition, suitable locations to trap bats were identified. The findings of the feasibility study were used to design the actual telemetry project.

The original aim of the project was to assess movement patterns in OWF's and to investigate the percentage of bats departing over sea during the autumn migration. Therefore, North-Noord-Holland was chosen as the main study area given the proximity of Offshore Wind Farm Egmond aan Zee (OWEZ) and Princess Amalia Wind Farm (PAWP).

Within the current telemetry project a network of receivers was built gradually from 2017 onwards. Starting in Noord Holland, the network increased every year and resulting in a dense network in the study area (North) Noord Holland. Outside that area the network extends along the coast from Westkapelle to Ameland in the Netherlands and from Landguard to Caister-at-Sea in the UK. Unfortunately no Motus network has been established offshore during the project. For that reason only the remaining research question that will be answered in this project is the percentage of bats departing over sea during the autumn migration.

Bats were tagged in the study area, late summer and early autumn for five consequential years from 2018 - 2022. In the beginning of the project, bats were mainly trapped from bat boxes in three small forest fragments in Noord Holland. As the number of captured individuals gradually decreased, we expanded our efforts to other areas in Noord Holland and mist nets and harp traps were also used at a later stage to increase the number of captures. Additional to the tagging in the study area bats were also tagged in Hoek van Holland and at the Afsluitdijk (Kornwerderzand). With the absence of a dense network in these areas these animals were not used for answering the current research question (see for further details the material and method section).

1.5 Aim of this report

The aim of this report is to investigate Nathusius' pipistrelle movements in Noord Holland from 2018-2022, and assess the relative importance of migration over sea in relation to coastal migration. Based on this analysis, recommendations will be addressed for further analysis and research. as well as for options for further finetuning of mitigating measures to prevent fatalities. In addition, this report provides an overall overview of the fieldwork conducted in this study, as well as an overview of the development of the Dutch MOTUS network.

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2 Materials and Methods

2.1 Fieldwork

In order to follow their movements, Nathusius' pipistrelles were captured and tagged. This section describes how, where and when bats were tagged in the study area Noord Holland.

2.1.1 Catching bats

To capture bats, bat boxes, harp traps and mist nets were used. Bat boxes are in general the easiest way to trap bats as the roosting animals (in torpor) can easily be caught by hand during the day. During late summer and autumn bat boxes are often used by territorial males. Here they try to attract females to mate with them. Not sexually active males are also tolerated to roost in there. Examples of the various types of bat boxes in the tagging areas are shown in figure 1.

Boshamer I | Boshamer II | Swegler 2FN | Swegler 1FF

Figure 1: *various types of bat boxes used throughout this study*

As the number of bats present in the bat boxes decreased over the years, possibly due to the disturbance we caused by opening them weekly during the tagging season, we redirected our trapping efforts to nocturnal activities using harp traps and mist nets.

Harp traps are equipped with 2-3 layers of nylon wires, enabling bats to be captured without entangling them. When bats fly into the wires they drop down into a collection chamber from where they can be easily caught by hand (Figure 2). Harp traps were always used in combination with a bat lure: a digital playback device to attract conspecifics (Figure 3). During the trapping sessions, both echolocation and social calls were played of several species, including Nathusius' pipistrelle, Particoloured bat and Common noctule. Harp traps were inspected every 15 min, or with even shorter intervals.

Figure 2: *Harp trap with bat lure*

Figure 3: *Bat lure (Apodemus)*

Figure 4: *Mist net (10 x 8 m)*

We used Solida Safety Line (white) mist nets which were supported on each side by telescoping poles (Figure 4). These nests have horizontally strung lines which create a baggy pocket where bats become entangled when they hit the net. Mist nets quickly bulge in response to wind which makes them easily detectable by bats. Therefore, mist nets can only be used in windless conditions in an open area. In forests or other sheltered areas they can be applied during slightly higher wind speeds. High humidity or rain also makes mist nets more easily detectable by bats. In general 3-5 nets were used during each trapping session, of which a batlure was positioned at one net (there were two batlures available per trapping session). Various net dimensions were deployed (L x H: 4 x 4, 6 x 4, 6 x 8 and 10 x 8 m), depending on the local situation. Nets were inspected every 5-10 minutes.

2.1.2 Handling and tagging bats

Captured bats were held in cloth bags and subsequently sexed, aged, weighed and measured in accordance with Haarsma (2008). Bats judged to be in poor condition were released immediately. We attached the tag using Sauer skin adhesive and ensured that the weight of the tag and the adhesive did not exceed the 5% of the body weight (cf. Aldridge & Brigham 1988, O'Mara et al. 2014). From 2018 – 2022 we tagged all suitable females and first year (juvenile) males Nathusius' pipistrelles. As we captured many (territorial) adult males from bat boxes we released about 75% of them to avoid an adult male skewed dataset. From 2020 onwards, a wing punch was taken.

In 2018 and 2019 we used 0.35 g NTQB2-2 coded tags (LOTEK Wireless, Canada) with burst intervals between 5.9 – 8.9 s and an expected lifespan of 78 – 109 days. From 2020 – 2022 we used identical burst intervals, but lighter 0.26 g NTQB2-1 coded tags (LOTEK Wireless, Canada) with an expected lifespan of 51 - 71 days. The uniquely coded signal enables the identification of individually tagged animals. We obtained a license (RDI-EZK/8315985) from Rijksinspectie Digitale Infrastructuur (formerly known as Agentschap Telecom) to use tags emitting at 150.1 MHz, as using this frequency for this purpose is in principle prohibited in the Netherlands.

Fieldwork was carried out under the Nature legislation permit 2018-057682 (Wageningen Marine Research) and the Animal Welfare protocol AVD248002016459 / VZZ-18-005 from 2018 – 2020 and AVD24800202114476 / VZZ-2021-001 from 2021 – 2023 (Dutch Mammal Society).

2.1.3 Study area

Figure 5 shows a map of the study area in Noord Holland, including the 5 forest fragments where bats were tagged. Detailed maps of the tagging locations, including the locations outside the study area, can be found in Annex 1.

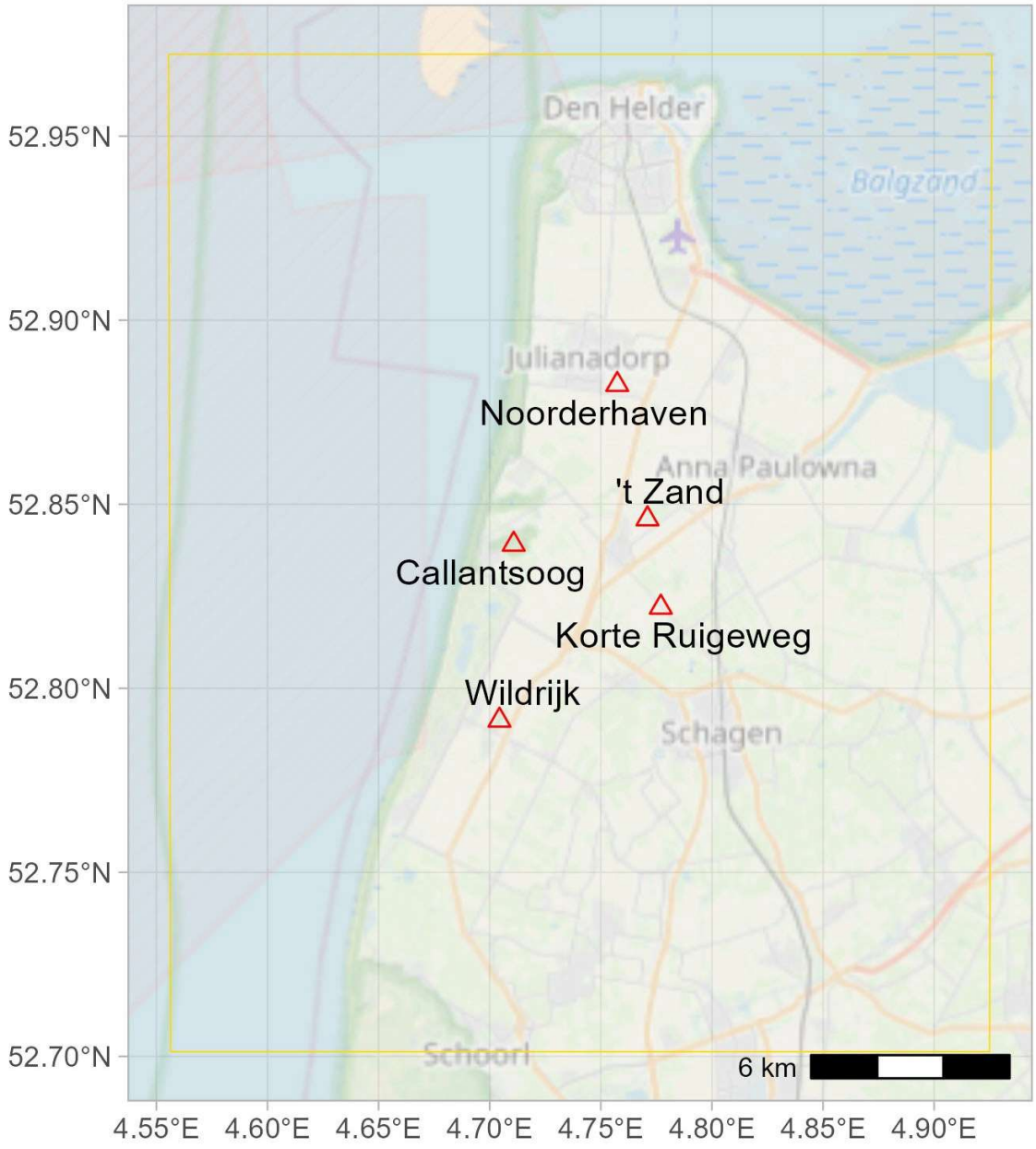

Figure 5: Noord Holland tagging locations

2.1.4 Tagging effort

A total of 133 bat box surveys was executed from 2018 – 2022 in the study area, of which the majority was conducted at Noorderhaven, Wildrijk and Callantsoog (Table 1). The earliest bat box survey during the autumn migration period was conducted at 3 August (2021) and the latest at 1 November (2023). Generally 10 – 20 bat boxes can be examined per hour.

***Table 1**: Bat box surveys per location per year. The number of bat boxes is indicated between brackets.*

Year	Noorderhaven (50)	Callantsoog (25)	Wildrijk (40)	Ruigeweg (10)	t Zand (25)	Total
2018	9	5	8	0	0	22
2019	12	11	11	3	7	44
2020	9	9	11	0	10	39
2021	5	6	5	0	0	16
2022	4	4	4	0	0	12
Total	39	35	39	3	17	133

A total of 53 (nocturnal) trapping sessions was undertaken from 2018 – 2022 in the study area (Table 2). One trapping session typically lasts between 6 – 8 hours (excluding setup and breakdown of the equipment). Trapping is conducted with 2-5 mist nets, one harp trap and two bat lures.

***Table 2**: Nocturnal trapping sessions per location per year.*

Year	Noorderhaven	Callantsoog	Wildrijk	Total
2018	0	0	1	1
2019	0	0	0	0
2020	5	2	2	9
2021	6	5	7	18
2022	8	8	9	25
Total	19	15	19	53

2.1.5 Tagged bats

A total of 409 Nathusius' pipistrelles was tagged within the study area over the years. The yearly number of tagged bats ranged from 46 – 121 individuals. The dataset included 205 females (50.1%) and 204 males (49.9%). A higher percentage of adults was tagged in comparison to juvenile bats: for females respectively 71.7% adults and 28.3% juveniles, and for males respectively 66.2% and 33.8% juveniles (Table 3).

***Table 3**: Tagged Nathusius' pipistrelles per year per sex/age category.*

Year	Female adult	Female juvenile	Male adult	Male juvenile	Total
2018	35	6	23	9	73
2019	41	8	69	3	121
2020	15	10	16	5	46
2021	36	7	21	16	80
2022	20	27	6	36	89
Total	147	58	135	69	409

Bats were tagged between 20 August (day number 232) and 19 October (day number 292). Most individuals were tagged throughout September (Figure 6).

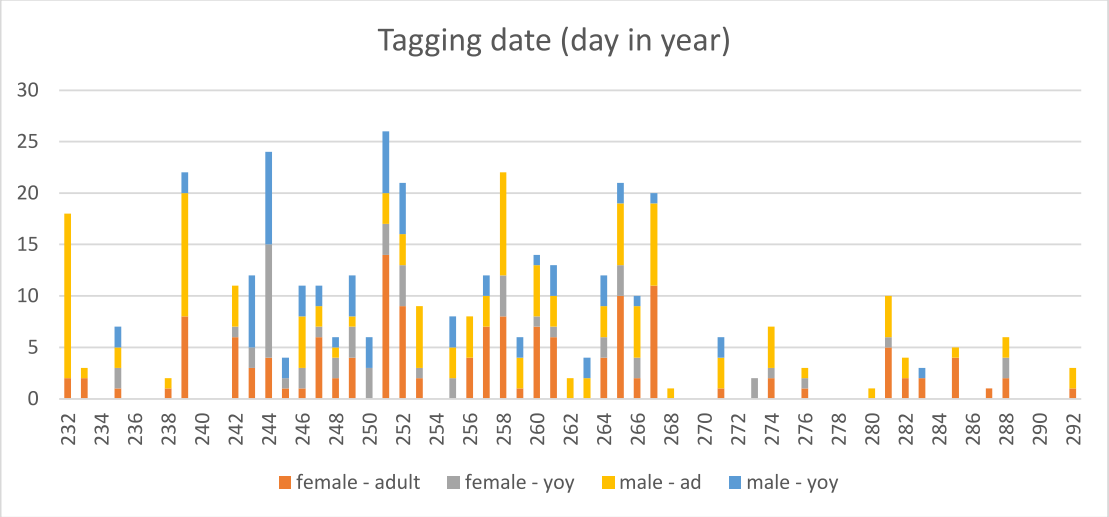

Figure 6: *Tagged bats per sex/age category throughout the season*

2.1.6 Other areas & species

Bats have also been captured and tagged in other areas (outside the study area) at the following locations:

- In the province Zuid Holland at Hoek van Holland (2018 – 2021) and at Goeree (2023).
- In the province Friesland at Zurich (2020) and Kornwerderzand (2020 – 2022)

An overview of the day-to-day efforts over the years for all locations can be found in Annex 2 (bat box surveys) and Annex 3 (nocturnal trapping sessions). Day-to-day captures of Nathusius' pipistrelle are given in in Annex 4. Likewise, Annex 5 – 11 provide information on the captures of Common pipistrelle, Common noctule, Particoloured bat, Serotine bat, Pond bat *Myotis dasycneme*, Daubenton's bat *Myotis daubentonii* and Long-eared bat *Plecotus auritus* respectively.An overview of all tagged Nathusius' pipistrelles is provided in Annex 12.

In addition to the tagging efforts late summer and throughout the autumn in the Netherlands, the Norfolk & Norwich Bat Group also started tagging in spring at the east coast of the United Kingdom (UK) (Lagerveld et al. in prep).

2.2 Receiver network

2.2.1 MOTUS Wildlife Tracking System

The MOTUS Wildlife Tracking System (www.motus.org) is an international collaborative research network that uses coordinated automated radio telemetry and is specifically designed to track the movements of smaller animals, such as bats and birds, during a prolonged period of time without the need to recapture them. It is therefore particularly used for migration studies. The system consists of a network of stationary automated receiving stations and light weight coded VHF radio tags, used to identify and track individual animals. MOTUS is a programme of Birds Canada in partnership with collaborating researchers and organizations. Basically, MOTUS is a community of researchers around the world conducting research on animals that are tracked by a network of coordinated receiving stations. These stations are maintained by a community of researchers, organizations, non-profits, governments, and individuals. In order for this concept to work, the system requires a centralized database and management system that all participants use. Most importantly, in order for the tags of one project to be detected on any other station in the network, or for other project tags to be detected elsewhere, projects, receivers and tags need to be registered with, and have data processed by MOTUS.

To reduce costs of automated receivers, MOTUS developed a new type of receiver: the SensorGnome. This receiver works with a small computer (a BeagleBone or Raspberry Pi). Having multiple USB-ports, it is able to process data simultaneously from up to 6 antennas. An onboard GPS device with PPS logs the location and makes sure that the UTC time is synchronized accurately to more than one second. The SensorGnome stores the recordings on a micro-SD card and can transfer the data via wifi or GMS-dongle. Besides the SensorGnome, other receivers like the readily available Lotek SRX-800's are also compatible with the MOTUS network, but this receiver is not able to process data from multiple antennas simultaneously.

2.2.2 Development of the network

In 2016 a pilot study was conducted during which the SensorGnome was tested at a small scale (Lagerveld et al. 2017b). Based on the results of this pilot study it was advised to build a network of at least 15 receivers in Noord-Holland near the tagging locations, and further south (inland and at the coast), as well as at one or two locations in offshore wind farms, assuming that movements of Nathusius' pipistrelle in the study area would be orientated towards the south (along the coast) or to the west heading for the UK.

From 2017 onwards the SensorGnome-based network was developed step-by-step. In particular obtaining permissions to install receivers at lighthouses, buildings and in nature reserves proved to be a very time-consuming process. Soon, it became apparent that many bats were not detected away from the tagging location and that more receiver coverage was needed to follow their movements. A total of 32 receivers were funded with Wozep means and 30 additional receivers were funded by Wageningen Marine Research and the Dutch Ministry of Agriculture, Nature and Food Quality (Research programmes KB-33-010-005: National Energy Transition, and KB-36-003-002: Development of instruments for a nature-inclusive energy transition). In addition to the receiver network along the Dutch coast, several receivers were installed at the east coast of the UK. It was also aimed to install receivers in Offshore Wind Farm Egmond aan Zee (OWEZ) and Princess Amalia Wind Farm (PAWP), but financial constraints prevented the actual implementation. For details on the receivers see Annex 12. . Moreover, a total of two receivers was added to the Dutch MOTUS network by the Rijksuniversiteit Groningen and two by Bionet Nature Research.

Figure 7 shows the development of the network in NW Europe which to date consists of about 125 receivers. Generally receivers are located along coastlines and are virtually absent from inland locations. The highest receiver coverage is in northern Noord Holland. Receivers in UK were installed from 2019 onwards but the coverage along the coast is still limited. There are currently 4 receivers in Belgium, one of which is located in Belwind Offshore Wind Farm. France still lacks receiver coverage.

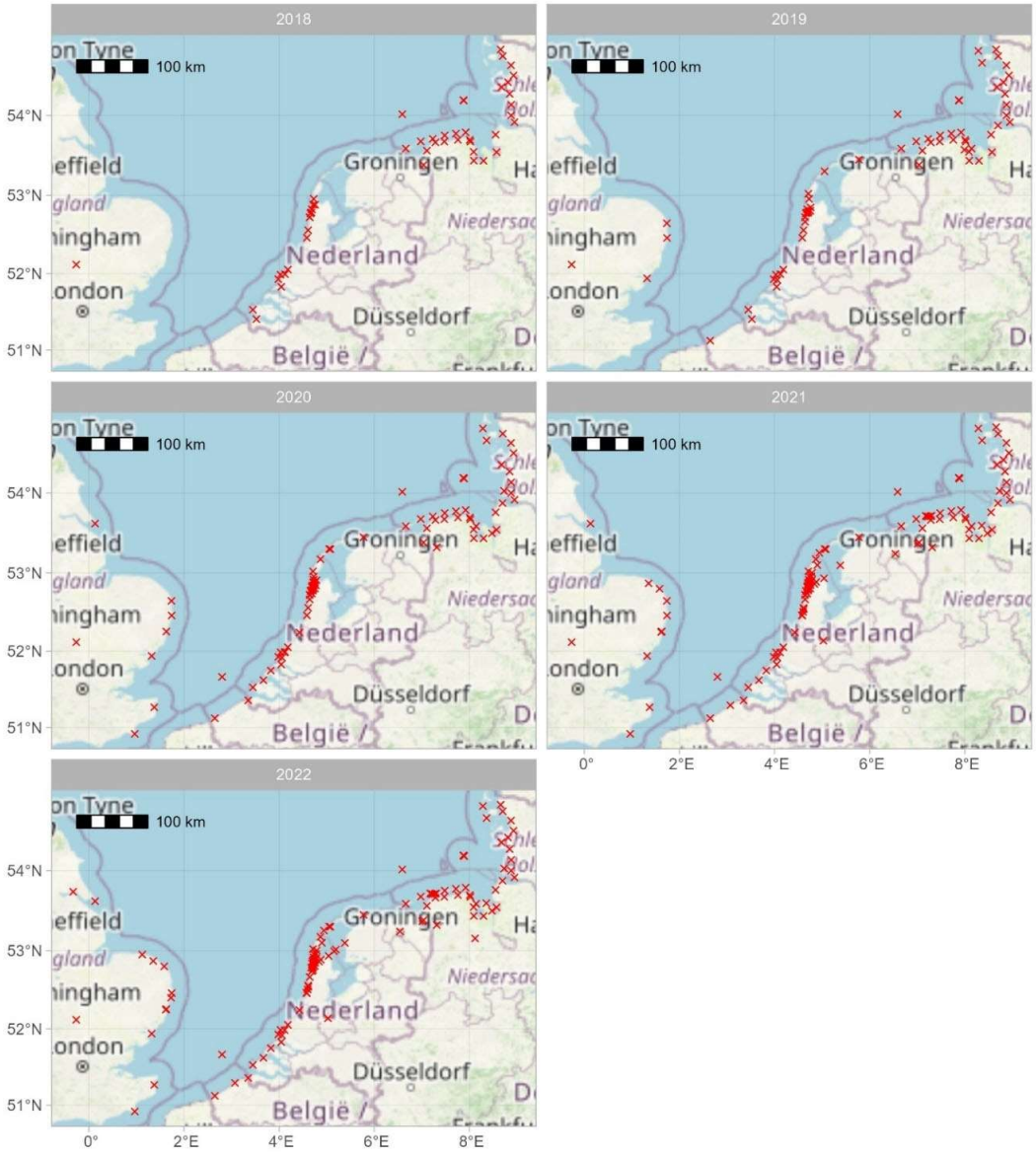

Figure 6: *Receiver network in NW Europe. Red crosses indicate deployed MOTUS receivers active between the 15th of August and the 15th of December of the year indicated in each panel.*

2.2.3 Performance monitoring and maintenance

To keep the receivers up and running proved to be a challenge. The SensorgnomeSensorGnome does not provide alerts in case of software, hardware and/or power failures. Consequently, downtime of the receivers was frequently not noted within a short notice during the first operational year. We therefore added several components to the SensorGnome to enable remote control and monitoring through a centralized server (Figure 7) which provides in:

- Realtime monitoring of receivers (up to SDR)
- Automated alerts
- Datatransfer / backup on weekly or daily basis
- Routers with capability to un- and replug power in case of Raspberry failures

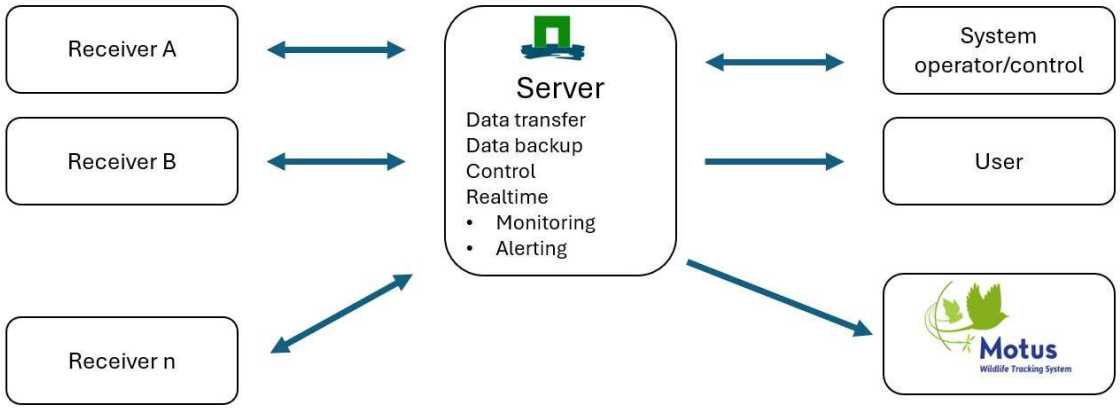

Figure 7: *Schematic overview of added functionality WUR server*

Receivers are maintained twice a year, or more when needed. Regular maintenance activities included the measuring of the SWR value (standing wave ratio meter value). Antennas (including cable) with a SWR higher then 1,5 where replaced. This measurement was performed with a RigExpert AA-600 antenna analyzer.

2.2.4 Receivers

Monitoring locations included lighthouses, lattice masts, pole mats, flats, houses, beach restaurants, hotels, barns, ringing huts and vantage points. Examples of receivers are shown in Figure 8.

Figure 8: *Various types of receivers, from upper left to bottom right, lighthouse Grote Kaap at Julianadorp, barn at Middenvliet Julianadorp, vantage point at Petten, dike at Zurich, production facility at 't Zand and measurement mast at TNO near Petten.*

Receivers are equipped with 2-6 directional SIRIO WY140-6N (Yagi) antennas in the Netherlands, Belgium and the UK. Since 2021, 3 stations in Noord Holland where equipped with an omnidirectional Diamond X-200N antenna. In Germany 6 element Vårgårda Helgoland (Yagi) antennas are used. Yagi antennas are fixed in a certain direction. In some cases the angle can be determined accurately (+/- 1 degree), for example if the antenna is aimed at a distant tower or another landscape element and the angle can be determined using a map. In other cases, the angle must be determined with a compass and reading errors or deviations (due to large metal surfaces) can cause relatively large errors in the antenna angle (up to approximately +/- 10 degrees). Yagi antennas are pointed upwards at an angle of 5 degrees.
The omnidirectional antenna used in this study has a detection range up to a few 100 m, while the detection range of Yagi antennas covers several kilometres. Yagi antennas with a low number of elements ensure a wide and short front detection area, while a high number of elements ensures a long and narrow front detection area. Several factors affect the detection probability of a tagged animal:

- The position of the transmitter and the transmitting antenna on the animal in relation to the receiving antenna (known as antenna polarization in radiotelemetry)
- The angle in orientation between the transmitting antenna and the receiving antenna
- Length of the antenna of the transmitter
- Transmitting power of the transmitter
- Flight altitude of the tagged animal
- Elevation of the receiver
- Weather/Rain (humidity)
- Nearby communication infrastructure causing a higher RF noise-floor (by example cell phone towers or marine VHF transmitters)
- Landscape (in general a direct line-of-sight is needed for VHF signals to be detected)

Consequently, bats are not always detected, in some cases even when passing relatively close to the receiver (within a few 100 m).

2.2.5 Location estimation using MOTUS data

In many migration studies using MOTUS data, the location of the receiver is used as proxy for the location of the tagged animal. However, when studying movements at a small spatial scale more precise location estimates are likely to be needed. The received signal strength provides an opportunity to obtain a more precise location estimate.

First we obtained a calibration dataset using a drone but this dataset was considered inadequate due to the relatively small area where the experiment was conducted, in combination with not-representative flight paths (fixed straight lines). Fortunately, we were able to make use of data obtained within the research programmes KB-33-010-005 (National Energy Transition) and KB-36-003-002 (Development of instruments for a nature-inclusive energy transition) in which 21 Common noctules were equipped with a GPS-logger, as well as with a MOTUS transmitter (cf. Lagerveld & Mostert 2023).
Using these data (see Annex 14 for details), we derived a relation between the distance from the receiver in the direction of the antenna (D) and the normalized signal strength (Sn):

$$D = -1017.65 * \ln(Sn) \quad (1)$$

We used this relation to estimate the location of the bat. When detections occurred at multiple antennae at about the same time (within 3 s) the averaged location was used.

2.3 Analysis

The aim of the analysis is to investigate Nathusius' pipistrelle movements in Noord Holland and assess the relative importance of migration over sea in relation to coastal migration. Due to the high receiver coverage in the northwestern parts of Noord Holland we consider only this area suitable to investigate the number of departures over sea. All calculations were performed in R version 4.3.2 (R Core team 2024).

The analysis involves several steps:

1. *Download of the MOTUS data and removal of false positives*
   The MOTUS R package (Birds Canada 2022) was used to download tag detection data, as well as the tag and receiver meta data from www.motus.org (retrieved 18-01-2024). This yielded a total of 40,226,039 recorded detections. A small part of the data consists of false positives which occur at locations with lots of radio traffic like harbours or at locations nearby cell phone towers. They can also be generated when multiple tagged animals are present simultaneously near a receiver. To exclude false positives from the dataset we removed detections with run lengths of 3 or less (i.e. number of consecutively detected signals) and a MOTUS filter value of 1 (automatically classified as a false positive detection) as recommended by the MOTUS R package manual (https://motuswts.github.io/motus/articles/05-data-cleaning.html). Additional false positives were removed after manual inspection of the data (see Annex 14 for details). After the data curation, 95% of the original records remained. This cleaning process was applied to the data of both the Nathusius' pipistrelle dataset for the analysis as well as to the Common noctule calibration dataset (Annex 13).

2. *Fligth path estimation*
   MOTUS detections are susceptible to variable surrounding conditions and noise effects, which may affect the location fixes. This frequently results in jagged patterns which may lead to inaccurate speed and heading estimations. To obtain smoothed trajectory paths we first applied state-space models (SSMs). These models are recognized as an important modelling framework for analyzing ecological time series (Augur-Méthé 2021), and are considered an appropriate choice for MOTUS data (Baldwin 2018). These models, a type of autoregressive time series model, typically feature a first-order autoregressive component, using information from the previous time step. Additionally, they allow for the incorporation

of uncertainty in observations, which is especially relevant for (noisy) MOTUS data, where uncertainty increases with distance from the receivers. We employed a widely adopted SSM approach for automated telemetry data, adapting a Bayesian hierarchical state-space model from the R 'aniMoturm' package (Jonsen et al. 2023). When the models were applied, the simulated tracks seemed unrealistic due to numerous turns and detours during apparent directional migratory flights. We therefore opted not to proceed with this approach. Instead, we applied smoothing by using floating averages. This is achieved by moving a fixed time-window (of 15 minutes) over the timeline with fixed time steps (10 minutes). For each time step the mean location and timestamp is calculated for all observations that lie within the time window. Based on the smoothed location fixes, the heading is calculated. This is the mean angle between line segments between the timestamps, corrected for the distance travelled. The ground speed is calculated by dividing the distance travelled by the time it took to travel this distance. Note that the speed and heading are indicative, as there are uncertainties in both the location fixes and the smoothing technique.

3. *Assessment of flights within the study area*
   In order to study the departure from the study area, the smoothed flight path as described above is determined for all individuals in the last night that they were observed inside the study area. For the last 15 minutes the mean heading and ground speed are also derived as described above (using time intervals of at least 4 minutes). In order to distinguish directional flights from local (foraging) flights we fitted two probability functions on the data using a gamma distribution with the R package 'mixtools' (Benaglia et al. 2009).
   Flights were subsequently classified into 3 categories:
   a. Undefined (time-interval < 4 min)
   b. Local (time-interval >= 4 min, groundspeed < intersection of distributions)
   c. Directional (time-interval >= 4 min, groundspeed >= intersection of distributions)

   We calculated the average groundspeed for each sex and age category using the classification described above. Subsequently, we assessed the general heading of the directional flights using 4 categories: W (between SW – NW), N (between NW – NE), E (between NE – SE) and S (between SE and SW).

4. *Assessment of flights outside the study area*
   Movement beyond the study area is tracked by using the location of the MOTUS receivers that detect the individual. In order to evaluate whether the direction of movement when leaving the study area is representative for the direction of movement outside the study area we compared the general heading at departure with the overall heading of the migratory movement. Moreover, we determined the number of bats recorded at different distances from the study area along the coast to assess potential departures over sea further down the coast.

3 Results

3.1 Flight paths

Figures 9 and 10 show examples of estimated Nathusius' pipistrelle flight paths. In the study area only the movements are shown during the last night the bat was detected. Dotted lines in the study area connect flight paths when gaps in detection data of more than 15 minutes are present. Antennas on which the bat was detected are indicated in green, while bats were not detected on black antennas. Non-operational receivers are shown as blue dots and the location where the bat was tagged is indicated by a red triangle. The black dots represent the location estimates based on the MOTUS received signals. Note that the estimated flight path does generally not continue until the last location estimate as a smoothing technique was applied looking back in time.

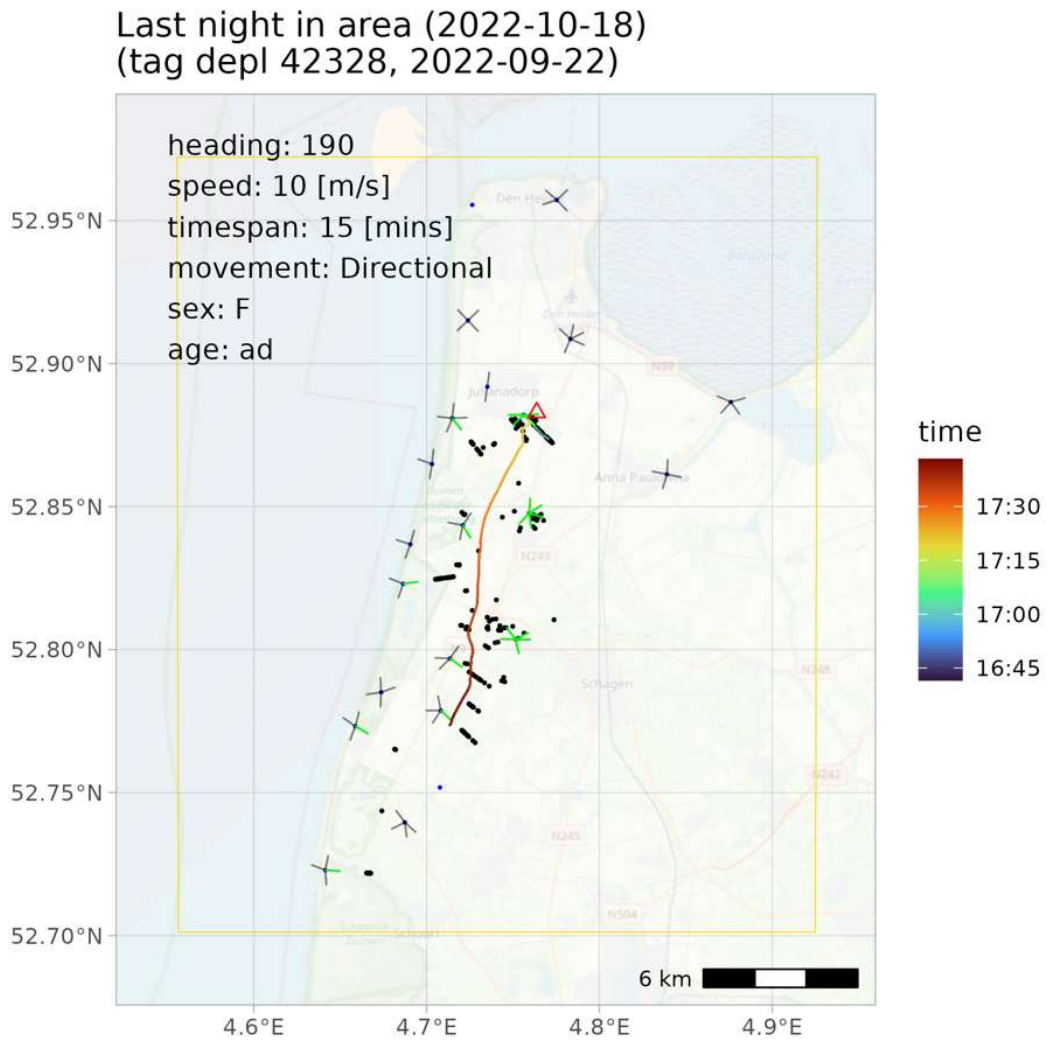

Figure 9: *this individual was tagged 22-09-2022 at Noorderhaven and remained in this general area almost a month. In the early evening of 18-10-2022 the bat departed at a relatively high speed in a southerly direction passing multiple receivers along the way, last being detected at Camperduin, but not outside the study area.*

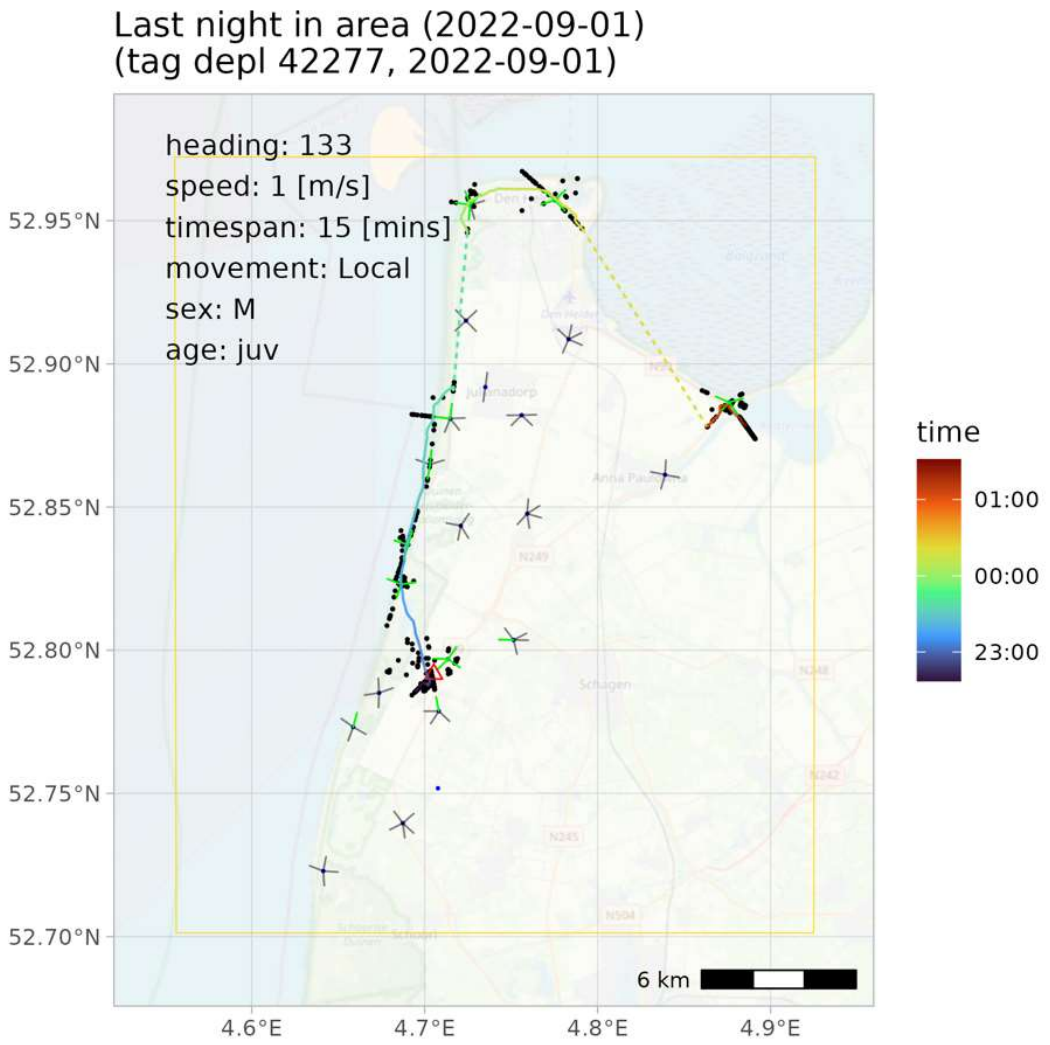

***Figure 10**: this individual was tagged 01-09-2022 at Callantsoog. The same evening the bat headed north and subsequently southeast at a relatively low speed. It was not detected outside the study area.*

Figures 11 – 33 show representative examples of the recorded movements, inside and outside the study area. Flight tracks of all individuals can be found in Annex 15. Note that solid lines outside the study area represent movements within one night, while dotted lines indicate movements over multiple nights (within the study area dotted lines connect flight paths when gaps in detection data of more than 15 minutes are present).

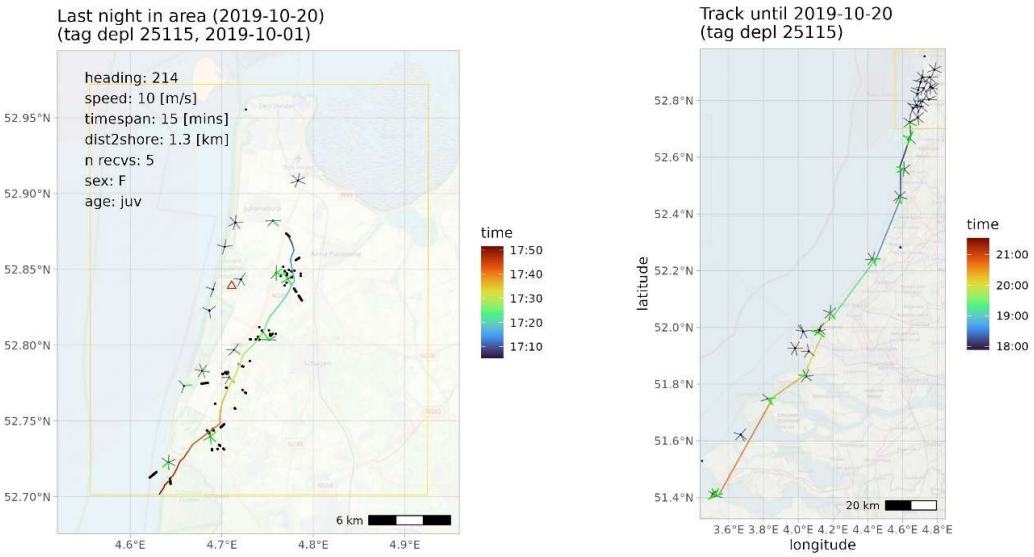

***Figure 11**: (i) the departure from the study area, typically gradually approaching the coast and (ii) the subsequent movement during the same night along the coast of Noord Holland, Zuid Holland and Zeeland until Breskens.*

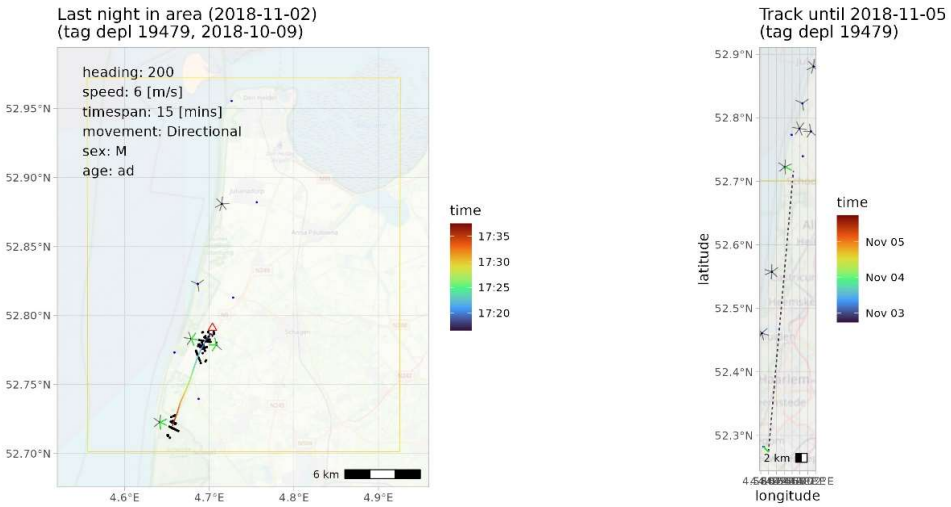

***Figure 12**: (i) departure from the study area, and (ii) the detection 3 nights later at an inland location (Hillegom) in Zuid Holland.*

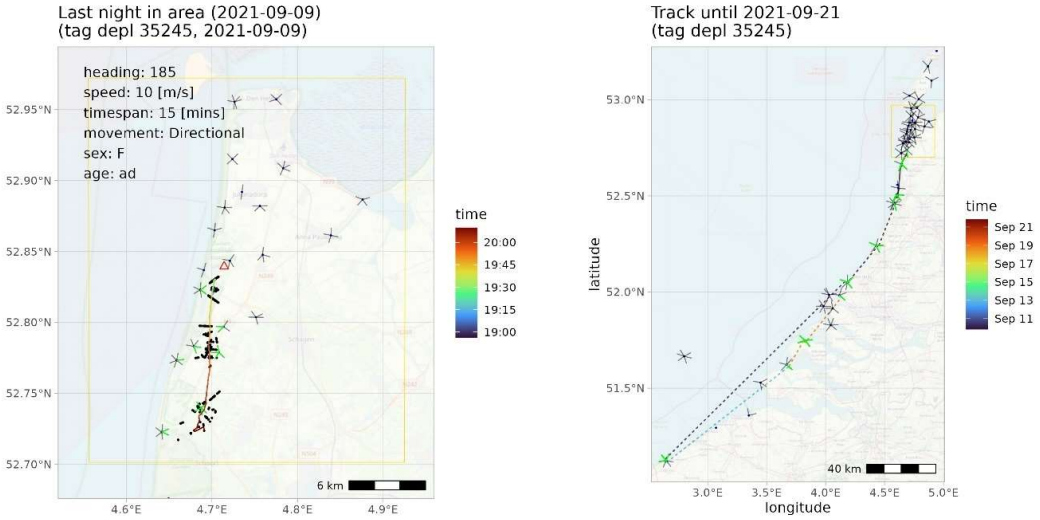

***Figure 13**: (i) the departure from the study area and (ii) the movement over multiple nights to southern Belgium, and the return to Hoek van Holland almost two weeks later.*

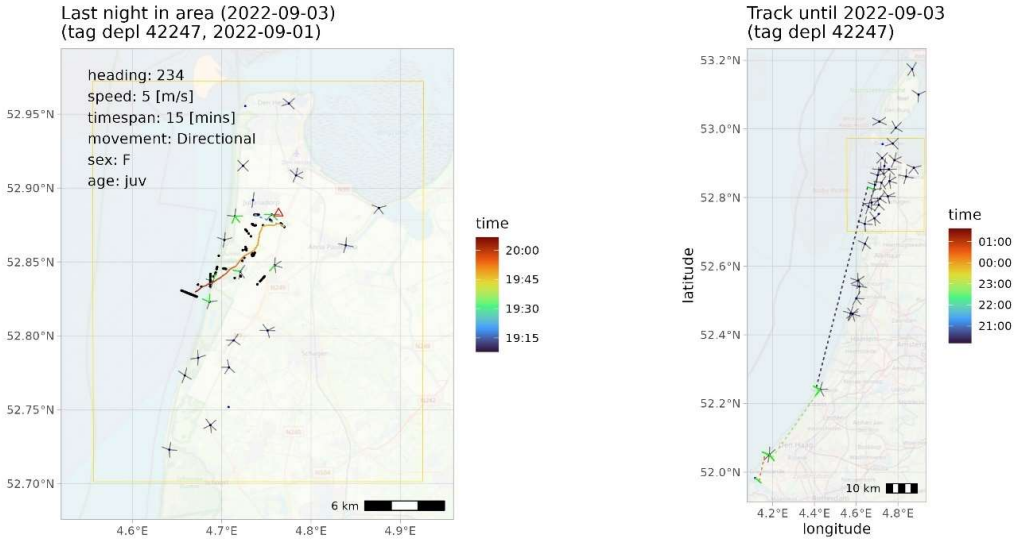

***Figure 14**: (i) the observed departure from the coast in the study area and (ii) the subsequent detections along the Zuid Holland coast, indicating an approximate 65 km flight over sea parallel to the coast.*

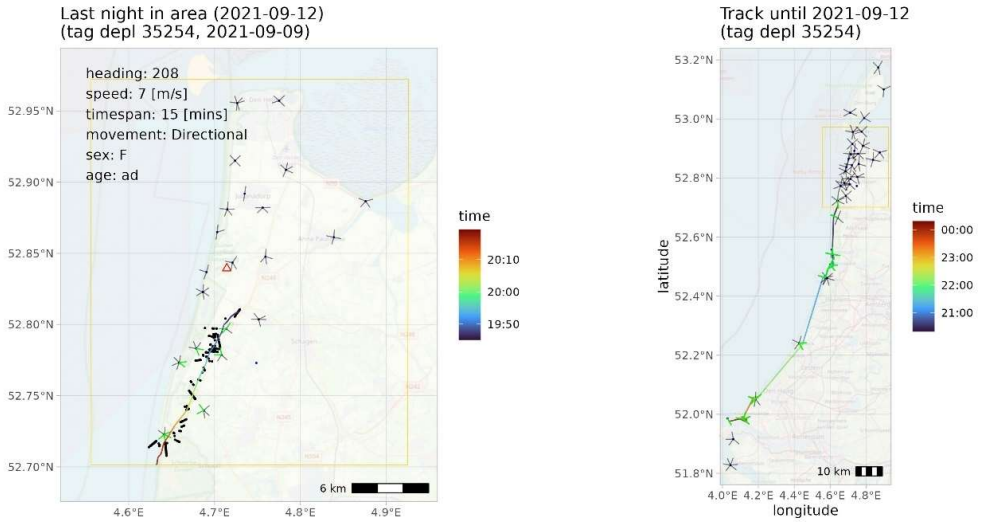

***Figure 15**: (i) the observed departure from the study area of an ad female and (ii) the subsequent detections along the Noord Holland and Zuid Holland coast. Note the possible departure onto sea at the Maasvlakte.*

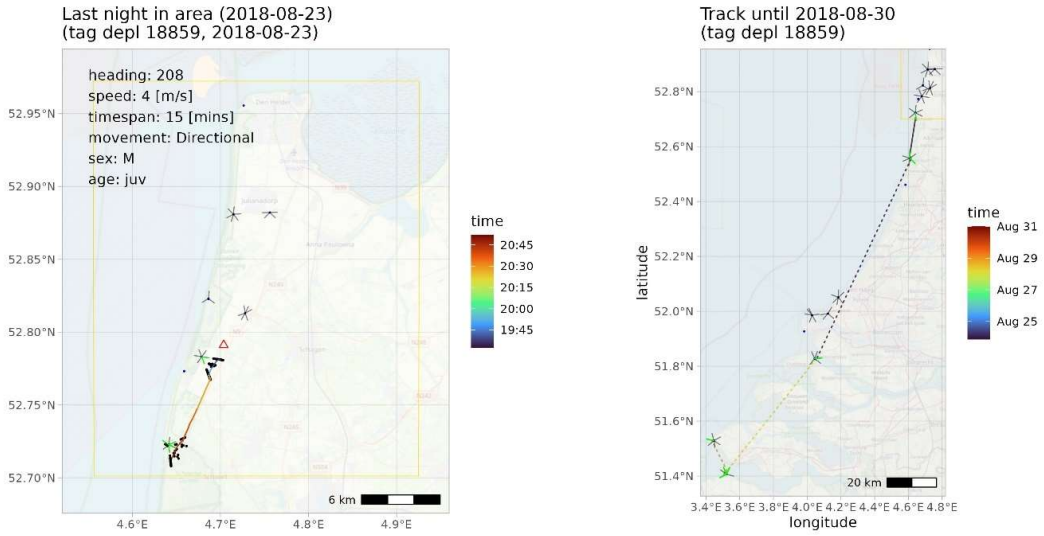

***Figure 16**: (i) the observed departure from the study area, and (ii) the subsequent detections at Castricum, Haringvlietdam, Breskens and eventually a likely departure onto sea at Westkapelle.*

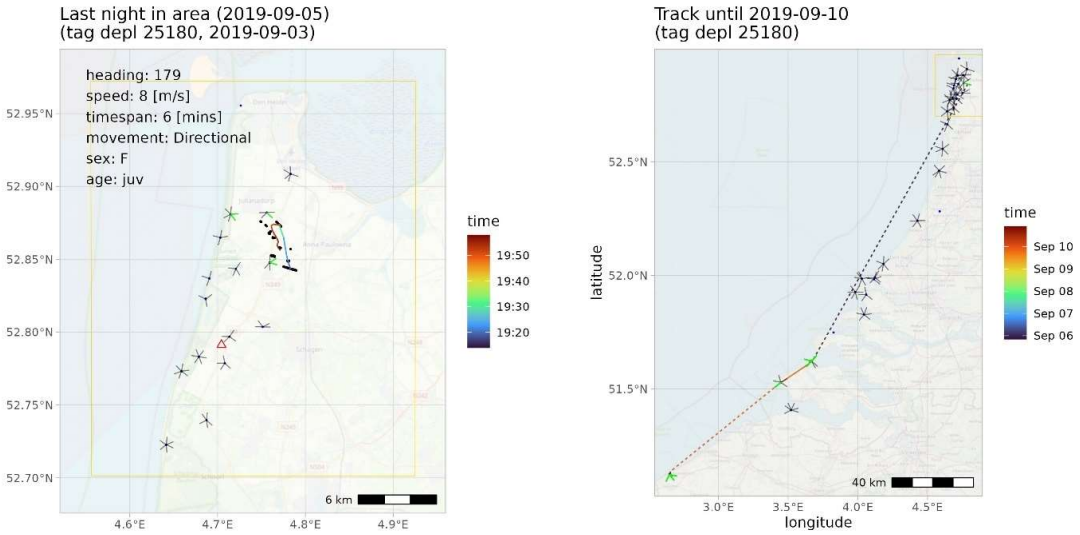

***Figure 17**: (i) the observed departure from the study area, and (ii) the detection at Neeltje Jans, the departure onto sea at Westkappele and detection at Koksijde in southern Belgium.*

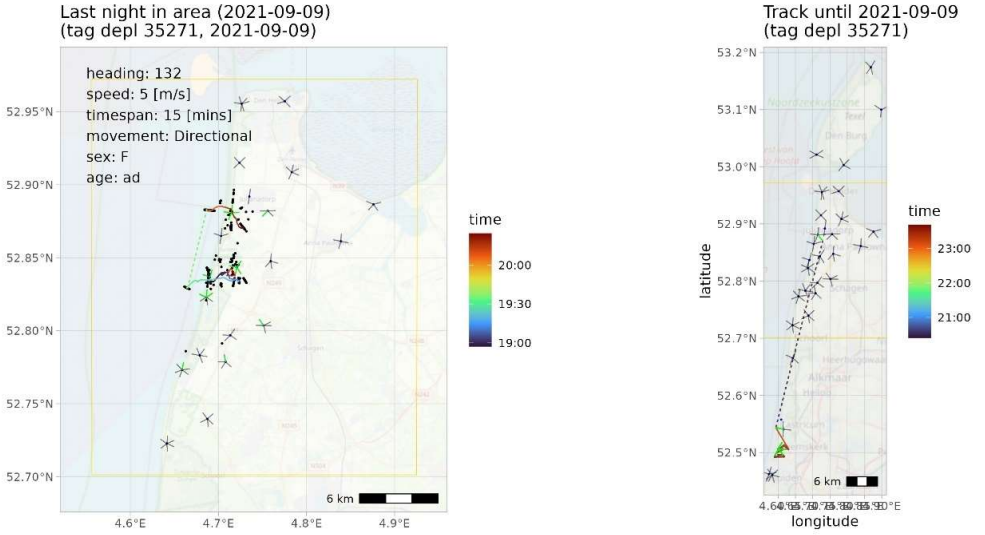

***Figure 18**: (i) the observed departure from the coast in the study area and the return from sea 30 minutes later 6 km to the north, and (ii) the subsequent detections later that night along the Noord Holland coast.*

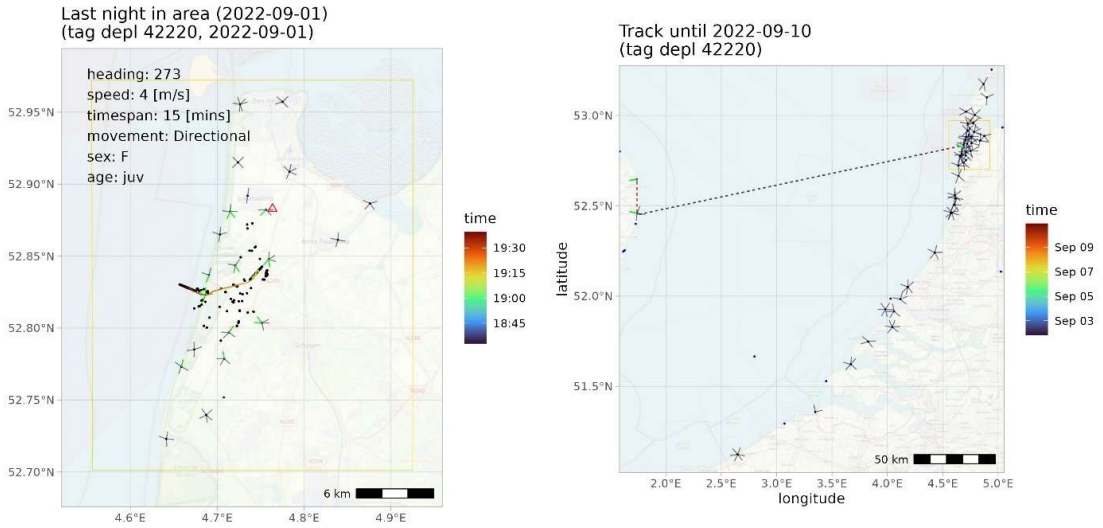

***Figure 19**: (i) the observed departure from the coast and (ii) the subsequent detections 9 days later along the Norfolk coast (UK).*

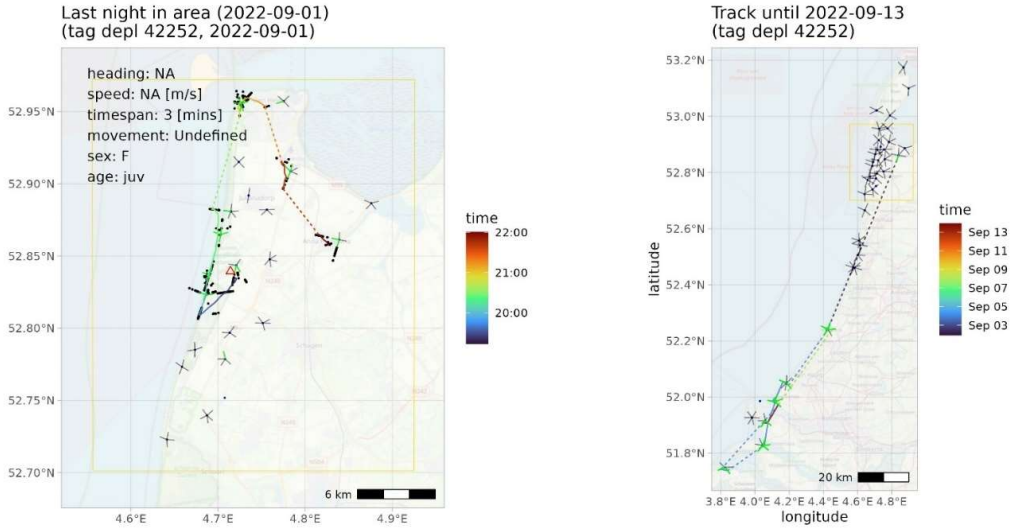

***Figure 20**:(i) the observed movement during the last night in the study area. Note that speed and heading of the last segment of the track could not be assessed due to the limited timeframe in which data was obtained (3 min), (ii) the observed flight paths during the 9 consecutive nights: from Noordwijk to Brouwersdam, and back to Noordwijk.*

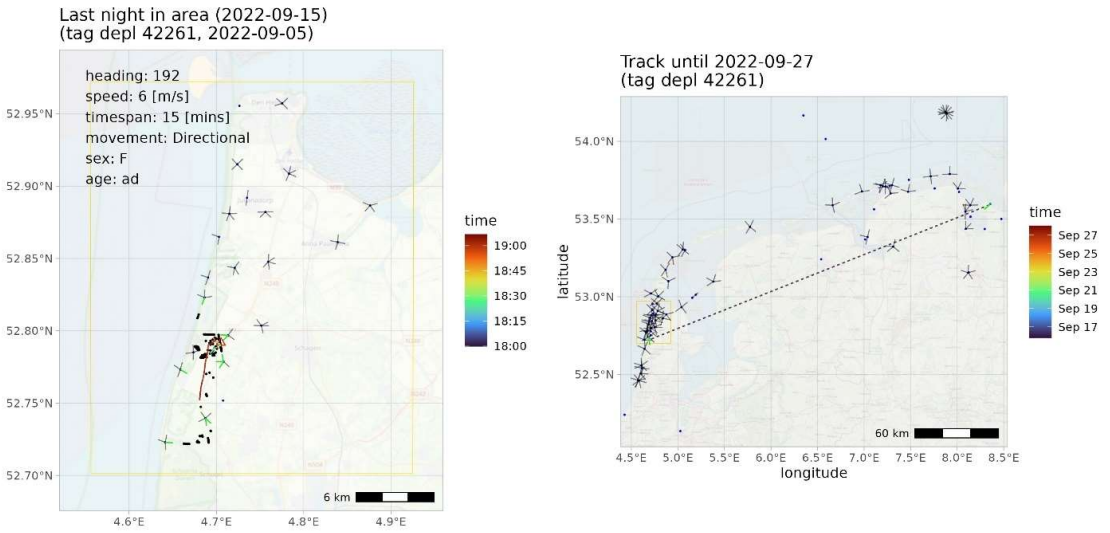

***Figure 21**: (i) the observed departure from the study area heading south, and (ii) the detection 12 nights later in Germany.*

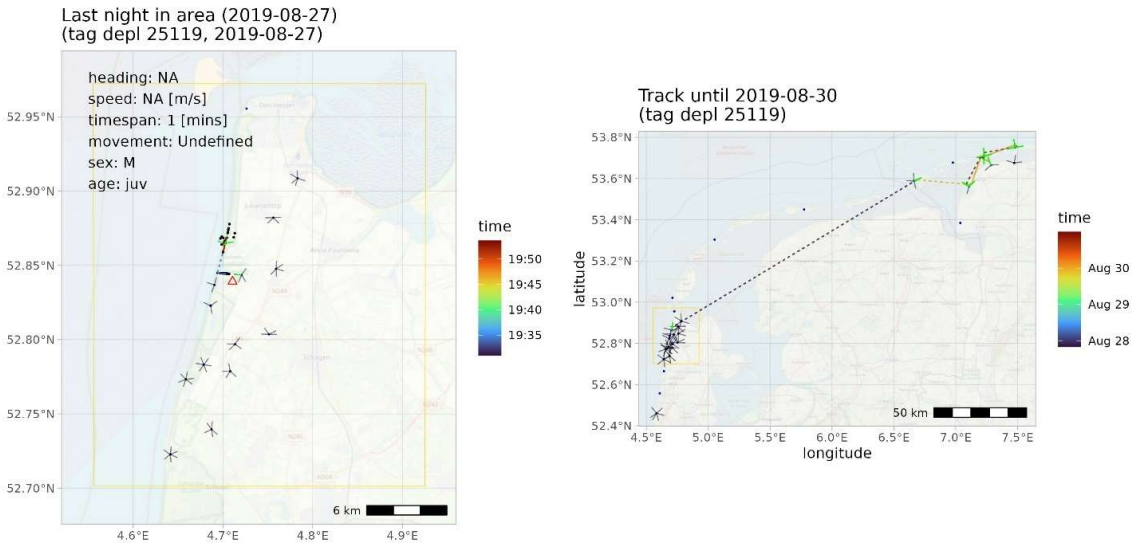

***Figure 22**: (i) an undefined movement in the study area, and (ii) its travel in the German Wadden Sea area heading east 3 nights later.*

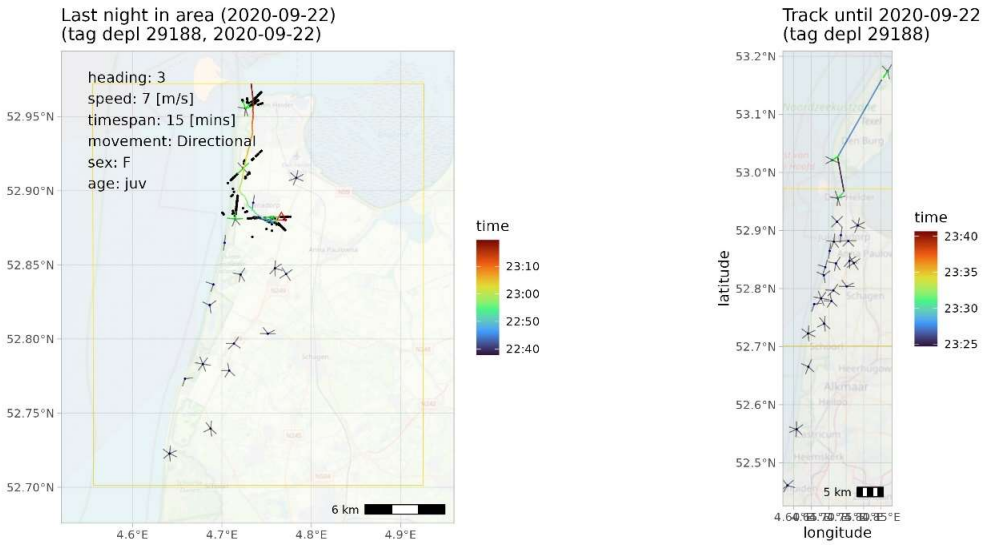

Figure 23 *(i) the observed departure from the study area heading north, and (ii) subsequent detections at Texel.*

3.2 Assessment of flights in the study area

Of the 409 tagged individuals 398 were detected by the receivers (97%). The flights of 66% of these detected individuals during their last night in the study area were considered suitable for speed and heading calculations (data obtained within a timeframe of more than 4 minutes). The flights of the other 34% where classified as "undefined" and not taken further into account. When the calculated ground speeds of the 262 individuals are plotted in a histogram (Figure 24), two peaks become apparent. These peaks were assumed to correspond with two different states of the animals: local movements at low speeds (i.e., foraging), or directional movements at a higher speed. Both distributions may overlap, i.e., some individuals may forage at higher speeds, whereas some individuals may perform a directional flight at a lower speed. A gamma distribution was used to describe the two states using the R package 'mixtools' (Benaglia et al. 2009), it was found that below a ground speed of 4.3 m/s, the local movement state is more likely, whereas the directional flight state is more likely above 4.3 m/s (Figure 24).

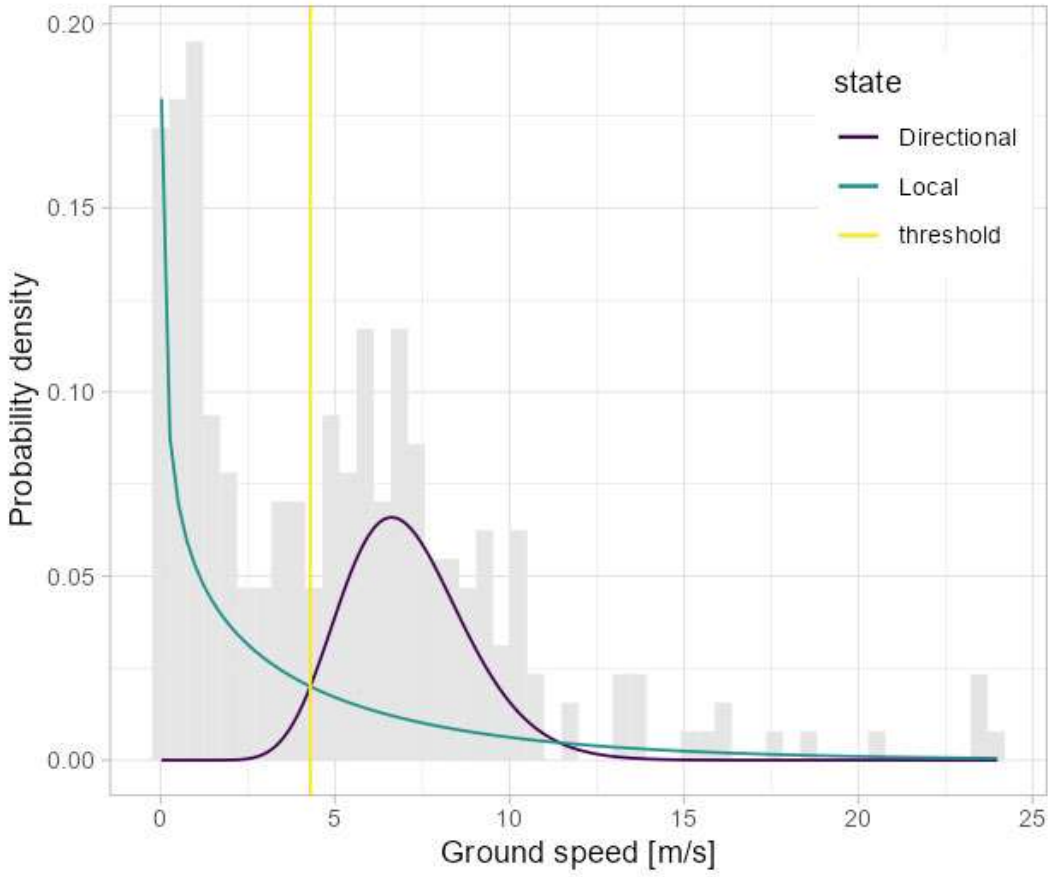

***Figure 24**: Grey bars indicate the density of ground speeds calculated from the MOTUS observations using the smoothing technique described in paragraph 2.3. The dark blue and green lines indicate the probability functions fitted with the 'mixtools' package. Each of these curves represent a different state (local/directional movement). The yellow line marks where the likelihood of a state at a given ground speed changes (i.e., above this speed, state 2 is more likely, below it, state 1 is more likely).*

Using this 4.3 m/s threshold, movements were classified into *directional* (57%) and *local* flights (43%). (Table 4). There are obvious differences amongst the sex/age categories. Adult females performed 60% directional flights while 40% was assessed to be local. First year bats showed a somewhat higher proportion of directional flights in comparison to local flights, respectively 74% and 26% for both juvenile females and juvenile males. In contrast, only 29% of flights of adult males consisted directional flights, whereas 71% of the flights were classified as local. Furthermore, adult males were overrepresented in the undefined flights.

***Table 4**: Classification of flights per sex and age category during the last night in the study area.*

Movement last night in study area	Female adult	Female juvenile	Male adult	Male juvenile	Total
Directional	62	30	14	42	148
Local	42	11	47	14	114
Total	104	41	61	56	262

Table 5 shows the average calculated groundspeed for each sex and age category using the classification described above. There are no obvious differences amongst the sex/age categories for both directional and local flights.

***Table 5**: Average groundspeed and standard error per sex and age category.*

Movement last night in study area	Female adult	Female juvenile	Male adult	Male juvenile	Total
Directional	8.6 +/- 0.6	8.1 +/- 0.5	7.2 +/- 1.4	8.1 +/- 0.6	8.2 +/- 0.3
Local	1.4 +/- 0.2	2.3 +/- 0.4	1.1 +/- 0.2	1.6 +/- 0.3	1.4 +/- 0.1

We assessed the general heading using 4 categories: W (between SW – NW), N (between NW – NE), E (between NE – SE) and S (between SE and SW) for the directional flights as well as the local flights. A significant higher proportion of directional flights (69%) is conducted in a general southerly direction, in comparison to the other directions, respectively west (10%), north (7%) and east (14%) (table 6). In contrast, the general direction of local movements is much more evenly distributed: 29% Z, 31% E, 19% W and 21% N (table 7).

***Table 6**: General heading of directional movements during the last night in the study area*

General heading directional movement	Female adult	Female juvenile	Male adult	Male juvenile	Total
N	3	3	1	3	10
E	7	5	2	7	21
S	45	18	10	29	102
W	7	4	1	3	15
Total	62	30	14	42	148

***Table 7**: General heading of local movements during the last night in the study area*

General heading directional movement	Female ad	Female yoy	Male ad	Male yoy	Total
N	10	2	10	2	24
E	16	3	13	3	35
S	10	4	14	5	33
W	6	2	10	4	22
Total	42	11	47	14	114

The majority of directionally moving bats (61%) was also detected outside the study area, in contrast to the bats with local flights (11%) and undefined (18%) flights (Table 8). Some bats also performed up-and-down movements along the coast (cf. Figures 13 & 20); this was mostly the case in directionally moving bats (14%) and in 6% and 8% of the bats classified as local and undefined respectively.

Of the directionally moving bats, 67% of the southbound moving individuals were detected outside the study area, while this was the case for respectively 40%, 48% and 33% of the individuals moving north, east and west. Individuals from the latter two categories (Local and Undefined) detected outside the study area (n=37) were recorded mainly in the south (81%) and the remaining individuals (19%) to the east (Table 8).

***Table 8**: general heading of movement in the study area and location of last detection outside the study area*

Movement in study area	General heading	Total	last detection outside study area				
			N	E	S	W	Not detected
Directional	N	10	2	0	2	0	6
	E	21	0	5	5	0	11
	S	102	0	4	64*	3	31
	W	15	0	1 (GER)	3	1 (UK)	10
	Subtotal	*148*	*2*	*10*	*74*	*4*	*58*
Local	N	24	0	0	2	0	22
	E	35	0	1	1	0	33
	S	33	0	2	5	0	26
	W	22	0	0	2	0	20
	Subtotal	*114*	*0*	*3*	*10*	*0*	*101*
Undefined	*Subtotal*	*136*	*0*	*4*	*20*	*0*	*112*
Total		398	2	17	104	4	271

**Note that 5 individuals of this category apparently departed over sea further south*

Of the 15 individuals heading west on a directional flight (Table 8), nine individuals (Annex 15: deployments 19028, 25155, 29194, 35243, 42200, 42220, 42221, 42247, 42263) were detected at sea by the receivers (indicated by black dots on the maps), confirming a departure over sea. Of those, five individuals were detected outside the study area: one (42220) was recorded in Norfolk (UK), three (19028, 42221 and 42247) were recorded in Zuid Holland after an apparent overseas flight parallel to the coast, and one (25155) with an unknown flight path was recorded in Northern Germany (GER). The remaining six individuals heading west (deployments 18841, 26142, 26160, 26302, 29231, 42320), possibly embarked offshore as they were not detected elsewhere in the study area and also not outside the study area.

Of the individuals heading north on a directional flight (n=10), four were detected outside the study area: two were detected at Texel, while two others were recorded in the south. Of the bats heading east (n=21), ten were recorded outside the study area: five in the east (four at the Afsluitdijk and one in Northern Germany) and five in the south. Of the individuals heading south (n=102), 71 were detected outside the study area, of which 68 individuals were observed further south along the coast and three headed east (two at the Afsluitdijk and one in Northern Germany). One individual (deployment 35272) embarked onto sea in the study area and returned from sea 30 min later before heading south. At least five individuals moving south along the coast seemingly departed over sea at the following locations: one at Bergen aan Zee (35561), one at the Maasvlakte (35254) and three at Westkapelle (18859, 25138, 29234).

Of the individuals heading south on a directional flight (n=102, Table 8), the percentage of detected bats gradually decreased from 70% at a distance of 1-50 km from the study area, to 5% between 201-250 km (Figure 25) Therefore, a high percentage of bats (95%) departing from the study area was not detected in Belgium.

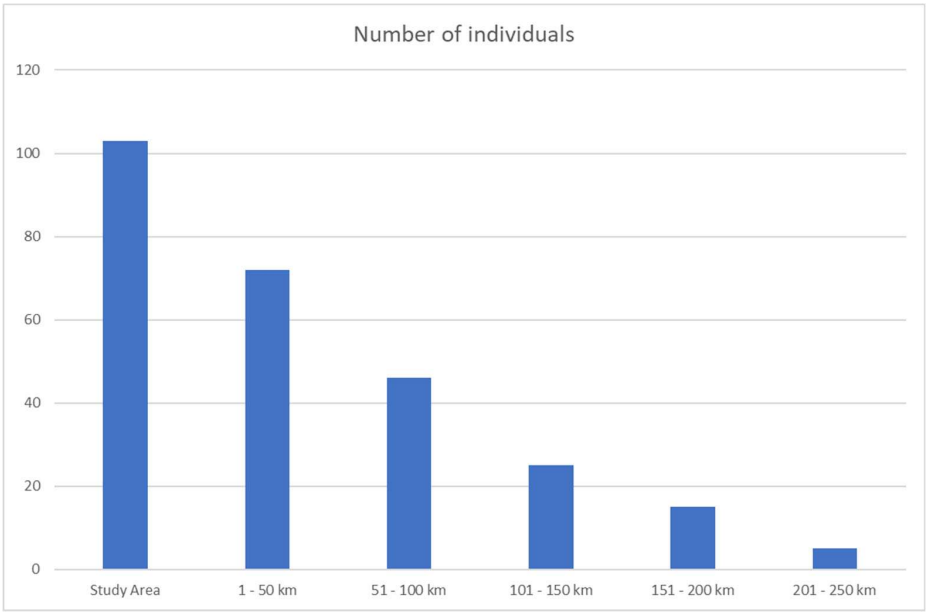

***Figure 25**: Number of individuals with a directional flight heading south in the study area (0 km), and the number of individuals detected further south along the coast in different distance classes.*

4 Discussion and Conclusions

4.1 Movements

Our results show that two categories of movements can be distinguished; one at relatively low groundspeeds (average 1.4 +/- 0.1 m/s) which were classified as local movements and one at relatively high ground speeds (average 8.2 +/- 0.3 m/s) which were classified as directional movements. As Nathusius' pipistrelle frequently forages in a relatively small area (Dietz & Kiefer 2016), it is not surprising that the observed ground speed over time of local movements is much lower than the minimum power velocity which is used during foraging (5.8 +/- 1.0 m/s, cf. Troxell et al. 2019). The average calculated groundspeed of directional flights corresponds well with the maximum range velocity (7.5 +/- 1.1 m/s, cf. Troxell et al. 2019), which is used during migratory and commuting flights (Alerstam & Lindström 1990, Hedenström & Alerstam 1995).

As adult males are known to occupy territories during autumn migration (Jahelkova & Horacek 2011), they are generally expected to be mostly sedentary within the timeframe of this study. This is supported by our observations which show that adult males perform significantly less directional movements and significantly more local movements in comparison to females (both adult and juvenile), as well as juvenile males. This also supports the idea that the observed directional flights are indeed migratory flights, and not commuting flights (e.g., between foraging areas and their roost).

Of the directional moving bats in the study area (n=148) fifteen individuals headed west, of which eight departed over sea, while the remaining six were heading towards the coast but were not recorded with certainty over sea. They may have departed over sea undetected by the receivers, but it is also possible that they escaped detection elsewhere in the study area. Therefore, we estimate the percentage of bats departing over sea from the study area 6% – 10%.

Detections outside the study area were noted of five individuals departing over sea: one was recorded in Norfolk (UK), three were recorded in Zuid Holland after an apparent overseas flight parallel to the coast, and one was recorded in Northern Germany (Table 8). Noteworthy also was an individual who departed over sea and subsequently returned to land before departing south along the coast (Figure 18).

The individual detected in Norfolk followed an ENE – WSW route, corresponding with the migration paths based on virtually all ringing recoveries in Great Britain (National Nathusius' Pipistrelle Project, 2024). Given the limited number of receivers along the UK coast the chances of detecting an arriving bat from the European mainland are small. It seems plausible therefore that more bats crossed over to the UK undetected.

Overseas migration parallel to coast has not been documented previously, although acoustic monitoring in the Dutch North Sea has been conducted at several locations relatively close to shore (22-25 km) (cf Lagerveld et al 2023). Acoustic monitoring in the Belgian North Sea however did show that the acoustic activity in autumn is higher close to shore in comparison to areas further away (Brabant et al. 2021), possibly indicating that migration parallel to the coast also occurs along the Belgian North Sea coast.

An additional new finding was the departure over sea and the subsequent return to land. The individual departing over sea and later detected in Germany may also returned from sea, although we cannot rule out the possibility that it travelled over sea eastwards.

Of the individuals heading south from the study area, a high percentage of bats (up to 95%) does not continue its migration until Belgium. Possible -mutually non-exclusive- explanations may be that:

1. Bats depart over sea from another location. We recorded five apparent departures over sea further south along the coast. Given the gaps in the receiver network this is likely an underestimate.
2. Bats fly back: we noted several return flights to the study area from bats which had left the area previously. Also, individuals heading north and east may in fact fly back to areas previously visited. This may be explained by avoidance of an ecological barrier like the North Sea (Lagerveld et al. in prep) or adverse weather conditions (Voigt et al. 2024). It may also be caused by earlier experiences (e.g., better foraging grounds or mating opportunities).
3. Bats follow a route more inland (cf. Figure 12). The number of Nathusius' pipistrelles in autumn does not only increase at the coast, it also increases inland (Broekhuizen et al. 2016).
4. Bats lose their tag along the way, or tags malfunction: we found some tags in the study area between 1-39 days after the animal had been tagged. However, we do not know how long the tags stay on the bats on average.
5. Mortality along the way, including natural mortality (e.g. predation, exhaustion, sickness etc), as well as anthropogenic mortality (e.g., wind turbines).
6. Bats do not continue their migration and start hibernating. Given the study period, though, this seems less likely as the onset of hibernation is expected from December onwards (Broekhuizen et al. 2016).

4.2 Relative importance of the route over sea

A relatively small percentage (up to 10%) of bats departs over sea directly from the study area, whereas most bats (69%) are heading in a southerly direction. Therefore, from the perspective of the study area, the coastal route is preferred over the route over sea. This preference may well be explained by the risk bats face to cross an ecological barrier like the North Sea (Lagerveld et al. in prep). An additional 7% heads north and 14% east.

Bats initially following the coast may decide at a later stage to depart over sea. We observed some individuals probably departing onto sea south from the study area at Bergen aan Zee, Maasvlakte and Westkapelle. Therefore, the overall percentage of 6-10% of bats -tagged in the study area- departing over sea must be regarded as a conservative estimate.

It seems unlikely that migratory bats encounter the Dutch coast exclusively in the study area in Noord Holland. Migratory bats are also observed at inland locations in the Netherlands (Broekhuizen et al. 2016), and are therefore likely to encounter the Dutch coast in areas further south. New arrivals down the coast may depart over sea from there, or follow the coastal route further south. At this moment it is not possible to assess this percentage with more precision due to gaps in the receiver network away from the study area and in the UK.

Limpens et al (2017) estimate that 25% of the migratory Nathusius' pipistrelles departing from the Netherlands over sea to the UK and 75% travels over land to Belgium.

4.3 Implications for wind farm developments

Offshore
The current study shows that bat migration over sea in autumn also occurs parallel to the coast, in addition to migration over sea to the UK. Acoustic research has shown a slight increase of bat presence at monitoring locations relatively close to shore (22 – 25 km), but this increase was much less pronounced in comparison to the increased bat presence at monitoring locations west of Noord Holland (cf Lagerveld et al 2023). As increased bat presence close to shore (6 km) was also observed in the Belgian North Sea (Brabant et al 2021), it seems likely that offshore wind developments should also pay attention to bat migration parallel to the coast. All in all, in the Dutch North Sea increased bat presence during the autumn migration can probably be expected in areas between Noord Holland and Norfolk (cf Lagerveld et al 2023), as well as in areas relatively close to shore (up to c. 25 km).

In spring, most bats can be expected in southern parts of the North Sea as bats frequently take a short(er) route over sea (Lagerveld et al in prep). If bats apply the same strategy in autumn this may also result in an increased number of crossings over sea in areas between Belgium/France and the UK.

Onshore
During migration over land, Nathusius' pipistrelle often uses guiding landscape structures like river valleys (Furmankiewicz & Kucharska 2009) or coasts (Bach et al 2022, Ijäs et al. 2017, Pētersons 2004, Voigt et al 2024). Our results also show that many migratory bats follow the coastline. As windfarms on land are often located at coastal locations migratory bats are likely exposed to an increased mortality risk in comparison to wind farms further away from the coast.

5 Recommendations

Additional analyses of collected data
The current study focusses on the question *where* migratory bats can be expected during their travel over sea and along the coast. Additional information on the spatial occurrence can be obtained by analysing the movements of the bats tagged at Kornwerderzand and Hoek van Holland (Annex 12). In particular the bats tagged at Kornwerderzand may shed a light on where bats from a location further inland encounter the Dutch coast.

In addition, the obtained tracking data in this study enable to investigate the overall migration speed, routing (in particular the 'backwards' movements), pre-migration-movements, stopover duration, departure decisions, airspeed, groundspeed and (possibly) flight altitude during migratory flights, as well as the influence of weather. Particularly useful would also be an analysis where acoustic data and telemetry data are compared. In addition, combining data of different taxa (bats, birds and insects) may reveal overall migration patterns.

This will provide us with essential additional information on the timing of migration and the environmental conditions which shape migration patterns (cf Lagerveld et al 2023, Lagerveld et al in prep); knowing *when, how* and *under which conditions* migration occurs will provide important information for curtailment measures which are known to effectively reduce the number of bat fatalities (Adams et al. 2021, Arnett et al. 2011, Peste et al. 2015).

Last, during this project several Particolored bats were tagged and tracked. As this species is also potentially vulnerable for offshore wind developments (Leopold et al 2014), it is recommended to analyse the obtained tracking data.

Additional research
In order to assess the percentage of bats departing over sea with more precision it is recommended to investigate migration patterns at a larger scale. Therefore the MOTUS network needs to be expanded offshore as well as further south to northern France. In addition, gaps in receiver coverage throughout the receiver network need to be closed.

Currently, the fatality risk of offshore wind turbines remains unknown (cf Lagerveld et al 2020). A potential important determinant of the fatality risk is the flight behaviour of bats in OWF's. It is therefore recommended to realise receiver networks in OWF's.

6 Quality Assurance

Wageningen Marine Research utilises an ISO 9001:2015 certified quality management system. The organisation has been certified since 27 February 2001. The certification was issued by DNV.

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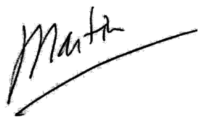
Justification

Report: C030/24
Project Number: 4315100067 & 4315100201

The scientific quality of this report has been peer reviewed by a colleague scientist and a member of the Management Team of Wageningen Marine Research

Approved: M.J.M. Poot
Researcher

Signature: 

Date: 21 May 2024

Approved: Dr. A.M. Mouissie
Business Manager Projects

Signature: 

Date: 21 May 2024

Annex 1: Capture areas

Fieldwork was executed in North Holland, Friesland and Zuid Holland. Most effort was conducted in North Holland at 7 different locations: Noorderhaven (figure A1-1), Callantsoog (figure A1-2), Wildrijk (figure A1-3), Ananas/Anna's Parck (figure A1-4) , de Stolpen (figure A1-5), Ruigeweg (figure A1-6) and t Zand (figure A1-7). In Friesland fieldwork was conducted at Breezanddijk (figure A1-8), Kornwerderzand (figure A1-9) and Zurich (figure A1-10), and in Zuid Holland at Hoek van Holland (figure A1-11) and at Goeree (figure A1-12).

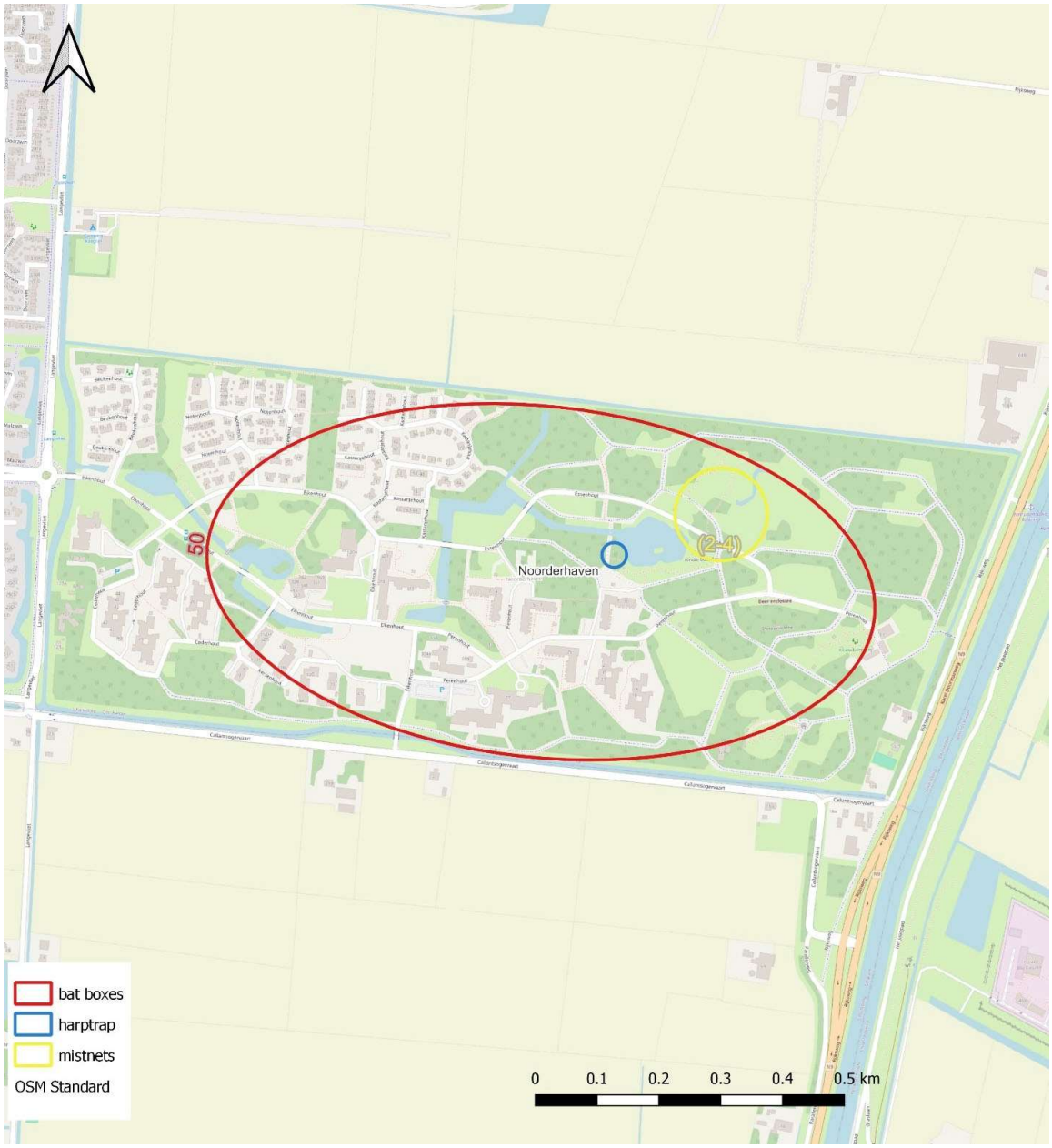


Figure A1-1: *Noorderhaven (N 52.88 E 4.76)*

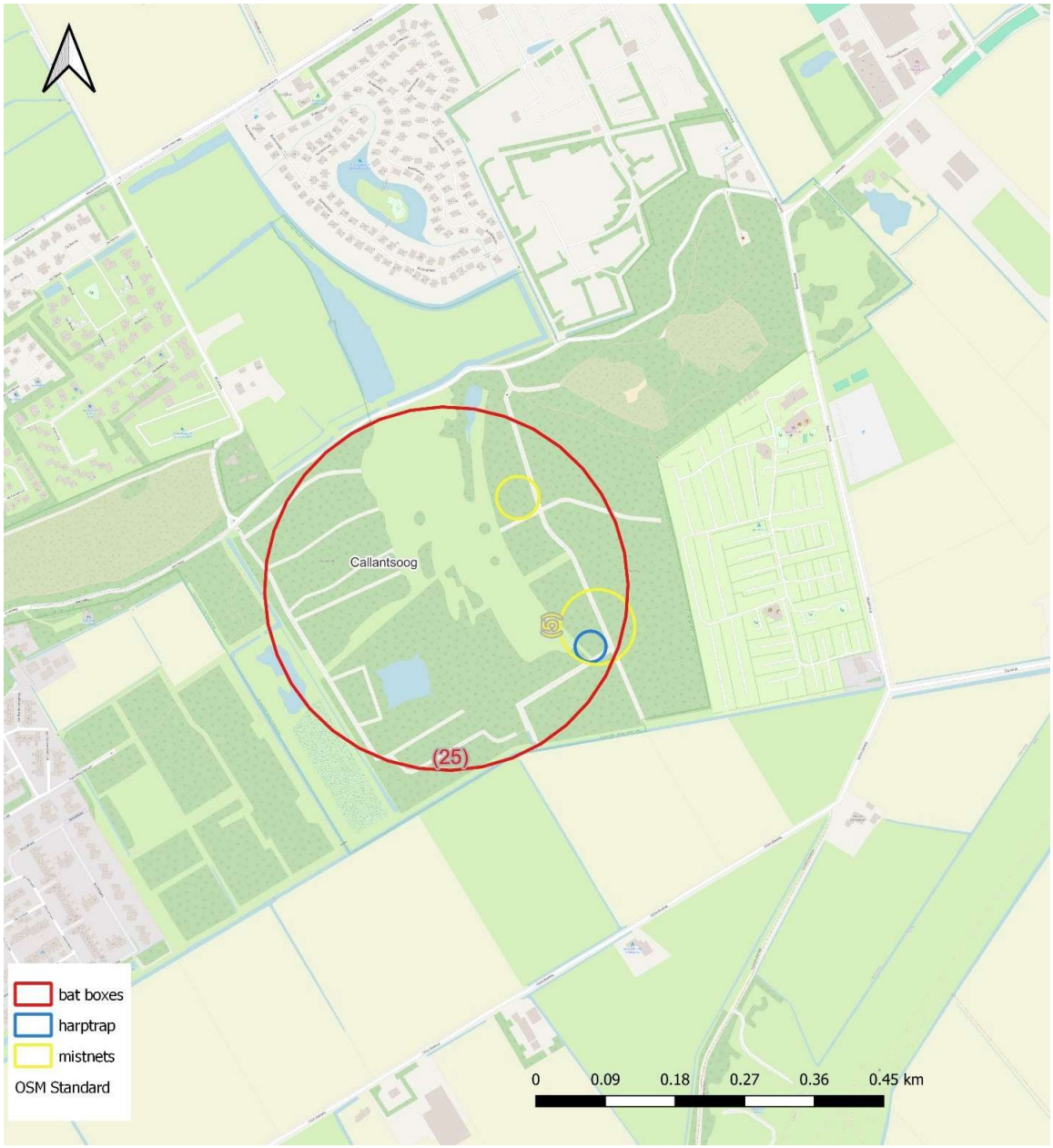


Figure A1-2: *Callantsoog (N 52.84 E 4.71)*

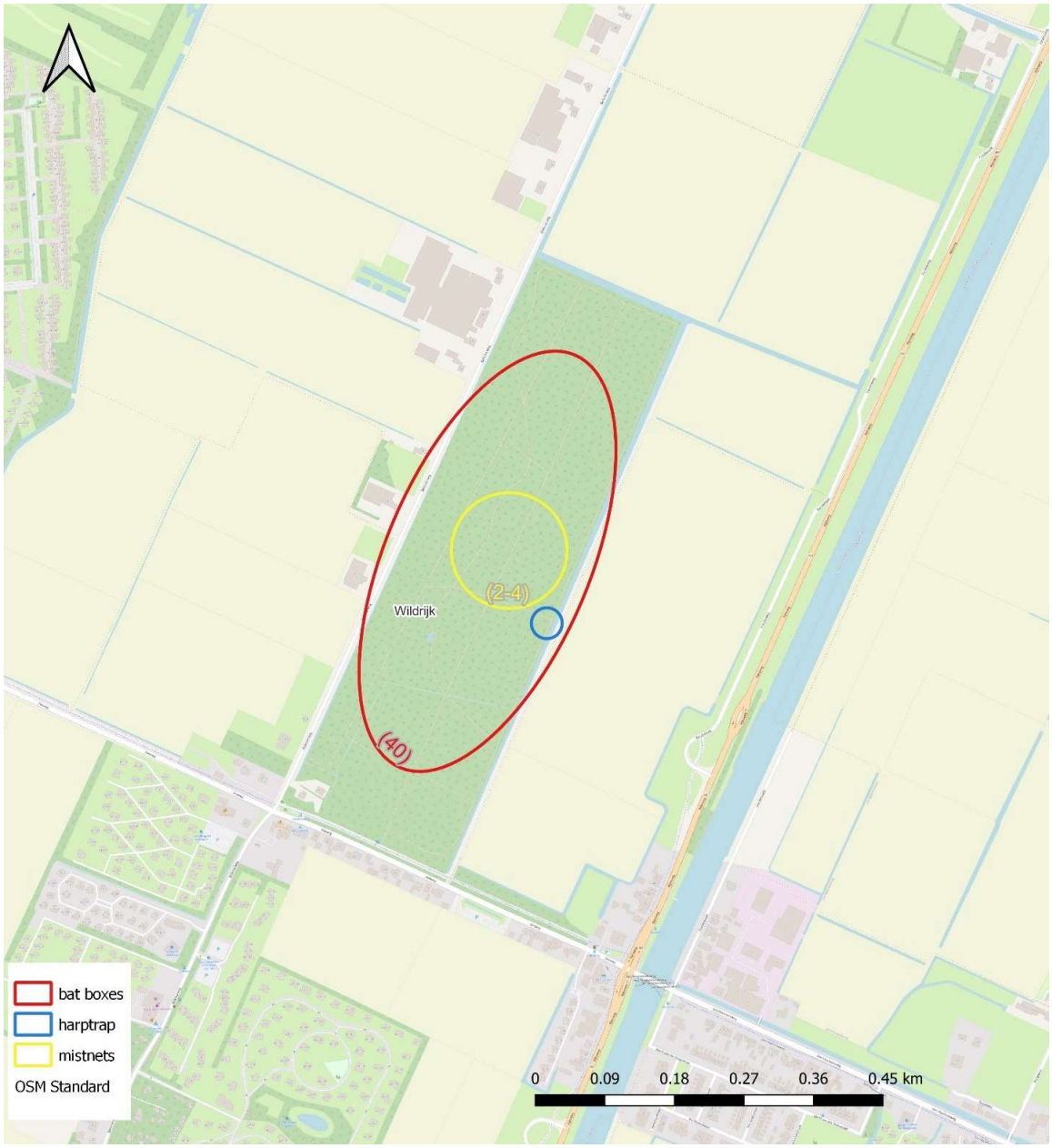


Figure A1-3: *Wildrijk (N 52.79 E 4.70)*

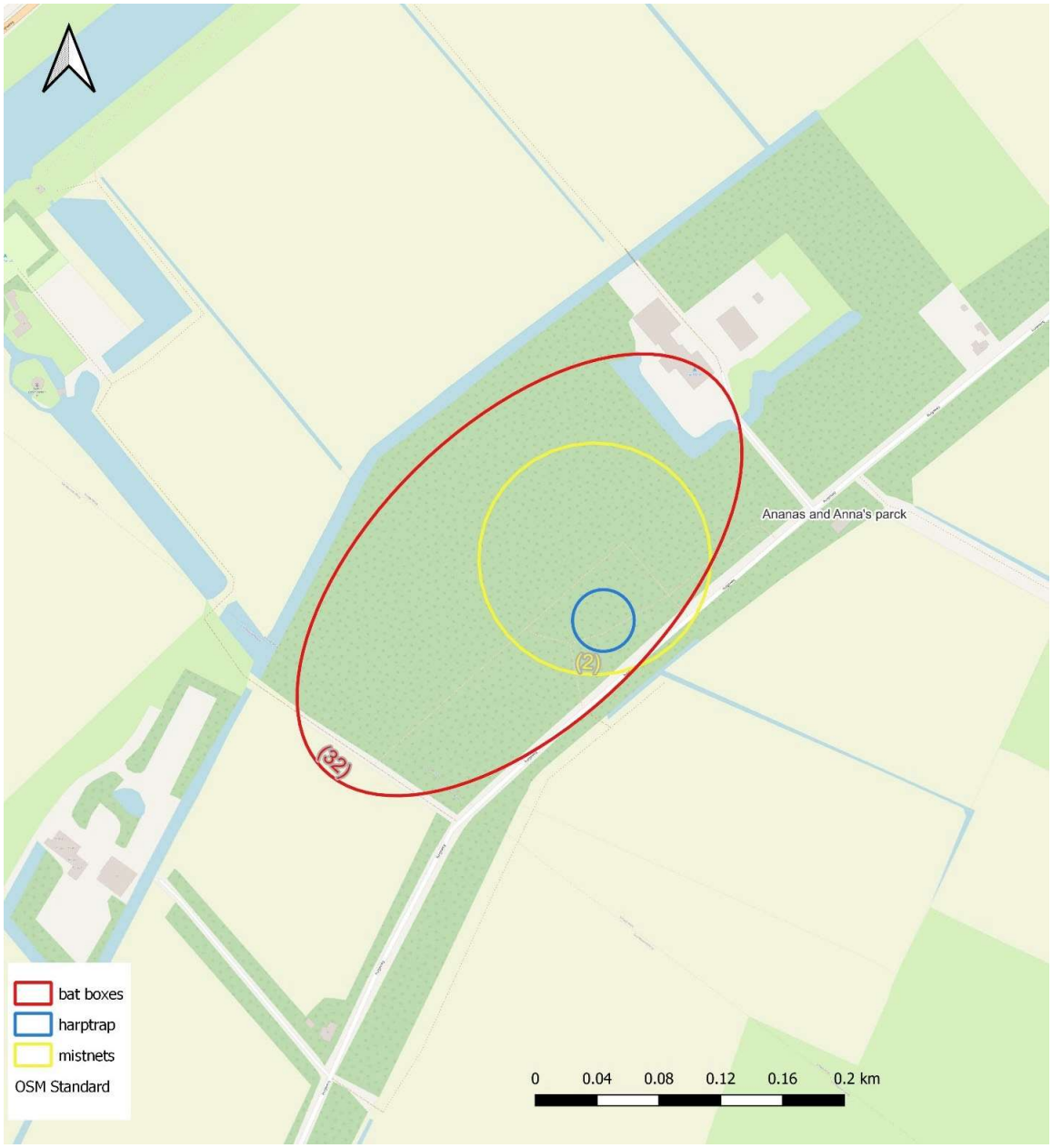


Figure A1-4: *Ananas and Anna's parck (N 52.80 E 4.73)*

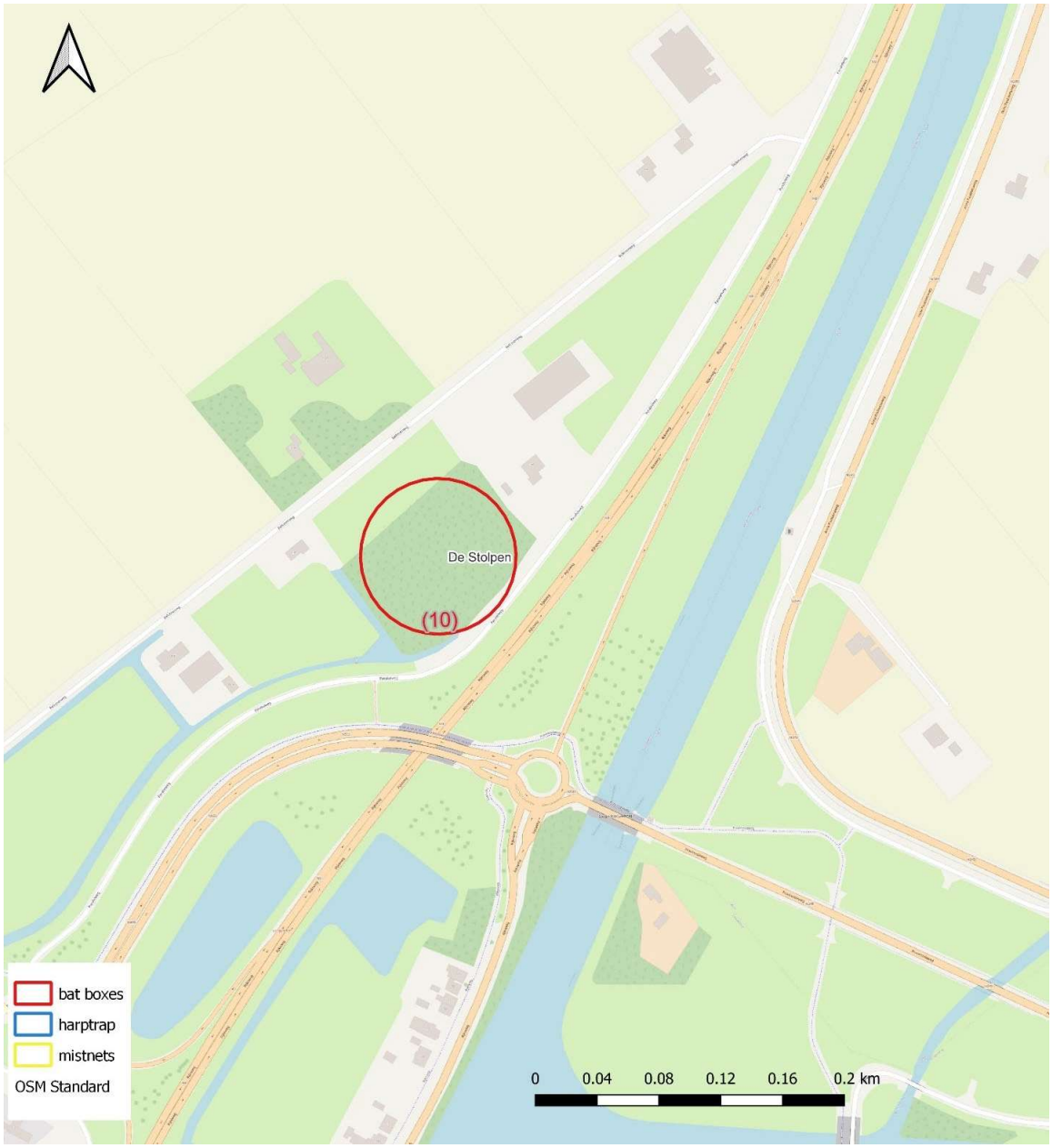


Figure A1-5: *de Stolpen (N 52.81 E 4.74)*

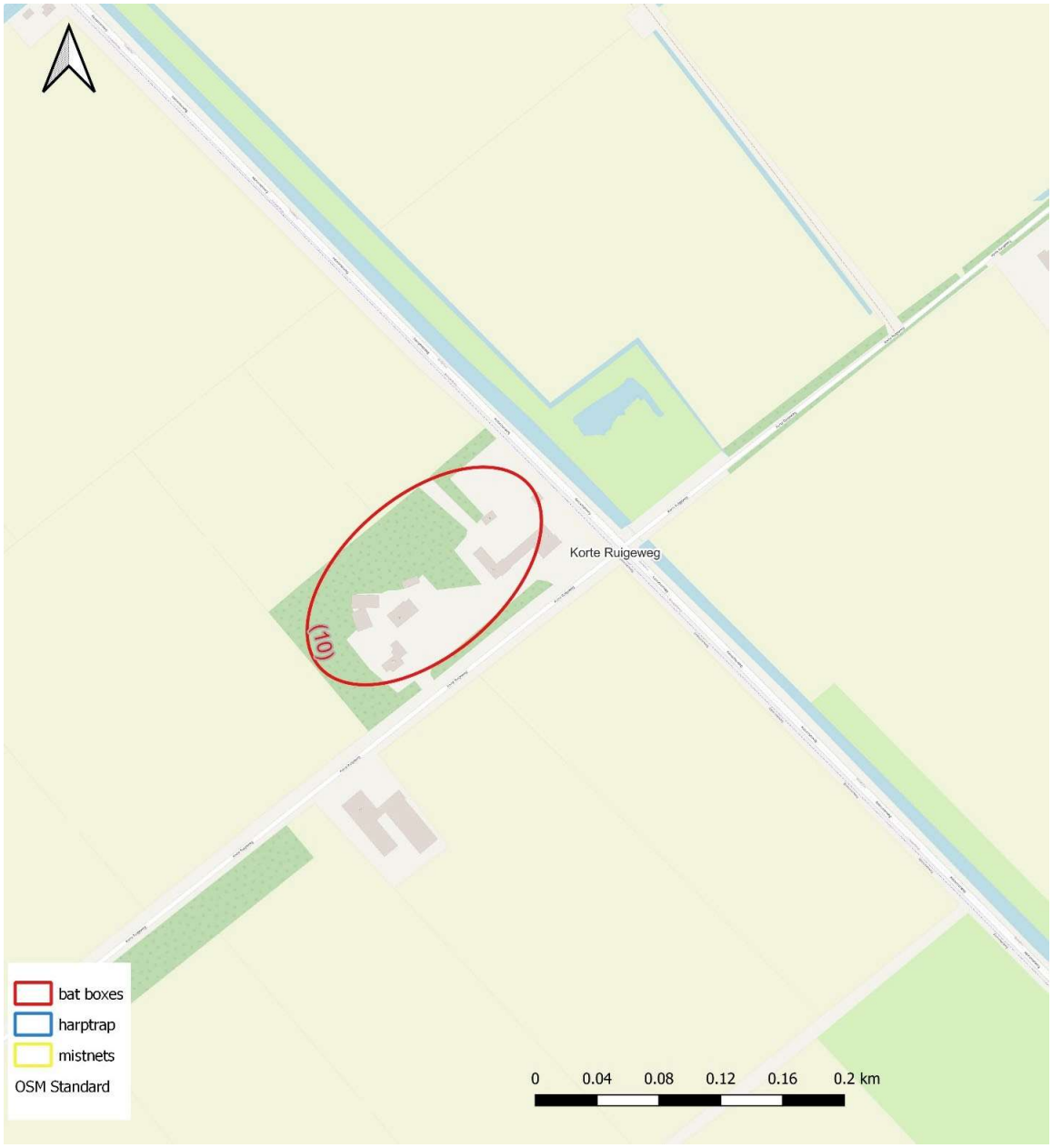


Figure A1-6: *Korte Ruigeweg (N 52.82 E 4.78)*

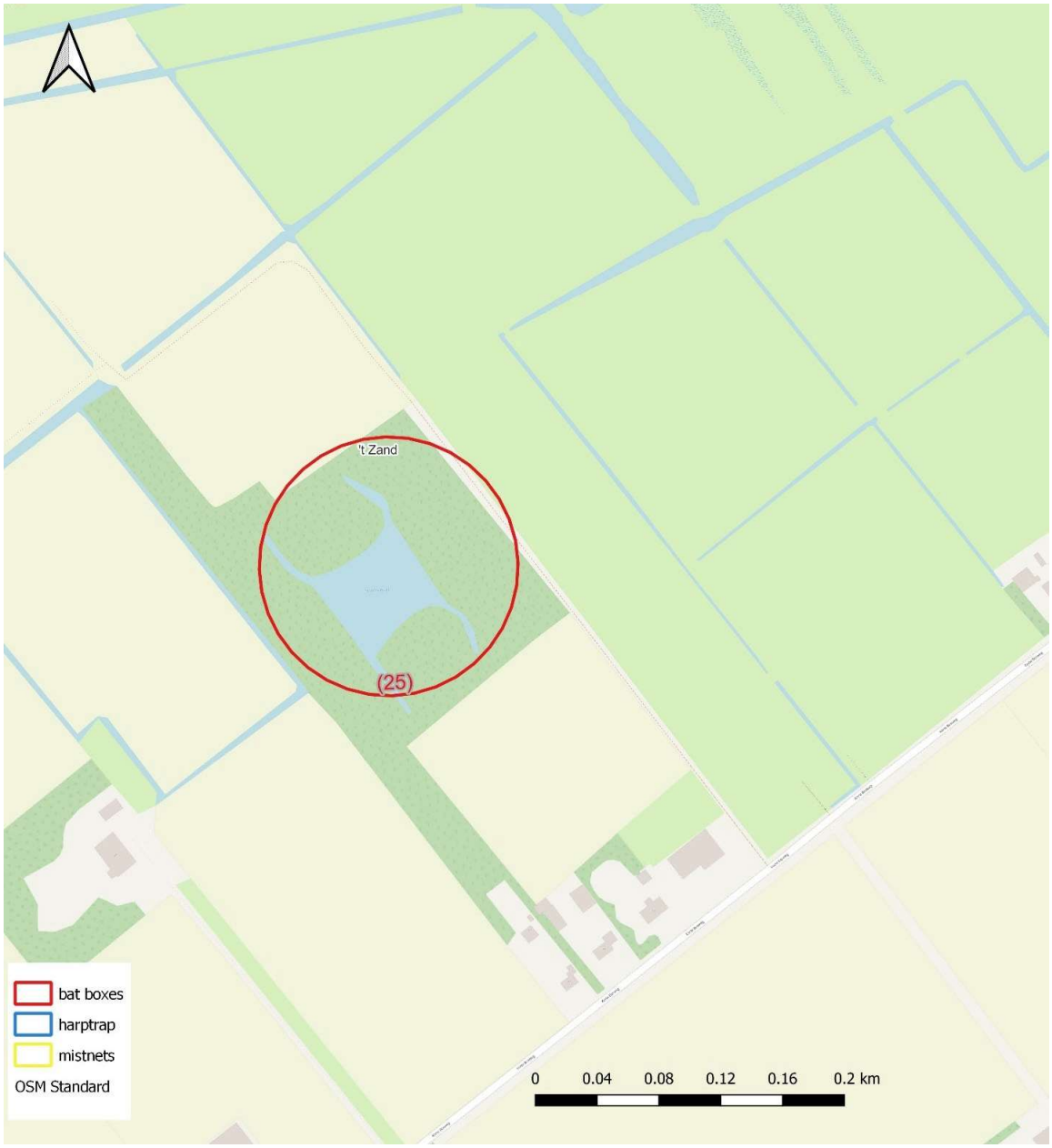


Figure A1-7: *'t Zand (N 52.85 E 4.77)*

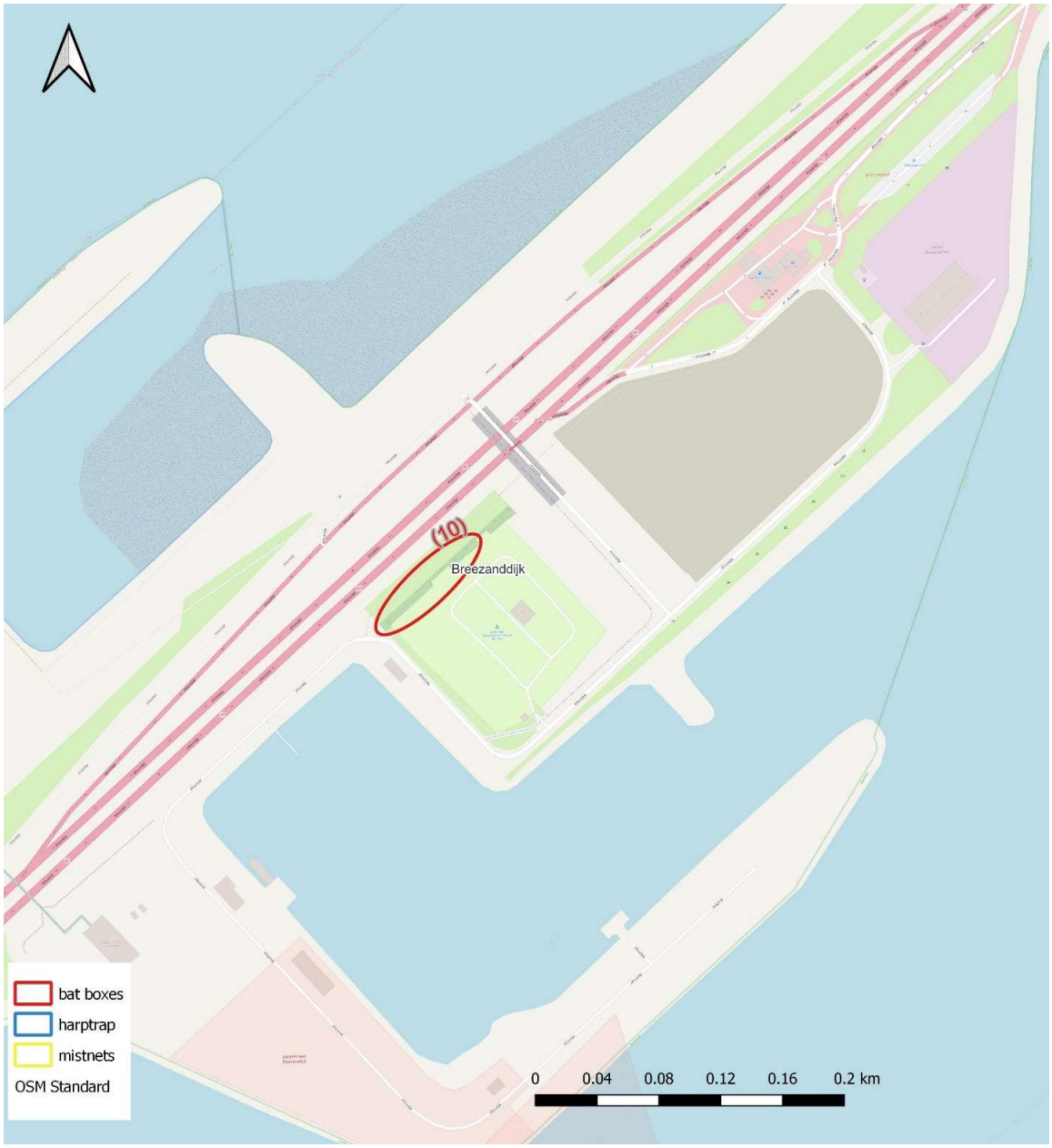


Figure A1-8: *Breezanddijk (N 53.02 E 5.21)*

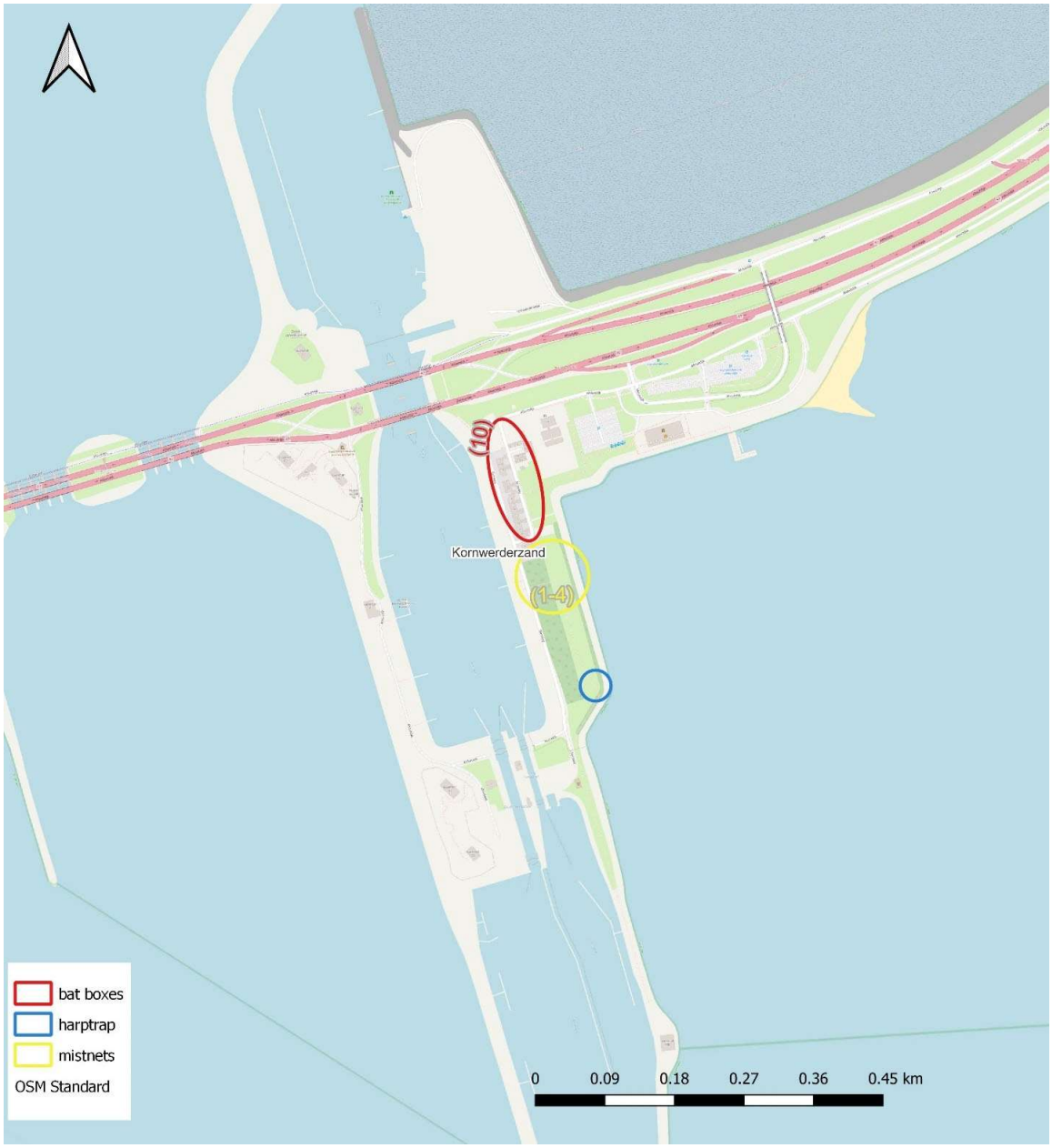


Figure A1-9: *Kornwerderzand (N 53.07 E 5.34)*

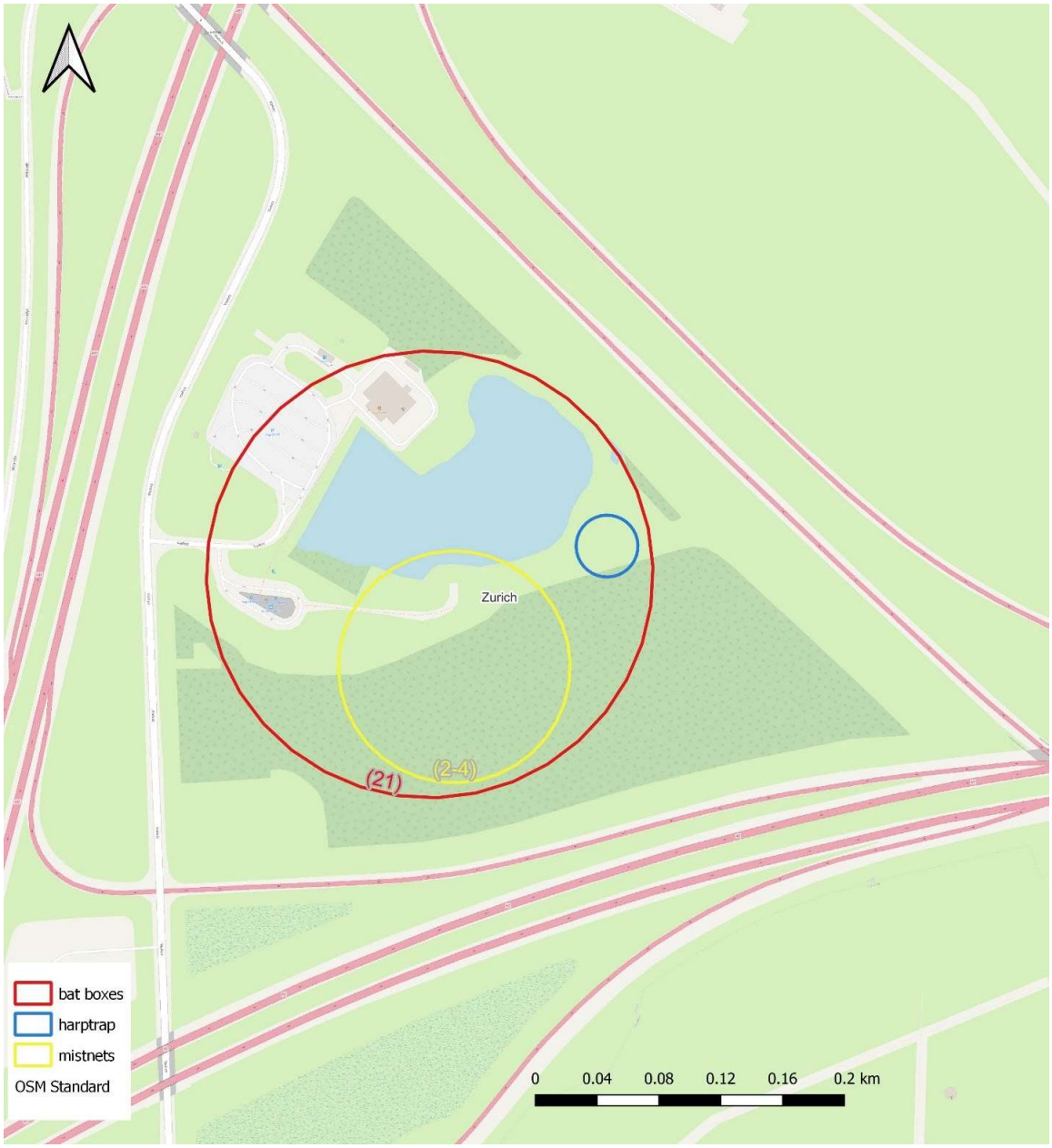


***Figure A1-10**: Zurich (N 53.10 E 5.39)*

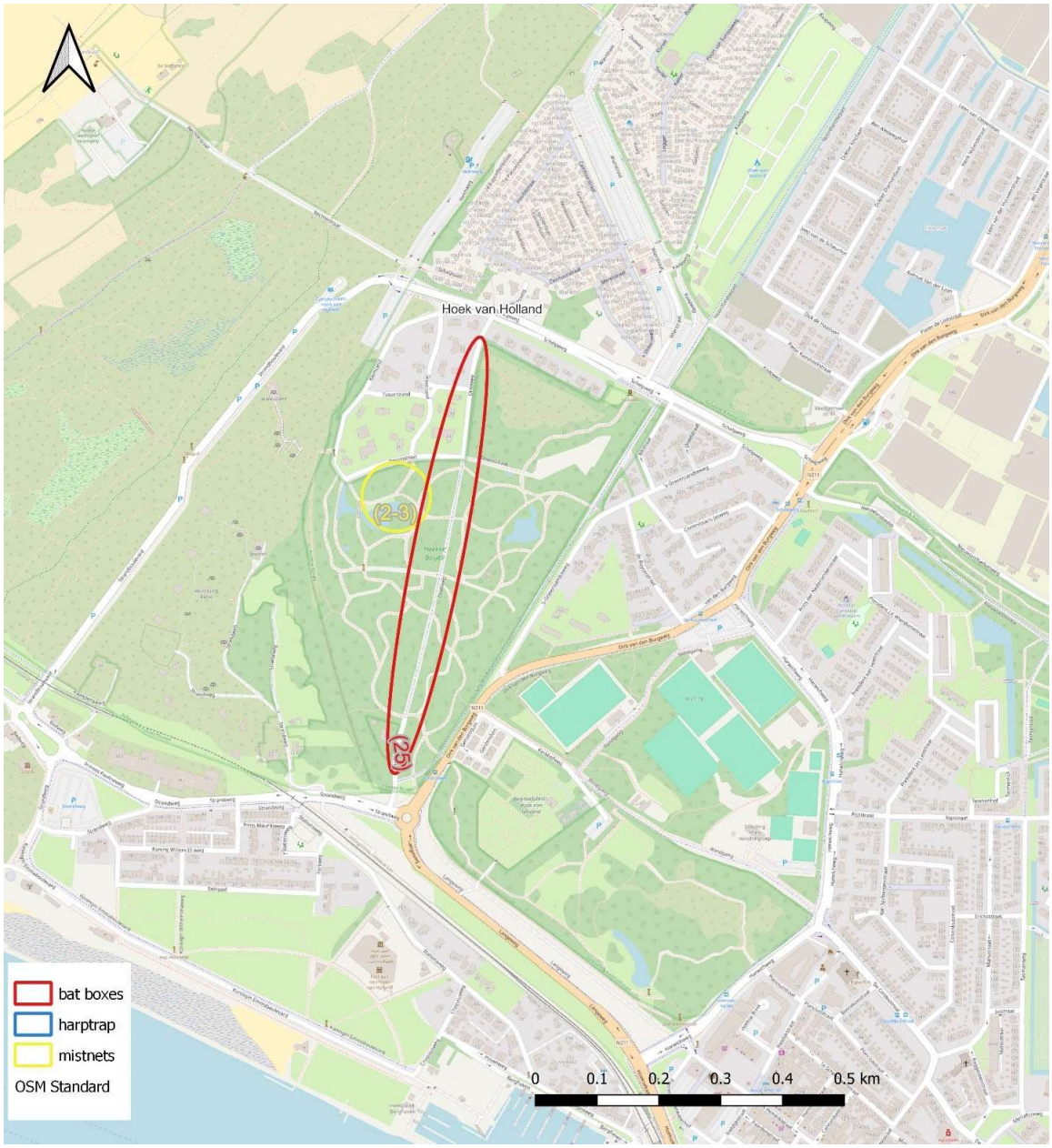


Figure A1-11: *Hoek van Holland (N 51.99 E E 4.12)*

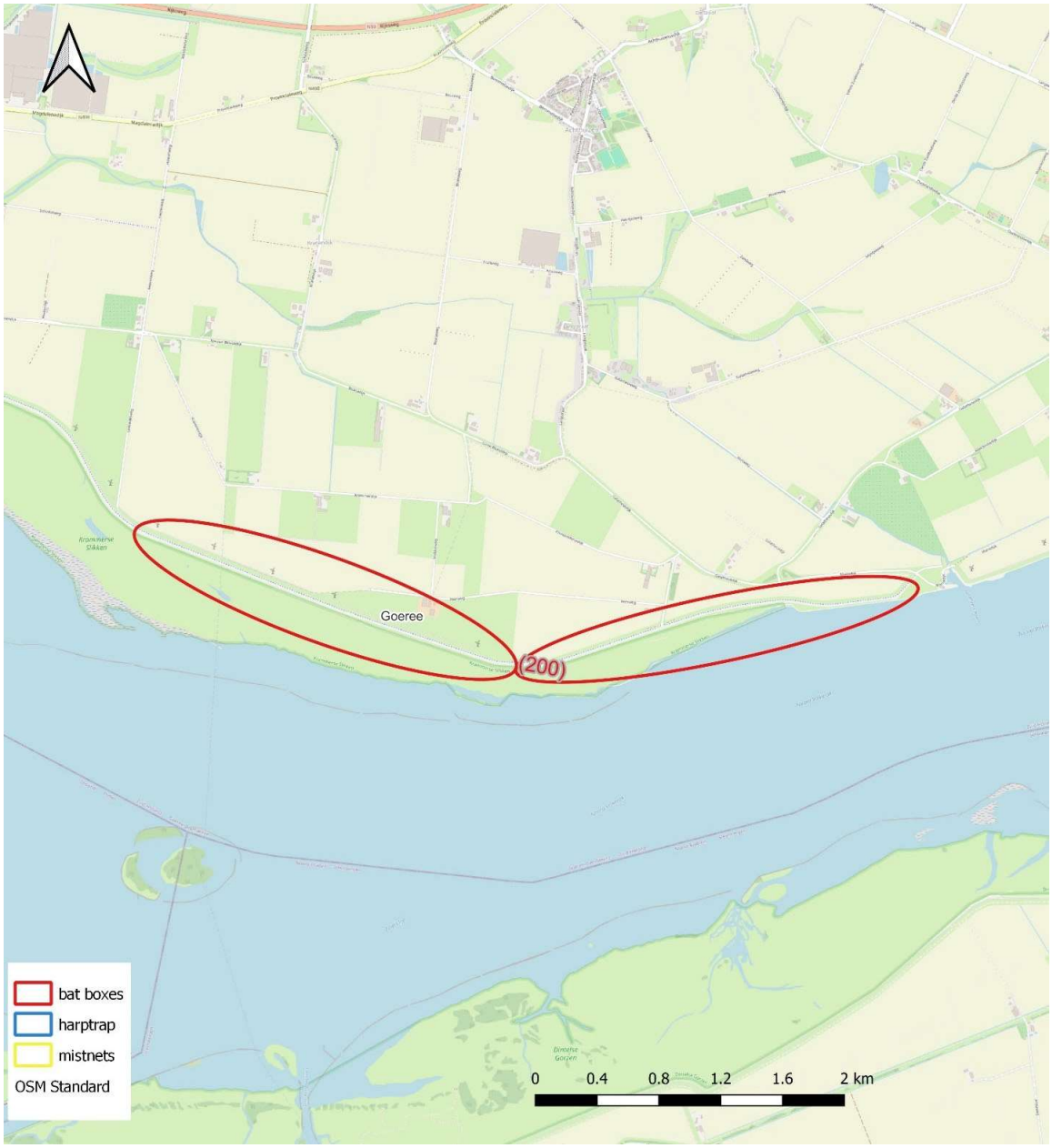


Figure A1-12: *Goeree (N 51.66 E 4.26)*

Annex 2: Bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t. Zand	Breezandijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree
2018	23-Aug	X		X								X	
	30-Aug	X	X	X								X	
	04-Sep	X		X								X	
	08-Sep	X		X								X	
	13-Sep	X	X	X								X	
	22-Sep	X											
	23-Sep		X	X									
	24-Sep											X	
	28-Sep	X	X	X								X	
	03-Oct	X	X									X	
	09-Oct	X		X								X	
2019	20-Aug	X	X	X								X	
	27-Aug	X	X	X								X	
	03-Sep	X	X	X								X	
	10-Sep	X	X	X								X	
	15-Sep	X	X	X				X				X	
	17-Sep	X	X	X			X	X				X	
	20-Sep		X	X								X	
	21-Sep	X						X					
	24-Sep	X	X	X			X	X				X	
	01-Oct	X	X	X				X				X	
	08-Oct	X	X	X			X	X					
	15-Oct	X											
	19-Oct	X	X	X				X					
2020	25-Aug	X	X					X				X	
	01-Sep		X	X				X				X	
	04-Sep	X	X	X				X				X	
	08-Sep	X	X	X				X					
	13-Sep	X	X	X				X				X	
	15-Sep											X	
	16-Sep		X	X				X					
	22-Sep	X	X	X								X	
	29-Sep	X	X	X				X					
	02-Oct	X											
	06-Oct	X	X										
	07-Oct			X				X				X	
	13-Oct	X		X				X				X	
	20-Oct			X									
	27-Oct			X				X					
2021	03-Aug										X		
	15-Aug										X		
	21-Aug	X	X	X									
	24-Aug										X		
	01-Sep										X		
	03-Sep										X		
	09-Sep	X	X	X									
	17-Sep	X	X										
	18-Sep		X	X									
	22-Sep											X	
	23-Sep	X											
	24-Sep		X	X									
	07-Oct										X		
	10-Oct			X									
	12-Oct	X	X										
	15-Oct											X	
2022	31-Aug	X		X							X		
	01-Sep		X						X	X			
	04-Sep									X	X		
	05-Sep			X									
	06-Sep	X	X										
	07-Sep								X				
	11-Sep									X			
	12-Sep		X										
	14-Sep	X											
	15-Sep			X									
	21-Sep	X									X		
	22-Sep		X						X	X			
	25-Sep			X									
	11-Oct								X		X		
2023	17-Aug				X	X							
	19-Aug				X								
	20-Aug								X	X	X		
	21-Aug				X								
	28-Aug				X								
	30-Aug				X	X							
	01-Sep				X								
	02-Sep				X								
	07-Sep				X	X							
	08-Sep				X								
	09-Sep												X
	11-Sep				X	X			X	X			
	13-Sep				X								
	19-Sep				X								
	20-Sep												X
	21-Sep					X							
	24-Sep				X								
	26-Sep				X				X	X			
	30-Sep				X	X							
	04-Oct												X
	05-Oct					X							
	06-Oct				X								
	09-Oct				X								
	12-Oct				X								
	17-Oct				X								
	18-Oct				X								
	19-Oct				X								X
	23-Oct				X								
	30-Oct				X								
	01-Nov				X	X							

Annex 3: Trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree
2018	03-Oct			X									
2020	01-Sep		X										
	02-Sep			X									
	08-Sep			X									
	11-Sep	X											
	14-Sep	X											
	15-Sep	X										X	
	22-Sep	X											
	29-Sep		X									X	
	13-Oct											X	
	22-Oct	X											
2021	15-Aug										X		
	20-Aug	X	X	X									
	21-Aug	X		X									
	24-Aug										X		
	01-Sep										X		
	03-Sep										X		
	06-Sep										X		
	07-Sep									X			
	08-Sep	X	X	X						X			
	09-Sep	X	X	X									
	13-Sep									X			
	16-Sep									X			
	17-Sep	X		X									
	18-Sep	X	X	X						X			
	19-Sep		X										
	20-Sep									X			
	21-Sep									X			
	22-Sep									X		X	
	25-Sep									X			
	26-Sep									X			
	28-Sep			X									
	07-Oct									X			
	09-Oct									X			
2022	31-Aug	X	X	X						X			
	01-Sep	X	X	X						X			
	04-Sep									X			
	05-Sep	X		X									
	06-Sep	X	X	X									
	07-Sep		X	X						X			
	11-Sep									X			
	12-Sep		X										
	13-Sep		X										
	14-Sep	X		X									
	20-Sep			X									
	21-Sep	X	X	X						X			
	22-Sep	X	X							X			
	25-Sep			X									
	06-Oct	X											
	11-Oct									X			
2023	17-Aug			X									
	18-Aug	X											
	19-Aug				X								
	20-Aug									X			
	21-Aug		X	X									
	22-Aug			X						X			
	25-Aug	X											
	28-Aug			X									
	29-Aug		X							X			
	02-Sep	X											
	03-Sep				X								
	04-Sep									X			
	05-Sep	X	X										
	06-Sep			X									
	11-Sep									X			
	13-Sep			X									
	14-Sep				X								
	16-Sep	X											
	25-Sep				X								
	26-Sep									X			
	30-Sep					X							
	05-Oct				X								
	17-Oct				X								

Annex 4: Nathusius' pipistrelle

Pnat - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Total
2018	03-Oct			1										1
	Subtotal	0	0	1	0	0	0	0	0	0	0	0	0	1
2020	01-Sep		3											3
	02-Sep			3										3
	08-Sep			1										1
	11-Sep	6												6
	14-Sep	4												4
	15-Sep	0										2		2
	22-Sep	1												1
	29-Sep		1									2		3
	13-Oct											7		7
	22-Oct	0												0
	Subtotal	11	4	4	0	0	0	0	0	0	0	11	0	30
2021	15-Aug										1			1
	20-Aug	4	5	0										9
	21-Aug	5		0										5
	24-Aug										0			0
	01-Sep										1			1
	03-Sep										1			1
	06-Sep										5			5
	07-Sep									4				4
	08-Sep	5	0	12						0				17
	09-Sep	3	2	5										10
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	0		1										1
	18-Sep	2	2	5						0				9
	19-Sep		2											2
	20-Sep									0				0
	21-Sep									3				3
	22-Sep									0		3		3
	25-Sep									2				2
	26-Sep									5				5
	28-Sep			0										0
	07-Oct									1				1
	09-Oct									0				0
	Subtotal	19	11	23	0	0	0	0	0	15	8	3	0	79
2022	31-Aug	8	3	8						0				19
	01-Sep	7	7	11						0				25
	04-Sep									1				1
	05-Sep	0		1										1
	06-Sep	1	1	5										7
	07-Sep		0	6						1				7
	11-Sep									3				3
	12-Sep		1											1
	13-Sep		1											1
	14-Sep	0		2										2
	20-Sep			4										4
	21-Sep	4	2	4						11				21
	22-Sep	5	4							16				25
	25-Sep			0										0
	06-Oct	1												1
	11-Oct									12				12
	Subtotal	26	19	41	0	0	0	0	0	44	0	0	0	130
2023	17-Aug			5										5
	18-Aug	0												0
	19-Aug				3									3
	20-Aug									1				1
	21-Aug		0	2										2
	22-Aug			0						10				10
	25-Aug	2												2
	28-Aug			3										3
	29-Aug		3							12				15
	02-Sep	4												4
	03-Sep				4									4
	04-Sep									0				0
	05-Sep	8	0											8
	06-Sep			1										1
	11-Sep									7				7
	13-Sep			0										0
	14-Sep				7									7
	16-Sep	8												8
	25-Sep				9									9
	26-Sep									13				13
	30-Sep					4								4
	05-Oct				9									9
	17-Oct				0									0
	Subtotal	22	3	11	32	4	0	0	0	43	0	0	0	115

Pnat - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	11		15								5		31
	30-Aug	12	11	9								10		42
	04-Sep	14		6								14		34
	08-Sep	13		6								9		28
	13-Sep	2	7	4								22		35
	22-Sep	15		6										21
	23-Sep		9											9
	24-Sep											4		4
	28-Sep	3	2	2								0		7
	03-Oct	0	0									0		0
	09-Oct	2		3								0		5
	Subtotal	72	29	51								64		216
2019	20-Aug	6	4	8								3		21
	27-Aug	4	17	1								11		33
	03-Sep	3	2	2								0		7
	10-Sep	3	4	1								1		9
	15-Sep	3	0	2				16				2		23
	17-Sep	0	0	0			14	0				0		14
	20-Sep		0	0								0		0
	21-Sep	4						2						6
	24-Sep	3	2	1			4	3				1		14
	01-Oct	2	4	0				2				5		13
	08-Oct	2	2	0			1	0						5
	15-Oct	7												7
	19-Oct	2	1	0				2						5
	Subtotal	39	36	15	0	0	19	25	0	0	0	23	0	157
2020	25-Aug	5	3					4				4		16
	01-Sep		1	2				2				12		17
	04-Sep	7	2	6				2				2		19
	08-Sep	2	1	2				2						7
	13-Sep	1	6	2				3				7		19
	15-Sep											10		10
	16-Sep		3	3				1						7
	22-Sep	1	1	1								7		10
	29-Sep	5	2	1				1						9
	02-Oct	1												1
	06-Oct	1	1											2
	07-Oct			0				5				2		7
	13-Oct	0		0				1				0		1
	20-Oct			0										0
	27-Oct			0				1						1
	Subtotal	23	20	17	0	0	0	22	0	0	0	44	0	126
2021	03-Aug										0			0
	15-Aug										0			0
	21-Aug	5	4	6										15
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	09-Sep	4	8	9										21
	17-Sep	11	5											16
	18-Sep		2	8										10
	22-Sep											5		5
	23-Sep	0												0
	24-Sep		6	5										11
	07-Oct										0			0
	10-Oct			3										3
	12-Oct	8	0											8
	15-Oct											3		3
	Subtotal	28	25	31	0	0	0	0	0	0	0	8	0	92
2022	31-Aug	6		8							0			14
	01-Sep		7						0	0				7
	04-Sep									0	0			0
	05-Sep			5										5
	06-Sep	7	6											13
	07-Sep								0					0
	11-Sep									0				0
	12-Sep		2											2
	14-Sep	11												11
	15-Sep			5										5
	21-Sep	6									0			6
	22-Sep		1						0	0				1
	25-Sep			1										1
	11-Oct								0		0			0
	Subtotal	30	16	19	0	0	0	0	0	0	0	0	0	65
2023	17-Aug				1	0								0
	19-Aug				0									0
	20-Aug								0	0	0			0
	21-Aug				2									0
	28-Aug				7									0
	30-Aug				3	0								0
	01-Sep				9									0
	02-Sep				0									0
	07-Sep				0	0								0
	08-Sep				11									0
	09-Sep											20		0
	11-Sep				15	0			0	0				0
	13-Sep				12									0
	19-Sep				5									0
	20-Sep											44		0
	21-Sep					0								0
	24-Sep				8									0
	26-Sep				7				0	0				0
	30-Sep				10	0								0
	04-Oct											67		0
	05-Oct					0								0
	06-Oct				6									0
	09-Oct				9									0
	12-Oct				11									0
	17-Oct				3									0
	18-Oct				2									0
	19-Oct				0									0
	23-Oct				3									0
	30-Oct				4									0
	01-Nov				3	0								0
	Subtotal	0	0	0	131	0	0	0	0	0	0	0	148	0

Annex 5: Common pipistrelle

Ppip - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Total
2018	03-Oct			4										4
	Subtotal	0	0	4	0	0	0	0	0	0	0	0	0	4
2020	01-Sep		4											4
	02-Sep			2										2
	08-Sep			2										2
	11-Sep	6												6
	14-Sep	2												2
	15-Sep	0										2		2
	22-Sep	0												0
	29-Sep		0									1		1
	13-Oct											1		1
	22-Oct	0												0
	Subtotal	8	4	4	0	0	0	0	0	0	0	4	0	20
2021	15-Aug										0			0
	20-Aug	2	1	1										4
	21-Aug	0		1										1
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	2	0	4						0				6
	09-Sep	1	0	3										4
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	0		0										0
	18-Sep	2	0	2						0				4
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		1		1
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	7	1	11	0	0	0	0	0	0	0	1	0	20
2022	31-Aug	12	4	1						0				17
	01-Sep	1	3	0						0				4
	04-Sep									0				0
	05-Sep	3		3										6
	06-Sep	0	2	4										6
	07-Sep		1	0						0				1
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		3										3
	20-Sep			0										0
	21-Sep	4	0	0						0				4
	22-Sep	3	0							0				3
	25-Sep			0										0
	06-Oct	1												1
	11-Oct									0				0
	Subtotal	24	10	11	0	0	0	0	0	0	0	0	0	45
2023	17-Aug			1										1
	18-Aug	0												0
	19-Aug				3									3
	20-Aug									0				0
	21-Aug		0	1										1
	22-Aug			0						0				0
	25-Aug	0												0
	28-Aug			0										0
	29-Aug		0							0				0
	02-Sep	0												0
	03-Sep				1									1
	04-Sep									0				0
	05-Sep	3	0											3
	06-Sep			0										0
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				2									2
	16-Sep	1												1
	25-Sep				1									1
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	4	0	2	7	0	0	0	0	0	0	0	0	13

Ppip - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	0		0								0		0
	30-Aug	0	0	0								0		0
	04-Sep	0		0								0		0
	08-Sep	0		0								0		0
	13-Sep	0	0	0								0		0
	22-Sep	0		0										0
	23-Sep		0											0
	24-Sep											3		3
	28-Sep	0	0	0								0		0
	03-Oct	0	0									0		0
	09-Oct	0		0								0		0
	Subtotal	0	0	0								3		3
2019	20-Aug	0	0	0								0		0
	27-Aug	0	0	0								0		0
	03-Sep	0	0	0								0		0
	10-Sep	0	0	0								0		0
	15-Sep	0	0	0				0				0		0
	17-Sep	0	0	0			0	0				0		0
	20-Sep		0	0								0		0
	21-Sep	0						0						0
	24-Sep	0	0	0			0	0				0		0
	01-Oct	0	0	0				0				0		0
	08-Oct	0	0	0			0	0						0
	15-Oct	0												0
	19-Oct	0	0	0				0						0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	25-Aug	0	0					0				0		0
	01-Sep		0	0				0				0		0
	04-Sep	0	0	0				0				0		0
	08-Sep	2	0	0				0						2
	13-Sep	0	0	0				0				1		1
	15-Sep											1		1
	16-Sep		0	0				0						0
	22-Sep	0	0	0								1		1
	29-Sep	1	0	0				0						1
	02-Oct	0												0
	06-Oct	0	0											0
	07-Oct			0				0				1		1
	13-Oct	1		0				0				0		1
	20-Oct			0										0
	27-Oct			0				0						0
	Subtotal	4	0	0	0	0	0	0	0	0	0	4	0	8
2021	03-Aug										0			0
	15-Aug										0			0
	21-Aug	0	0	0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	09-Sep	0	0	0										0
	17-Sep	0	0											0
	18-Sep		0	0										0
	22-Sep											0		0
	23-Sep	0												0
	24-Sep		0	0										0
	07-Oct										0			0
	10-Oct			0										0
	12-Oct	0	0											0
	15-Oct											1		1
	Subtotal	0	0	0	0	0	0	0	0	0	0	1	0	1
2022	31-Aug	0		0							0			0
	01-Sep		0						0	0				0
	04-Sep									0	0			0
	05-Sep			0										0
	06-Sep	0	0											0
	07-Sep								0					0
	11-Sep									0				0
	12-Sep		0											0
	14-Sep	0												0
	15-Sep			0										0
	21-Sep	0									0			0
	22-Sep		0						0	0				0
	25-Sep			0										0
	11-Oct								0		0			0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	17-Aug				0	0								0
	19-Aug				0									0
	20-Aug								0	0	0			0
	21-Aug				0									0
	28-Aug				0									0
	30-Aug				0	0								0
	01-Sep				0									0
	02-Sep				0									0
	07-Sep				0	0								0
	08-Sep				0									0
	09-Sep												0	0
	11-Sep				0	0			0	0				0
	13-Sep				0									0
	19-Sep				1									0
	20-Sep												0	0
	21-Sep					1								0
	24-Sep				0									0
	26-Sep				0				0	0				0
	30-Sep				0	1								0
	04-Oct												0	0
	05-Oct					2								0
	06-Oct				0									0
	09-Oct				0									0
	12-Oct				0									0
	17-Oct				0									0
	18-Oct				0									0
	19-Oct				0								0	0
	23-Oct				0									0
	30-Oct				0									0
	01-Nov				0	0								0
	Subtotal	0	0	0	1	4	0	0	0	0	0	0	0	0

Annex 6: Noctule

Nnoc - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			3										3
	Subtotal	0	0	3	0	0	0	0	0	0	0	0	0	3
2020	01-Sep		0											0
	02-Sep			2										2
	08-Sep			0										0
	11-Sep	0												0
	14-Sep	0												0
	15-Sep	0										4		4
	22-Sep	0												0
	29-Sep		0									0		0
	13-Oct											0		0
	22-Oct	0												0
	Subtotal	0	0	2	0	0	0	0	0	0	0	4	0	6
2021	15-Aug										0			0
	20-Aug	0	0	1										1
	21-Aug	0		0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	0	0	1						0				1
	09-Sep	0	0	1										1
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	0		0										0
	18-Sep	0	0	1						0				1
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		1		1
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	0	0	4	0	0	0	0	0	0	0	1	0	5
2022	31-Aug	0	1	4						0				5
	01-Sep	1	0	3						0				4
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	0	0	1										1
	07-Sep		0	0						0				0
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		0										0
	20-Sep			1										1
	21-Sep	0	0	0						0				0
	22-Sep	0	0							0				0
	25-Sep			0										0
	06-Oct	0												0
	11-Oct									0				0
	Subtotal	1	1	9	0	0	0	0	0	0	0	0	0	11
2023	17-Aug			0										0
	18-Aug	0												0
	19-Aug				3									3
	20-Aug									0				0
	21-Aug		0	0										0
	22-Aug			1						0				1
	25-Aug	0												0
	28-Aug			1										1
	29-Aug		0							0				0
	02-Sep	0												0
	03-Sep				4									4
	04-Sep									0				0
	05-Sep	1	0											1
	06-Sep			1										1
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				3									3
	16-Sep	0												0
	25-Sep				1									1
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	1	0	3	11	0	0	0	0	0	0	0	0	15

Nnoc - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	0		8								0		8
	30-Aug	0	0	3								0		3
	04-Sep	0		2								0		2
	08-Sep	0		0								0		0
	13-Sep	0	0	4								0		4
	22-Sep	0		5										5
	23-Sep		1											1
	24-Sep											1		1
	28-Sep	0	0	0								1		1
	03-Oct	0	0									0		0
	09-Oct	0		2								0		2
	Subtotal	0	1	24								2		27
2019	20-Aug	0	0	28								0		28
	27-Aug	0	0	21								0		21
	03-Sep	0	0	3								0		3
	10-Sep	0	0	2								0		2
	15-Sep	0	0	0				0				0		0
	17-Sep	0	0	5			0	0				1		6
	20-Sep		0	8								0		8
	21-Sep	0						0						0
	24-Sep	0	0	0			0	0				0		0
	01-Oct	0	0	5				1				0		6
	08-Oct	0	0	0			0	0						0
	15-Oct	0												0
	19-Oct	0	0	11				1						12
	Subtotal	0	0	83	0	0	0	2	0	0	0	1	0	86
2020	25-Aug	0	0					0				0		0
	01-Sep		0	0				0				0		0
	04-Sep	0	0	0				0				1		1
	08-Sep	0	0	0				0						0
	13-Sep	0	0	0				0				1		1
	15-Sep											1		1
	16-Sep		0	0				0						0
	22-Sep	0	0	0								2		2
	29-Sep	0	0	0				0						0
	02-Oct	0												0
	06-Oct	0	0											0
	07-Oct			5				0				5		10
	13-Oct	0		5				0				5		10
	20-Oct			7										7
	27-Oct			7				0						7
	Subtotal	0	0	24	0	0	0	0	0	0	0	15	0	39
2021	03-Aug										0			0
	15-Aug										0			0
	21-Aug	0	0	2										2
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	09-Sep	0	0	0										0
	17-Sep	0	0											0
	18-Sep		0	0										0
	22-Sep											3		3
	23-Sep	0												0
	24-Sep		0	0										0
	07-Oct										0			0
	10-Oct			3										3
	12-Oct	0	0											0
	15-Oct											12		12
	Subtotal	0	0	5	0	0	0	0	0	0	0	15	0	20
2022	31-Aug	0		0							0			0
	01-Sep		0						0	0				0
	04-Sep									0	0			0
	05-Sep			0										0
	06-Sep	0	0											0
	07-Sep								0					0
	11-Sep									0				0
	12-Sep		0											0
	14-Sep	0												0
	15-Sep			0										0
	21-Sep	0									0			0
	22-Sep		0						0	0				0
	25-Sep			0										0
	11-Oct								0		0			0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	17-Aug				0	0								0
	19-Aug				0									0
	20-Aug								0	0	0			0
	21-Aug				0									0
	28-Aug				0									0
	30-Aug				0	0								0
	01-Sep				0									0
	02-Sep				0									0
	07-Sep				0	0								0
	08-Sep				0									0
	09-Sep											0	0	0
	11-Sep				0	0			0	0				0
	13-Sep				0									0
	19-Sep				0									0
	20-Sep											0	0	0
	21-Sep					0								0
	24-Sep				0									0
	26-Sep				1				0	0				0
	30-Sep				0	0								0
	04-Oct											1		0
	05-Oct					0								0
	06-Oct				0									0
	09-Oct				0									0
	12-Oct				0									0
	17-Oct				1									0
	18-Oct				0									0
	19-Oct				0								0	0
	23-Oct				0									0
	30-Oct				0									0
	01-Nov				0	0								0
	Subtotal	0	0	0	2	0	0	0	0	0	0	0	1	0

Annex 7: Particolored bat

Vmur - trapping sessions															
Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			0										0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	01-Sep		0											0
	02-Sep			0										0
	08-Sep			0										0
	11-Sep	0												0
	14-Sep	0												0
	15-Sep	0										0		0
	22-Sep	0												0
	29-Sep		0									0		0
	13-Oct											0		0
	22-Oct	0												0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	15-Aug										0			0
	20-Aug	0	0	0										0
	21-Aug	0		0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	0	0	0						0				0
	09-Sep	2	0	0										2
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	1		0										1
	18-Sep	0	0	0						0				0
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		0		0
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	3	0	0	0	0	0	0	0	0	0	0	0	3
2022	31-Aug	0	0	0						0				0
	01-Sep	0	0	0						0				0
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	0	0	0										0
	07-Sep		0	0						0				0
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		0										0
	20-Sep			0										0
	21-Sep	0	0	0						1				1
	22-Sep	0	0							0				0
	25-Sep			0										0
	06-Oct	0												0
	11-Oct									0				0
	Subtotal	0	0	0	0	0	0	0	0	1	0	0	0	1
2023	17-Aug			0										0
	18-Aug	0												0
	19-Aug				0									0
	20-Aug									0				0
	21-Aug		0	0										0
	22-Aug			0						0				0
	25-Aug	0												0
	28-Aug			0										0
	29-Aug		0							0				0
	02-Sep	0												0
	03-Sep				0									0
	04-Sep									0				0
	05-Sep	0	0											0
	06-Sep			0										0
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				0									0
	16-Sep	0												0
	25-Sep				0									0
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0

Not observed in bat boxes.

Several particoloured bats were obtained through Vogelklas Karel Schot (Rotterdam), wildopvang de Bonte Piet (Midwoud) and Fûgelhelling (Ureterp). Additional individuals were found in IJmuiden, Nijmegen and Groningen. All individuals were tagged.

08-09-2021 Rotterdam (1)

10-09-2021 IJmuiden (2)

02-10-2021 Midwoud (1)

07-10-2021 Midwoud (1)

07-05-2022 Rotterdam (1)

09-09-2022 Midwoud (1)

12-09-2022 Ureterp (1)

13-10-2022 Nijmegen (1)

29-04-2023 Rotterdam (1)

09-09-2023 Rotterdam (2)

16-09-2023 Midwoud (1)

17-09-2023 Midwoud (1)

20-09-2023 Rotterdam (2)

21-09-2023 IJmuiden (1)

27-09-2023 Midwoud (1)

04-10-2023 Rotterdam (1)

31-10-2023 Midwoud (1)

Annex 8: Serotine

Eser - trapping sessions															
Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			0										0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	01-Sep		0											0
	02-Sep			1										1
	08-Sep			0										0
	11-Sep	0												0
	14-Sep	2												2
	15-Sep	0										0		0
	22-Sep	0												0
	29-Sep		0									0		0
	13-Oct											0		0
	22-Oct	0												0
	Subtotal	2	0	1	0	0	0	0	0	0	0	0	0	3
2021	15-Aug										0			0
	20-Aug	0	0	1										1
	21-Aug	1		0										1
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	0	0	0						0				0
	09-Sep	2	0	0										2
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	1		0										1
	18-Sep	0	0	0						0				0
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		0		0
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	4	0	1	0	0	0	0	0	0	0	0	0	5
2022	31-Aug	0	2	0						0				2
	01-Sep	0	0	1						0				1
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	0	0	0										0
	07-Sep		0	0						0				0
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		0										0
	20-Sep			0										0
	21-Sep	0	0	0						0				0
	22-Sep	0	0							0				0
	25-Sep			0										0
	06-Oct	0												0
	11-Oct									0				0
	Subtotal	0	2	1	0	0	0	0	0	0	0	0	0	3
2023	17-Aug			0										0
	18-Aug	0												0
	19-Aug				0									0
	20-Aug									0				0
	21-Aug		2	0										2
	22-Aug			0						0				0
	25-Aug	1												1
	28-Aug			1										1
	29-Aug		0							0				0
	02-Sep	1												1
	03-Sep				0									0
	04-Sep									0				0
	05-Sep	0	0											0
	06-Sep			0										0
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				0									0
	16-Sep	1												1
	25-Sep				0									0
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	3	2	1	0	0	0	0	0	0	0	0	0	6

Not observed in bat boxes.

Annex 9: Pond bat

Mdas - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Rugeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			2										2
	Subtotal	0	0	2	0	0	0	0	0	0	0	0	0	2
2020	01-Sep		0											0
	02-Sep			0										0
	08-Sep			0										0
	11-Sep	0												0
	14-Sep	0												0
	15-Sep	0										2		2
	22-Sep	0												0
	29-Sep		0									0		0
	13-Oct											0		0
	22-Oct	0												0
	Subtotal	0	0	0	0	0	0	0	0	0	0	2	0	2
2021	15-Aug										0			0
	20-Aug	0	0	0										0
	21-Aug	0		0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	0	0	0						0				0
	09-Sep	0	0	0										0
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	0		0										0
	18-Sep	0	0	0						0				0
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		1		1
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	0	0	0	0	0	0	0	0	0	0	1	0	1
2022	31-Aug	0	0	0						0				0
	01-Sep	0	0	1						0				1
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	0	0	0										0
	07-Sep		0	0						0				0
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		0										0
	20-Sep			0										0
	21-Sep	0	0	0						0				0
	22-Sep	0	0							0				0
	25-Sep			0										0
	06-Oct	0												0
	11-Oct									0				0
	Subtotal	0	0	1	0	0	0	0	0	0	0	0	0	1
2023	17-Aug			0										0
	18-Aug	0												0
	19-Aug				0									0
	20-Aug									2				2
	21-Aug		0	0										0
	22-Aug			0						0				0
	25-Aug	0												0
	28-Aug			0										0
	29-Aug		0							0				0
	02-Sep	0												0
	03-Sep				0									0
	04-Sep									0				0
	05-Sep	0	0											0
	06-Sep			0										0
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				0									0
	16-Sep	1												1
	25-Sep				0									0
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	1	0	0	0	0	0	0	0	2	0	0	0	3

Mdas - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Rugeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	0		0								0		0
	30-Aug	0	0	0								0		0
	04-Sep	0		1								0		1
	08-Sep	0		0								0		0
	13-Sep	0	0	0								0		0
	22-Sep	0		0										0
	23-Sep		0											0
	24-Sep											0		0
	28-Sep	0	0	0								0		0
	03-Oct	0	0									0		0
	09-Oct	0		0								1		1
	Subtotal	0	0	1								1		2
2019	20-Aug	0	0	0								0		0
	27-Aug	0	0	0								0		0
	03-Sep	0	0	0								1		1
	10-Sep	0	0	0								0		0
	15-Sep	0	0	0				0				0		0
	17-Sep	0	0	0			0	0				0		0
	20-Sep		0	0								0		0
	21-Sep	0						0						0
	24-Sep	0	0	0			0	0				1		1
	01-Oct	0	0	2				0				0		2
	08-Oct	0	0	0			0	0						0
	15-Oct	0												0
	19-Oct	0	0	0				0						0
	Subtotal	0	0	2	0	0	0	0	0	0	0	2	0	4
2020	25-Aug	0	0					0				0		0
	01-Sep		0	0				0				0		0
	04-Sep	0	0	0				0				0		0
	08-Sep	0	0	0				0						0
	13-Sep	0	0	0				0				0		0
	15-Sep											0		0
	16-Sep		0	0				0						0
	22-Sep	0	0	0								0		0
	29-Sep	0	0	0				0						0
	02-Oct	0												0
	06-Oct	0	0											0
	07-Oct			0				0				0		0
	13-Oct	0		0				0				0		0
	20-Oct			0										0
	27-Oct			0				0						0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2021	03-Aug										0			0
	15-Aug										0			0
	21-Aug	0	0	0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	09-Sep	0	0	0										0
	17-Sep	0	0											0
	18-Sep		0	0										0
	22-Sep											0		0
	23-Sep	0												0
	24-Sep		0	0										0
	07-Oct										0			0
	10-Oct			0										0
	12-Oct	0	0											0
	15-Oct											0		0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2022	31-Aug	1		0							0			0
	01-Sep		0						0	0				0
	04-Sep									0	0			0
	05-Sep			0										0
	06-Sep	3	0											0
	07-Sep								0					0
	11-Sep									0				0
	12-Sep		0											0
	14-Sep	0												0
	15-Sep			0										0
	21-Sep	0									0			0
	22-Sep		0						0	0				0
	25-Sep			0										0
	11-Oct								0		0			0
	Subtotal	4	0	0	0	0	0	0	0	0	0	0	0	0
2023	17-Aug				0	0								0
	19-Aug				0									0
	20-Aug								0	0	0			0
	21-Aug				0									0
	28-Aug				0									0
	30-Aug				0	0								0
	01-Sep				0									0
	02-Sep				0									0
	07-Sep				0	0								0
	08-Sep				0									0
	09-Sep												0	0
	11-Sep				0	0			0	0				0
	13-Sep				0									0
	19-Sep				0									0
	20-Sep												0	0
	21-Sep					0								0
	24-Sep				0									0
	26-Sep				0				0	0				0
	30-Sep				0	0								0
	04-Oct												0	0
	05-Oct					0								0
	06-Oct				0									0
	09-Oct				0									0
	12-Oct				0									0
	17-Oct				0									0
	18-Oct				0									0
	19-Oct				0								0	0
	23-Oct				0									0
	30-Oct				0									0
	01-Nov				0	0								0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0

Annex 10: Daubenton's bat

Mdaub - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			2										2
	Subtotal	0	0	2	0	0	0	0	0	0	0	0	0	2
2020	01-Sep		0											0
	02-Sep			0										0
	08-Sep			0										0
	11-Sep	0												0
	14-Sep	1												1
	15-Sep	4										3		7
	22-Sep	0												0
	29-Sep		0									0		0
	13-Oct											8		8
	22-Oct	0												0
	Subtotal	5	0	0	0	0	0	0	0	0	0	11	0	16
2021	15-Aug										0			0
	20-Aug	15	0	0										15
	21-Aug	0		0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	1	0	0						0				1
	09-Sep	2	1	0										3
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	0		0										0
	18-Sep	2	0	0						0				2
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		4		4
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	20	1	0	0	0	0	0	0	0	0	4	0	25
2022	31-Aug	2	0	0						0				2
	01-Sep	3	0	0						0				3
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	1	0	0										1
	07-Sep		0	0						0				0
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		0											0
	14-Sep	0		1										1
	20-Sep			0										0
	21-Sep	1	0	0						0				1
	22-Sep	2	0							0				2
	25-Sep			0										0
	06-Oct	1												1
	11-Oct									0				0
	Subtotal	10	0	1	0	0	0	0	0	0	0	0	0	11
2023	17-Aug			0										0
	18-Aug	7												7
	19-Aug				0									0
	20-Aug									1				1
	21-Aug		0	0										0
	22-Aug			0						0				0
	25-Aug	0												0
	28-Aug			0										0
	29-Aug		0							0				0
	02-Sep	4												4
	03-Sep				0									0
	04-Sep									1				1
	05-Sep	4	0											4
	06-Sep			1										1
	11-Sep									0				0
	13-Sep			0										0
	14-Sep				0									0
	16-Sep	5												5
	25-Sep				0									0
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	20	0	1	0	0	0	0	0	2	0	0	0	23

Mdaub - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	O		O								O		O
	30-Aug	O	O	O								O		O
	04-Sep	O		O								O		O
	08-Sep	O		O								O		O
	13-Sep	O	O	O								O		O
	22-Sep	O		O										O
	23-Sep		O											O
	24-Sep											O		O
	28-Sep	O	O	O								O		O
	03-Oct	O	O									O		O
	09-Oct	O		O								O		O
	Subtotal	O	O	O								O		O
2019	20-Aug	O	O	O								O		O
	27-Aug	O	O	O								O		O
	03-Sep	O	O	O								O		O
	10-Sep	O	O	O								O		O
	15-Sep	O	O	O					O			O		O
	17-Sep	O	O	O			O	O				O		O
	20-Sep		O	O								O		O
	21-Sep	O						O						O
	24-Sep	O	O	O			O	O				O		O
	01-Oct	O	O	O				O				O		O
	08-Oct	O	O	O			O	O						O
	15-Oct	O												O
	19-Oct	O	O	O				O						O
	Subtotal	O	O	O	O	O	O	O	O	O	O	O	O	O
2020	25-Aug	O	O					O				O		O
	01-Sep		O	O				O				O		O
	04-Sep	O	O	O				O				O		O
	08-Sep	O	O	O				O						O
	13-Sep	O	1	O				O				O		1
	15-Sep											O		O
	16-Sep		O	O				O						O
	22-Sep	O	O	O								O		O
	29-Sep	O	O	O				O						O
	02-Oct	O												O
	06-Oct	O	O											O
	07-Oct			O				O				O		O
	13-Oct	O		O				O				O		O
	20-Oct			O										O
	27-Oct			O				O						O
	Subtotal	O	1	O	O	O	O	O	O	O	O	O	O	1
2021	03-Aug										O			O
	15-Aug										O			O
	21-Aug	O	O	O										O
	24-Aug										O			O
	01-Sep										O			O
	03-Sep										O			O
	09-Sep	O	O	O										O
	17-Sep	O	O											O
	18-Sep		O	O										O
	22-Sep											O		O
	23-Sep	O												O
	24-Sep		O	O										O
	07-Oct										O			O
	10-Oct			O										O
	12-Oct	O	O											O
	15-Oct											O		O
	Subtotal	O	O	O	O	O	O	O	O	O	O	O	O	O
2022	31-Aug	O		O							O			O
	01-Sep		O						O	O				O
	04-Sep									O	O			O
	05-Sep			O										O
	06-Sep	O	O											O
	07-Sep								O					O
	11-Sep										O			O
	12-Sep		O											O
	14-Sep	O												O
	15-Sep			O										O
	21-Sep	O									O			O
	22-Sep		1						O	O				O
	25-Sep			O										O
	11-Oct								O		O			O
	Subtotal	O	1	O	O	O	O	O	O	O	O	O	O	O
2023	17-Aug				O	O								O
	19-Aug				O									O
	20-Aug								O	O	O			O
	21-Aug				O									O
	28-Aug				O									O
	30-Aug				O	O								O
	01-Sep				O									O
	02-Sep				O									O
	07-Sep				O	O								O
	08-Sep				O									O
	09-Sep												O	O
	11-Sep				O	O			O	O				O
	13-Sep				O									O
	19-Sep				O									O
	20-Sep												O	O
	21-Sep					O								O
	24-Sep				O									O
	26-Sep				O				O	O				O
	30-Sep				O	O								O
	04-Oct												O	O
	05-Oct					O								O
	06-Oct				O									O
	09-Oct				O									O
	12-Oct				O									O
	17-Oct				O									O
	18-Oct				O									O
	19-Oct				O								O	O
	23-Oct				O									O
	30-Oct				O									O
	01-Nov				O	O								O
	Subtotal	O	O	O	O	O	O	O	O	O	O	O	O	O

Annex 11: Long-eared bat

Paur - trapping sessions

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	03-Oct			0										0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	01-Sep		0											0
	02-Sep			0										0
	08-Sep			0										0
	11-Sep	2												2
	14-Sep	0												0
	15-Sep	0										0		0
	22-Sep	0												0
	29-Sep		0									1		1
	13-Oct											0		0
	22-Oct	0												0
	Subtotal	2	0	0	0	0	0	0	0	0	0	1	0	3
2021	15-Aug										0			0
	20-Aug	0	2	0										2
	21-Aug	0		0										0
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	06-Sep										0			0
	07-Sep									0				0
	08-Sep	0	1	0						0				1
	09-Sep	0	0	1										1
	13-Sep									0				0
	16-Sep									0				0
	17-Sep	2		0										2
	18-Sep	0	0	0						0				0
	19-Sep		0											0
	20-Sep									0				0
	21-Sep									0				0
	22-Sep									0		0		0
	25-Sep									0				0
	26-Sep									0				0
	28-Sep			0										0
	07-Oct									0				0
	09-Oct									0				0
	Subtotal	2	3	1	0	0	0	0	0	0	0	0	0	6
2022	31-Aug	0	0	2						0				2
	01-Sep	0	2	0						0				2
	04-Sep									0				0
	05-Sep	0		0										0
	06-Sep	0	0	0										0
	07-Sep		1	0						0				1
	11-Sep									0				0
	12-Sep		0											0
	13-Sep		1											1
	14-Sep	0		0										0
	20-Sep			0										0
	21-Sep	0	0	0						0				0
	22-Sep	0	1							0				1
	25-Sep			0										0
	06-Oct	0												0
	11-Oct									0				0
	Subtotal	0	5	2	0	0	0	0	0	0	0	0	0	7
2023	17-Aug			0										0
	18-Aug	0												0
	19-Aug				0									0
	20-Aug									0				0
	21-Aug		0	0										0
	22-Aug			0						0				0
	25-Aug	4												4
	28-Aug			0										0
	29-Aug		0							0				0
	02-Sep	0												0
	03-Sep				0									0
	04-Sep									0				0
	05-Sep	1	0											1
	06-Sep			0										0
	11-Sep									0				0
	13-Sep			1										1
	14-Sep				0									0
	16-Sep	1												1
	25-Sep				0									0
	26-Sep									0				0
	30-Sep					0								0
	05-Oct				0									0
	17-Oct				0									0
	Subtotal	6	0	1	0	0	0	0	0	0	0	0	0	7

Paur - bat box surveys

Year	Date	Noorderhaven	Callantsoog	Wildrijk	Ananas/Anna's Parck	de Stolpen	Ruigeweg	t Zand	Breezanddijk	Kornwerderzand	Zurich	Hoek van Holland	Goeree	Totaal
2018	23-Aug	0		0								0		0
	30-Aug	0	0	0								0		0
	04-Sep	0		0								0		0
	08-Sep	0		0								0		0
	13-Sep	0	0	0								0		0
	22-Sep	0		0										0
	23-Sep		0											0
	24-Sep											0		0
	28-Sep	0	0	0								0		0
	03-Oct	0	0									0		0
	09-Oct	0		0								0		0
	Subtotal	0	0	0								0		0
2019	20-Aug	0	0	0								0		0
	27-Aug	0	0	0								0		0
	03-Sep	0	0	0								0		0
	10-Sep	0	0	0								0		0
	15-Sep	0	0	0				0				0		0
	17-Sep	0	0	0			0	0				0		0
	20-Sep		0	0								0		0
	21-Sep	0						0						0
	24-Sep	0	0	0			0	0				0		0
	01-Oct	0	0	0				0				0		0
	08-Oct	0	0	0			0	0						0
	15-Oct	0												0
	19-Oct	0	0	0				0						0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	25-Aug	0	0					0				0		0
	01-Sep		0	0				0				0		0
	04-Sep	0	0	0				0				1		1
	08-Sep	0	0	0				0						0
	13-Sep	0	1	0				0				0		1
	15-Sep											1		1
	16-Sep		0	0				0						0
	22-Sep	0	0	0								0		0
	29-Sep	1	0	0				0						1
	02-Oct	1												1
	06-Oct	1	0											1
	07-Oct			0				0				3		3
	13-Oct	0		0				0				2		2
	20-Oct			0										0
	27-Oct			0				0						0
	Subtotal	3	1	0	0	0	0	0	0	0	0	7	0	11
2021	03-Aug										0			0
	15-Aug										0			0
	21-Aug	5	0	1										6
	24-Aug										0			0
	01-Sep										0			0
	03-Sep										0			0
	09-Sep	0	0	0										0
	17-Sep	0	0											0
	18-Sep		0	0										0
	22-Sep											1		1
	23-Sep	0												0
	24-Sep		0	0										0
	07-Oct										0			0
	10-Oct			0										0
	12-Oct	0	0											0
	15-Oct											6		6
	Subtotal	5	0	1	0	0	0	0	0	0	0	7	0	13
2022	31-Aug	0		0							0			0
	01-Sep		0						0	0				0
	04-Sep									0	0			0
	05-Sep			0										0
	06-Sep	0	0											0
	07-Sep								0					0
	11-Sep									0				0
	12-Sep		0											0
	14-Sep	0												0
	15-Sep			0										0
	21-Sep	0									0			0
	22-Sep		0						0	0				0
	25-Sep			0										0
	11-Oct								0		0			0
	Subtotal	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	17-Aug				9	0								0
	19-Aug				0									0
	20-Aug								0	0	0			0
	21-Aug				0									0
	28-Aug				9									0
	30-Aug				4	0								0
	01-Sep				4									0
	02-Sep				0									0
	07-Sep				0	0								0
	08-Sep				0									0
	09-Sep												0	0
	11-Sep				0	0			0	0				0
	13-Sep				0									0
	19-Sep				0									0
	20-Sep												0	0
	21-Sep					0								0
	24-Sep				0									0
	26-Sep				0				0	0				0
	30-Sep				0	1								0
	04-Oct												0	0
	05-Oct					1								0
	06-Oct				0									0
	09-Oct				0									0
	12-Oct				0									0
	17-Oct				0									0
	18-Oct				1									0
	19-Oct				0								0	0
	23-Oct				2									0
	30-Oct				1									0
	01-Nov				1	0								0
	Subtotal	0	0	0	31	2	0	0	0	0	0	0	0	0

Annex 12: Tagged Nathusius' pipistrelles

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
FR	35353	M	ad	1-9-2021	Zurich	53,10	5,39	1	3	3-9-2021	Zurich	53,1	5,38
FR	35282	M	juv	3-9-2021	Zurich	53,10	5,39	2	3	3-9-2021	Zurich	53,1	5,38
FR	35227	F	ad	6-9-2021	Zurich	53,11	5,39	5	3	9-9-2021	Hoek van Holland - Vinetaduin	51,98	4,12
FR	35236	F	ad	7-9-2021	Kornwerderzand	53,07	5,34	2	3	13-9-2021	Zurich	53,1	5,38
FR	35241	F	ad	7-9-2021	Kornwerderzand	53,07	5,34	6	2	8-9-2021	Noordwijk	52,24	4,43
FR	35242	F	ad	7-9-2021	Kornwerderzand	53,07	5,34	3	15	6-10-2021	Zurich	53,1	5,38
FR	35349	F	ad	7-9-2021	Kornwerderzand	53,07	5,34	2	2	8-10-2021	Neeltje Jans	51,62	3,67
FR	35251	F	juv	21-9-2021	Kornwerderzand	53,07	5,34	7	6	27-9-2021	Büsum	54,13	8,88
FR	36231	M	ad	21-9-2021	Kornwerderzand	53,07	5,34	1	4	26-9-2021	Zurich	53,1	5,38
FR	36236	F	juv	21-9-2021	Kornwerderzand	53,07	5,34	20	2	28-9-2021	Noordwijk	52,24	4,43
FR	36028	M	ad	25-9-2021	Kornwerderzand	53,07	5,34	1	5	30-9-2021	Zurich	53,1	5,38
FR	36035	M	ad	26-9-2021	Kornwerderzand	53,07	5,34	1	1	26-9-2021	Den Oever	52,93	5,04
FR	36045	M	juv	26-9-2021	Kornwerderzand	53,07	5,34	8	2	27-9-2021	Noordwijk	52,24	4,43
FR	36235	F	ad	26-9-2021	Kornwerderzand	53,07	5,34	1	7	6-10-2021	Zurich	53,1	5,38
FR	36238	F	ad	26-9-2021	Kornwerderzand	53,07	5,34	1	1	26-9-2021	Zurich	53,1	5,38
FR	36241	M	juv	26-9-2021	Kornwerderzand	53,07	5,34	9	3	9-10-2021	Neeltje Jans	51,62	3,67
FR	35579	F	ad	7-10-2021	Kornwerderzand	53,07	5,34	2	2	9-10-2021	Zurich	53,1	5,38
FR	42228	M	juv	4-9-2022	Kornwerderzand	53,07	5,34	1	2	7-9-2022	Heemskerk -Kieftenvlak	52,51	4,6
FR	42407	F	ad	4-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42439	F	juv	4-9-2022	Kornwerderzand	53,07	5,34	1	1	21-9-2022	Zurich	53,1	5,38

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
FR	42410	F	ad	7-9-2022	Kornwerderzand	53,07	5,34	2	4	8-9-2022	Zurich	53,1	5,38
FR	42408	F	ad	11-9-2022	Kornwerderzand	53,07	5,34	9	11	11-10-2022	Zurich	53,1	5,38
FR	42436	M	ad	11-9-2022	Kornwerderzand	53,07	5,34	1	2	15-9-2022	Zurich	53,1	5,38
FR	42213	M	ad	21-9-2022	Kornwerderzand	53,07	5,34	1	10	3-10-2022	Zurich	53,1	5,38
FR	42409	M	ad	21-9-2022	Kornwerderzand	53,07	5,34	1	1	21-9-2022	Zurich	53,1	5,38
FR	42423	F	juv	21-9-2022	Kornwerderzand	53,07	5,34	11	2	18-10-2022	Wenduine	51,29	3,07
FR	42424	F	juv	21-9-2022	Kornwerderzand	53,07	5,34	1	1	22-9-2022	Zurich	53,1	5,38
FR	42426	M	ad	21-9-2022	Kornwerderzand	53,07	5,34	2	17	22-10-2022	Zurich	53,1	5,38
FR	42427	M	juv	21-9-2022	Kornwerderzand	53,07	5,34	13	3	2-10-2022	Zurich	53,1	5,38
FR	42429	M	ad	21-9-2022	Kornwerderzand	53,07	5,34	1	3	25-9-2022	Zurich	53,1	5,38
FR	42432	M	juv	21-9-2022	Kornwerderzand	53,07	5,34	2	15	21-10-2022	Zurich	53,1	5,38
FR	42435	F	ad	21-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42302	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	3	8	8-10-2022	Den Oever	52,93	5,04
FR	42303	F	ad	22-9-2022	Kornwerderzand	53,07	5,34	2	2	22-9-2022	Zurich	53,1	5,38
FR	42304	F	juv	22-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42411	F	ad	22-9-2022	Kornwerderzand	53,07	5,34	1	1	22-9-2022	Zurich	53,1	5,38
FR	42412	M	ad	22-9-2022	Kornwerderzand	53,07	5,34	2	2	24-9-2022	Hoek van Holland - Vinetaduin	51,98	4,12
FR	42413	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42414	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	23	5	30-9-2022	Brouwersdam	51,75	3,83
FR	42415	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	1	1	22-9-2022	Zurich	53,1	5,38
FR	42417	M	ad	22-9-2022	Kornwerderzand	53,07	5,34	1	1	23-9-2022	Den Oever	52,93	5,04
FR	42420	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	1	1	22-9-2022	Den Oever	52,93	5,04
FR	42422	F	juv	22-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42428	F	juv	22-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42431	F	ad	22-9-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42437	M	juv	22-9-2022	Kornwerderzand	53,07	5,34	4	2	8-10-2022	Zwin	51,36	3,35
FR	43059	M	ad	22-9-2022	Zurich	53,11	5,39	NA	NA	NA	NA	NA	NA

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
FR	42430	F	ad	23-9-2022	Kornwerderzand	53,07	5,34	3	2	11-10-2022	Neeltje Jans	51,62	3,67
FR	36331	F	juv	11-10-2022	Kornwerderzand	53,07	5,34	9	10	24-10-2022	Hoenderdahl	52,86	4,84
FR	36333	F	ad	11-10-2022	Kornwerderzand	53,07	5,34	8	11	13-11-2022	Brandweer Maasvlakte	51,99	4,03
FR	42223	M	juv	11-10-2022	Kornwerderzand	53,07	5,34	2	1	11-10-2022	Den Oever	52,93	5,04
FR	42230	M	juv	11-10-2022	Kornwerderzand	53,07	5,34	1	8	25-10-2022	Zurich	53,1	5,38
FR	42253	F	ad	11-10-2022	Kornwerderzand	53,07	5,34	3	2	23-10-2022	Afsluitdijk - Noord	53,01	5,19
FR	42256	F	ad	11-10-2022	Kornwerderzand	53,07	5,34	9	22	5-11-2022	Heemskerk -Kieftenvlak	52,51	4,6
FR	42257	M	juv	11-10-2022	Kornwerderzand	53,07	5,34	2	8	18-10-2022	Zurich	53,1	5,38
FR	42262	M	juv	11-10-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42264	M	juv	11-10-2022	Kornwerderzand	53,07	5,34	NA	NA	NA	NA	NA	NA
FR	42269	F	ad	11-10-2022	Kornwerderzand	53,07	5,34	13	2	12-10-2022	Heemskerk -Kieftenvlak	52,51	4,6
NH	18848	F	juv	23-8-2018	Noorderhaven	52,88	4,76	9	4	31-8-2018	Hoek van Holland - Zeetoren	51,99	4,12
NH	18851	M	juv	23-8-2018	Wildrijk	52,79	4,7	4	1	23-8-2018	Camperduin	52,72	4,64
NH	18855	M	ad	23-8-2018	Wildrijk	52,79	4,7	5	1	23-8-2018	Noorderhaven	52,88	4,76
NH	18858	M	ad	23-8-2018	Noorderhaven	52,88	4,76	2	12	4-9-2018	Noorderhaven	52,88	4,76
NH	18859	M	juv	23-8-2018	Wildrijk	52,79	4,7	6	4	31-8-2018	Westkapelle	51,53	3,45
NH	18861	F	ad	23-8-2018	Wildrijk	52,79	4,7	6	27	4-9-2018	ECN	52,78	4,68
NH	18862	F	juv	23-8-2018	Noorderhaven	52,88	4,76	2	1	23-8-2018	Julianadorp - vuurtoren	52,88	4,71
NH	18841	F	ad	30-8-2018	Callantsoog	52,84	4,71	2	1	31-8-2018	Zwanenwater	52,82	4,69
NH	18842	F	ad	30-8-2018	Callantsoog	52,84	4,71	5	4	24-9-2018	Schagerbrug	52,81	4,73
NH	18844	F	ad	30-8-2018	Callantsoog	52,84	4,71	5	4	3-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	18845	F	ad	30-8-2018	Noorderhaven	52,88	4,76	1	2	30-8-2018	Noorderhaven	52,88	4,76
NH	18849	F	ad	30-8-2018	Callantsoog	52,84	4,71	3	1	30-8-2018	Schagerbrug	52,81	4,73
NH	18850	M	ad	30-8-2018	Wildrijk	52,79	4,7	6	5	6-9-2018	Den Helder - Vuurtoren	52,96	4,73
NH	18854	M	ad	30-8-2018	Noorderhaven	52,88	4,76	5	2	30-8-2018	Camperduin	52,72	4,64
NH	18856	M	ad	30-8-2018	Wildrijk	52,79	4,7	5	8	6-9-2018	Schagerbrug	52,81	4,73
NH	18857	F	juv	30-8-2018	Noorderhaven	52,88	4,76	1	4	3-9-2018	Noorderhaven	52,88	4,76

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	18863	F	ad	30-8-2018	Callantsoog	52,84	4,71	8	4	3-9-2018	Zwanenwater	52,82	4,69
NH	18864	M	ad	30-8-2018	Noorderhaven	52,88	4,76	2	6	3-9-2018	Noorderhaven	52,88	4,76
NH	18840	F	ad	4-9-2018	Noorderhaven	52,88	4,76	2	8	28-10-2018	IJmuiden	52,46	4,58
NH	18843	F	ad	4-9-2018	Noorderhaven	52,88	4,76	4	12	25-9-2018	Schagerbrug	52,81	4,73
NH	18853	M	juv	4-9-2018	Noorderhaven	52,88	4,76	1	2	4-9-2018	Noorderhaven	52,88	4,76
NH	18860	M	ad	4-9-2018	Noorderhaven	52,88	4,76	1	9	15-9-2018	Noorderhaven	52,88	4,76
NH	19015	M	ad	4-9-2018	Wildrijk	52,79	4,7	2	3	6-9-2018	Zwanenwater	52,82	4,69
NH	19016	F	ad	4-9-2018	Wildrijk	52,79	4,7	14	25	28-9-2018	Maasvlakte - KNRM	51,93	3,98
NH	19021	F	ad	4-9-2018	Noorderhaven	52,88	4,76	13	3	5-9-2018	Breskens	51,41	3,52
NH	19026	F	ad	4-9-2018	Noorderhaven	52,88	4,76	3	6	13-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19027	F	juv	4-9-2018	Noorderhaven	52,88	4,76	NA	NA	NA	NA	NA	NA
NH	19028	F	ad	4-9-2018	Noorderhaven	52,88	4,76	9	2	5-9-2018	Breskens	51,41	3,52
NH	19029	M	juv	4-9-2018	Noorderhaven	52,88	4,76	2	1	4-9-2018	Noorderhaven	52,88	4,76
NH	19019	F	ad	8-9-2018	Wildrijk	52,79	4,7	8	15	24-9-2018	Kennemerwind	52,74	4,69
NH	19020	F	ad	8-9-2018	Noorderhaven	52,88	4,76	2	1	8-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19023	M	ad	8-9-2018	Noorderhaven	52,88	4,76	4	17	10-9-2018	Schagerbrug	52,81	4,73
NH	19090	F	ad	8-9-2018	Noorderhaven	52,88	4,76	15	11	28-9-2018	Maasvlakte - KNRM	51,93	3,98
NH	19094	F	ad	8-9-2018	Noorderhaven	52,88	4,76	13	7	18-9-2018	Zandmotor	52,05	4,18
NH	19095	F	ad	8-9-2018	Noorderhaven	52,88	4,76	2	2	8-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19099	M	juv	8-9-2018	Noorderhaven	52,88	4,76	2	2	8-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19100	F	ad	8-9-2018	Wildrijk	52,79	4,7	2	2	19-9-2018	IJmuiden	52,46	4,58
NH	19110	F	juv	8-9-2018	Noorderhaven	52,88	4,76	10	16	10-10-2018	IJmuiden	52,46	4,58
NH	19017	M	ad	13-9-2018	Wildrijk	52,79	4,7	8	24	6-10-2018	Huiberts	52,78	4,71
NH	19018	M	ad	13-9-2018	Noorderhaven	52,88	4,76	1	1	14-9-2018	Noorderhaven	52,88	4,76
NH	19022	M	ad	13-9-2018	Noorderhaven	52,88	4,76	2	16	6-10-2018	Noorderhaven	52,88	4,76
NH	19092	F	ad	13-9-2018	Callantsoog	52,84	4,71	11	12	27-9-2018	IJmuiden	52,46	4,58
NH	19093	M	ad	13-9-2018	Wildrijk	52,79	4,7	4	5	17-9-2018	Huiberts	52,78	4,71

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	19096	F	ad	13-9-2018	Callantsoog	52,84	4,71	8	4	16-10-2018	Den Helder - Vuurtoren	52,96	4,73
NH	19101	F	ad	13-9-2018	Wildrijk	52,79	4,7	9	23	12-10-2018	Schagerbrug	52,81	4,73
NH	19103	F	ad	13-9-2018	Noorderhaven	52,88	4,76	11	19	4-10-2018	Julianadorp - vuurtoren	52,88	4,71
NH	18820	F	ad	22-9-2018	Noorderhaven	52,88	4,76	5	4	17-10-2018	Schagerbrug	52,81	4,73
NH	19115	M	ad	22-9-2018	Noorderhaven	52,88	4,76	2	4	30-9-2018	Noorderhaven	52,88	4,76
NH	19123	F	ad	22-9-2018	Noorderhaven	52,88	4,76	6	11	6-10-2018	Kennemerwind	52,74	4,69
NH	19464	M	ad	22-9-2018	Noorderhaven	52,88	4,76	2	6	27-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19465	F	ad	22-9-2018	Noorderhaven	52,88	4,76	2	6	27-9-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19468	F	ad	22-9-2018	Noorderhaven	52,88	4,76	8	12	7-10-2018	Breskens	51,41	3,52
NH	19476	M	juv	22-9-2018	Noorderhaven	52,88	4,76	2	1	22-9-2018	Huiberts	52,78	4,71
NH	19480	M	ad	22-9-2018	Wildrijk	52,79	4,7	9	32	17-10-2018	Huiberts	52,78	4,71
NH	19482	F	ad	22-9-2018	Noorderhaven	52,88	4,76	1	1	22-9-2018	Noorderhaven	52,88	4,76
NH	19483	M	ad	22-9-2018	Wildrijk	52,79	4,7	6	7	28-9-2018	Huiberts	52,78	4,71
NH	19486	M	juv	22-9-2018	Noorderhaven	52,88	4,76	5	11	17-10-2018	ECN	52,78	4,68
NH	19487	F	ad	22-9-2018	Noorderhaven	52,88	4,76	11	26	18-10-2018	Breskens	51,41	3,52
NH	19470	F	ad	23-9-2018	Callantsoog	52,84	4,71	11	7	30-9-2018	ECN	52,78	4,68
NH	19471	F	ad	23-9-2018	Callantsoog	52,84	4,71	5	4	14-10-2018	Kennemerwind	52,74	4,69
NH	19473	M	juv	23-9-2018	Callantsoog	52,84	4,71	6	8	6-11-2018	Ijmuiden	52,46	4,58
NH	19488	M	ad	23-9-2018	Callantsoog	52,84	4,71	2	2	23-9-2018	Breskens	51,41	3,52
NH	18852	F	ad	28-9-2018	Noorderhaven	52,88	4,76	2	94	29-9-2018	Ütlandshorn	53,56	7,11
NH	19104	M	ad	28-9-2018	Noorderhaven	52,88	4,76	2	24	2-11-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19108	M	juv	28-9-2018	Callantsoog	52,84	4,71	8	16	25-10-2018	Schagerbrug	52,81	4,73
NH	19119	M	ad	28-9-2018	Wildrijk	52,79	4,7	10	11	17-10-2018	IJmuiden	52,46	4,58
NH	19111	F	juv	3-10-2018	Wildrijk	52,79	4,7	9	2	5-10-2018	Camperduin	52,72	4,64
NH	19116	M	ad	3-10-2018	Wildrijk	52,79	4,7	8	8	10-10-2018	Huiberts	52,78	4,71
NH	19120	F	ad	3-10-2018	Wildrijk	52,79	4,7	6	12	14-10-2018	ECN	52,78	4,68
NH	19098	F	ad	9-10-2018	Noorderhaven	52,88	4,76	6	22	30-11-2018	Huiberts	52,78	4,71

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	19107	M	ad	9-10-2018	Noorderhaven	52,88	4,76	3	22	13-11-2018	Julianadorp - vuurtoren	52,88	4,71
NH	19286	F	ad	9-10-2018	Wildrijk	52,79	4,7	6	2	10-10-2018	Huiberts	52,78	4,71
NH	19479	M	ad	9-10-2018	Wildrijk	52,79	4,7	9	18	5-11-2018	Hillegom	52,28	4,59
NH	25079	M	ad	20-8-2019	Wildrijk	52,79	4,7	7	14	1-9-2019	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	25080	M	ad	20-8-2019	Noorderhaven	52,88	4,77	NA	NA	NA	NA	NA	NA
NH	25092	M	ad	20-8-2019	Callantsoog	52,84	4,71	3	7	26-8-2019	Zwanenwater	52,82	4,69
NH	25093	M	ad	20-8-2019	Wildrijk	52,79	4,7	10	6	26-8-2019	Huiberts	52,78	4,71
NH	25094	M	ad	20-8-2019	Noorderhaven	52,88	4,77	1	9	7-9-2019	Noorderhaven	52,88	4,76
NH	25108	M	ad	20-8-2019	Wildrijk	52,79	4,7	10	5	24-8-2019	ECN	52,78	4,68
NH	25109	M	ad	20-8-2019	Noorderhaven	52,88	4,77	1	1	21-8-2019	Noorderhaven	52,88	4,76
NH	25120	M	ad	20-8-2019	Wildrijk	52,79	4,7	9	43	25-10-2019	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	25121	M	ad	20-8-2019	Noorderhaven	52,88	4,77	1	1	21-8-2019	Noorderhaven	52,88	4,76
NH	25136	F	ad	20-8-2019	Callantsoog	52,84	4,71	13	3	22-8-2019	Westkapelle	51,53	3,45
NH	25137	M	ad	20-8-2019	Wildrijk	52,79	4,7	NA	NA	NA	NA	NA	NA
NH	25156	F	ad	20-8-2019	Wildrijk	52,79	4,7	NA	NA	NA	NA	NA	NA
NH	25164	M	ad	20-8-2019	Callantsoog	52,84	4,71	2	2	22-8-2019	Zwanenwater	52,82	4,69
NH	25165	M	ad	20-8-2019	Wildrijk	52,79	4,7	10	9	28-8-2019	Huiberts	52,78	4,71
NH	25166	M	ad	20-8-2019	Noorderhaven	52,88	4,77	4	1	21-8-2019	Noorderhaven	52,88	4,76
NH	25177	M	ad	20-8-2019	Callantsoog	52,84	4,71	6	10	26-8-2019	Callantsoog	52,84	4,72
NH	25178	M	ad	20-8-2019	Wildrijk	52,79	4,7	7	14	3-9-2019	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	25183	M	ad	20-8-2019	Noorderhaven	52,88	4,77	9	2	22-8-2019	Noorderhaven	52,88	4,76
NH	25088	M	ad	27-8-2019	Callantsoog	52,84	4,71	12	1	28-8-2019	Noordwijk	52,24	4,43
NH	25089	M	juv	27-8-2019	Callantsoog	52,84	4,71	3	1	27-8-2019	de Kooij	52,91	4,78
NH	25090	F	ad	27-8-2019	Callantsoog	52,84	4,71	14	4	31-8-2019	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	25091	M	ad	27-8-2019	Callantsoog	52,84	4,71	4	13	9-9-2019	Callantsoog - reddingsbrigade	52,84	4,69
NH	25103	M	ad	27-8-2019	Wildrijk	52,79	4,7	10	8	3-9-2019	Kennemerwind	52,74	4,69
NH	25104	M	ad	27-8-2019	Noorderhaven	52,88	4,77	3	15	9-9-2019	Noorderhaven	52,88	4,76

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	25105	M	ad	27-8-2019	Callantsoog	52,84	4,71	11	4	30-8-2019	Kennemerwind	52,74	4,69
NH	25106	F	ad	27-8-2019	Callantsoog	52,84	4,71	11	4	9-9-2019	Koksijde	51,12	2,65
NH	25117	M	ad	27-8-2019	Callantsoog	52,84	4,71	2	7	5-9-2019	Callantsoog	52,84	4,72
NH	25118	F	ad	27-8-2019	Callantsoog	52,84	4,71	7	2	4-9-2019	Breskens	51,41	3,52
NH	25119	M	juv	27-8-2019	Callantsoog	52,84	4,71	7	3	30-8-2019	Utlandshorn	53,56	7,11
NH	25131	M	ad	27-8-2019	Noorderhaven	52,88	4,77	1	2	28-8-2019	Noorderhaven	52,88	4,76
NH	25133	M	ad	27-8-2019	Callantsoog	52,84	4,71	3	4	30-8-2019	Callantsoog	52,84	4,72
NH	25148	M	ad	27-8-2019	Noorderhaven	52,88	4,77	1	5	1-9-2019	Noorderhaven	52,88	4,76
NH	25150	F	ad	27-8-2019	Noorderhaven	52,88	4,77	13	17	15-9-2019	Noorderhaven	52,88	4,76
NH	25151	F	ad	27-8-2019	Callantsoog	52,84	4,71	13	6	2-9-2019	ECN	52,78	4,68
NH	25152	M	ad	27-8-2019	Callantsoog	52,84	4,71	5	10	5-9-2019	t Zand	52,85	4,76
NH	25153	M	ad	27-8-2019	Callantsoog	52,84	4,71	7	14	9-9-2019	Zwanenwater	52,82	4,69
NH	25154	F	ad	27-8-2019	Callantsoog	52,84	4,71	10	10	5-9-2019	Huiberts	52,78	4,71
NH	25155	F	ad	27-8-2019	Callantsoog	52,84	4,71	3	1	30-8-2019	Sehestedt	53,44	8,3
NH	25175	F	ad	27-8-2019	Callantsoog	52,84	4,71	5	1	27-8-2019	Camperduin	52,72	4,64
NH	25176	M	ad	27-8-2019	Callantsoog	52,84	4,71	3	11	7-9-2019	Julianadorp - vuurtoren	52,88	4,71
NH	25086	M	ad	3-9-2019	Noorderhaven	52,88	4,77	14	11	14-9-2019	Camperduin	52,72	4,64
NH	25087	M	ad	3-9-2019	Noorderhaven	52,88	4,77	1	2	4-9-2019	Noorderhaven	52,88	4,76
NH	25097	M	ad	3-9-2019	Wildrijk	52,79	4,7	9	7	14-9-2019	Noorderhaven	52,88	4,76
NH	25101	M	ad	3-9-2019	Callantsoog	52,84	4,71	3	6	8-9-2019	Callantsoog	52,84	4,72
NH	25149	F	ad	3-9-2019	Noorderhaven	52,88	4,77	9	1	3-9-2019	Bergen aan Zee	52,67	4,64
NH	25163	M	ad	3-9-2019	Callantsoog	52,84	4,71	4	4	7-9-2019	Schagerbrug	52,81	4,73
NH	25174	M	juv	3-9-2019	Noorderhaven	52,88	4,77	4	5	7-9-2019	Noorderhaven	52,88	4,76
NH	25180	F	juv	3-9-2019	Wildrijk	52,79	4,7	15	5	10-9-2019	Koksijde	51,12	2,65
NH	25114	M	ad	10-9-2019	Callantsoog	52,84	4,71	5	5	15-9-2019	Callantsoog	52,84	4,72
NH	25116	M	ad	10-9-2019	Callantsoog	52,84	4,71	7	6	16-9-2019	Callantsoog	52,84	4,72
NH	25129	M	ad	10-9-2019	Noorderhaven	52,88	4,77	10	9	19-9-2019	Noorderhaven	52,88	4,76

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	25130	F	ad	10-9-2019	Wildrijk	52,79	4,7	8	1	10-9-2019	Noordwijk	52,24	4,43
NH	25146	F	juv	10-9-2019	Noorderhaven	52,88	4,77	18	4	13-9-2019	Breskens	51,41	3,52
NH	25147	F	ad	10-9-2019	Callantsoog	52,84	4,71	NA	NA	NA	NA	NA	NA
NH	25162	M	ad	10-9-2019	Callantsoog	52,84	4,71	6	8	17-9-2019	Julianadorp - vuurtoren	52,88	4,71
NH	25173	M	ad	10-9-2019	Noorderhaven	52,88	4,77	2	14	24-9-2019	Noorderhaven	52,88	4,76
NH	25095	M	ad	15-9-2019	Noorderhaven	52,88	4,77	3	7	20-9-2019	Noorderhaven	52,88	4,76
NH	25110	M	ad	15-9-2019	t Zand	52,85	4,77	4	12	29-9-2019	Eendenkooi t zand	52,84	4,77
NH	25122	F	ad	15-9-2019	t Zand	52,85	4,77	10	30	14-10-2019	t Zand	52,85	4,76
NH	25126	M	ad	15-9-2019	Noorderhaven	52,88	4,77	1	5	23-9-2019	Noorderhaven	52,88	4,76
NH	25127	F	ad	15-9-2019	t Zand	52,85	4,77	12	18	5-10-2019	Noordwijk	52,24	4,43
NH	25138	F	juv	15-9-2019	t Zand	52,85	4,77	18	4	19-9-2019	Westkapelle	51,53	3,45
NH	25142	F	ad	15-9-2019	Noorderhaven	52,88	4,77	3	2	15-9-2019	Den Helder - Vuurtoren	52,96	4,73
NH	25143	F	ad	15-9-2019	t Zand	52,85	4,77	3	15	5-10-2019	t Zand	52,85	4,76
NH	25171	M	ad	15-9-2019	Wildrijk	52,79	4,7	10	6	11-10-2019	Huiberts	52,78	4,71
NH	25179	M	ad	15-9-2019	t Zand	52,85	4,77	4	20	4-10-2019	Eendenkooi t zand	52,84	4,77
NH	25220	M	ad	15-9-2019	t Zand	52,85	4,77	4	57	24-9-2019	Eendenkooi t zand	52,84	4,77
NH	25224	M	ad	15-9-2019	Wildrijk	52,79	4,7	8	6	20-9-2019	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	25961	M	ad	15-9-2019	t Zand	52,85	4,77	4	5	19-9-2019	Eendenkooi t zand	52,84	4,77
NH	25962	M	ad	15-9-2019	t Zand	52,85	4,77	3	18	26-10-2019	Eendenkooi t zand	52,84	4,77
NH	25964	F	ad	15-9-2019	t Zand	52,85	4,77	7	20	26-10-2019	Eendenkooi t zand	52,84	4,77
NH	25970	F	ad	15-9-2019	t Zand	52,85	4,77	11	36	20-10-2019	Ijmuiden	52,46	4,58
NH	25971	M	ad	15-9-2019	t Zand	52,85	4,77	4	20	4-10-2019	Eendenkooi t zand	52,84	4,77
NH	25958	F	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	8	9	24-10-2019	Noordwijk	52,24	4,43
NH	25965	M	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	2	1	21-9-2019	Schagerbrug	52,81	4,73
NH	26141	F	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	NA	NA	NA	NA	NA	NA
NH	26142	M	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	5	3	22-9-2019	Schagerbrug	52,81	4,73
NH	26143	F	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	12	6	17-10-2019	Brouwersdam	51,75	3,83

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	26152	F	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	9	14	8-10-2019	Eendenkooi t zand	52,84	4,77
NH	26153	F	juv	17-9-2019	Korte Ruigeweg	52,82	4,78	NA	NA	NA	NA	NA	NA
NH	26154	F	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	12	9	3-10-2019	Kennemerwind	52,74	4,69
NH	26157	M	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	5	4	21-9-2019	Schagerbrug	52,81	4,73
NH	26161	M	ad	17-9-2019	Korte Ruigeweg	52,82	4,78	12	4	25-9-2019	Eendenkooi t Zand	52,84	4,77
NH	26145	F	ad	21-9-2019	t Zand	52,85	4,77	4	6	26-9-2019	Noorderhaven	52,88	4,76
NH	26147	F	ad	21-9-2019	Noorderhaven	52,88	4,77	9	3	5-10-2019	Castricum	52,56	4,61
NH	26148	M	ad	21-9-2019	Noorderhaven	52,88	4,77	2	15	8-10-2019	Noorderhaven	52,88	4,76
NH	26150	M	ad	21-9-2019	Noorderhaven	52,88	4,77	2	3	23-9-2019	Noorderhaven	52,88	4,76
NH	26156	M	ad	21-9-2019	t Zand	52,85	4,77	5	22	13-10-2019	Eendenkooi t zand	52,84	4,77
NH	26160	F	ad	21-9-2019	Noorderhaven	52,88	4,77	6	11	1-10-2019	Noorderhaven	52,88	4,76
NH	25221	F	ad	24-9-2019	Korte Ruigeweg	52,82	4,78	16	7	20-10-2019	Brouwersdam	51,75	3,83
NH	26140	F	ad	24-9-2019	Noorderhaven	52,88	4,77	17	13	13-10-2019	Bremerhaven	53,54	8,57
NH	26144	M	ad	24-9-2019	t Zand	52,85	4,77	2	10	3-10-2019	Eendenkooi t zand	52,84	4,77
NH	26146	M	ad	24-9-2019	t Zand	52,85	4,77	3	26	26-10-2019	Eendenkooi t zand	52,84	4,77
NH	26149	F	ad	24-9-2019	Callantsoog	52,84	4,71	11	4	5-10-2019	Eendenkooi t zand	52,84	4,77
NH	26151	F	ad	24-9-2019	Wildrijk	52,79	4,7	7	7	29-9-2019	ECN	52,78	4,68
NH	26155	M	ad	24-9-2019	t Zand	52,85	4,77	5	54	29-11-2019	Castricum	52,56	4,61
NH	26158	F	ad	24-9-2019	Callantsoog	52,84	4,71	3	3	27-9-2019	Schagerbrug	52,81	4,73
NH	26159	F	ad	24-9-2019	Noorderhaven	52,88	4,77	16	9	1-10-2019	Castricum	52,56	4,61
NH	26300	M	ad	24-9-2019	Korte Ruigeweg	52,82	4,78	5	2	1-10-2019	Eendenkooi t Zand	52,84	4,77
NH	26303	F	ad	24-9-2019	Korte Ruigeweg	52,82	4,78	2	6	5-10-2019	Eendenkooi t zand	52,84	4,77
NH	26305	M	ad	24-9-2019	Korte Ruigeweg	52,82	4,78	3	3	5-10-2019	Eendenkooi t Zand	52,84	4,77
NH	25115	F	juv	1-10-2019	Callantsoog	52,84	4,71	25	17	20-10-2019	Breskens	51,41	3,52
NH	25966	M	ad	1-10-2019	Callantsoog	52,84	4,71	10	11	5-11-2019	Bergen aan Zee	52,67	4,64
NH	26299	F	ad	1-10-2019	Callantsoog	52,84	4,71	15	16	30-11-2019	Bergen aan Zee	52,67	4,64
NH	26301	M	ad	1-10-2019	Callantsoog	52,84	4,71	3	6	14-10-2019	St Maartensvlotbrug - parallelweg	52,8	4,71

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	26302	F	ad	1-10-2019	Noorderhaven	52,88	4,77	6	23	24-10-2019	Noorderhaven	52,88	4,76
NH	26304	M	ad	1-10-2019	t Zand	52,85	4,77	3	29	29-10-2019	Eendenkooi t zand	52,84	4,77
NH	26653	M	ad	1-10-2019	t Zand	52,85	4,77	3	11	13-10-2019	Eendenkooi t zand	52,84	4,77
NH	26638	F	juv	8-10-2019	Noorderhaven	52,88	4,77	3	11	17-10-2019	Noorderhaven	52,88	4,76
NH	26643	F	ad	8-10-2019	Noorderhaven	52,88	4,77	4	8	14-10-2019	Schagerbrug	52,81	4,73
NH	26644	M	ad	8-10-2019	Korte Ruigeweg	52,82	4,78	1	2	23-10-2019	Eendenkooi t zand	52,84	4,77
NH	26654	F	ad	8-10-2019	Korte Ruigeweg	52,82	4,78	3	4	20-10-2019	Eendenkooi t Zand	52,84	4,77
NH	26640	M	ad	15-10-2019	Noorderhaven	52,88	4,77	8	2	15-10-2019	Kennemerwind	52,74	4,69
NH	26641	M	ad	15-10-2019	Noorderhaven	52,88	4,77	1	4	18-10-2019	Noorderhaven	52,88	4,76
NH	26647	F	juv	15-10-2019	Noorderhaven	52,88	4,77	1	1	15-10-2019	Noorderhaven	52,88	4,76
NH	26651	F	juv	15-10-2019	Noorderhaven	52,88	4,77	2	2	15-10-2019	de Kooij	52,91	4,78
NH	26652	F	ad	15-10-2019	Noorderhaven	52,88	4,77	4	2	16-10-2019	Noorderhaven	52,88	4,76
NH	26656	F	ad	15-10-2019	Noorderhaven	52,88	4,77	4	13	28-11-2019	Noorderhaven	52,88	4,76
NH	26639	M	ad	19-10-2019	Callantsoog	52,84	4,71	2	4	3-11-2019	Callantsoog	52,84	4,72
NH	26645	F	ad	19-10-2019	t Zand	52,85	4,77	2	3	20-10-2019	Eendenkooi t zand	52,84	4,77
NH	26648	M	ad	19-10-2019	t Zand	52,85	4,77	6	20	6-11-2019	Kennemerwind	52,74	4,69
NH	29171	F	ad	25-8-2020	Noorderhaven	52,88	4,77	2	1	25-8-2020	Julianadorp - vuurtoren	52,88	4,71
NH	29226	M	ad	25-8-2020	Noorderhaven	52,88	4,77	1	7	30-8-2020	Noorderhaven	52,88	4,76
NH	29193	F	ad	1-9-2020	Callantsoog	52,84	4,71	13	2	2-9-2020	Den Helder - Vuurtoren	52,96	4,73
NH	29176	F	juv	2-9-2020	Wildrijk	52,79	4,7	12	4	10-9-2020	Koksijde	51,12	2,65
NH	29191	M	juv	2-9-2020	Wildrijk	52,79	4,7	13	8	21-9-2020	Brouwersdam	51,75	3,83
NH	29228	M	juv	2-9-2020	Wildrijk	52,79	4,7	2	1	2-9-2020	Huiberts	52,78	4,71
NH	29181	F	juv	4-9-2020	Wildrijk	52,79	4,7	26	5	10-9-2020	Koksijde	51,12	2,65
NH	29184	F	ad	4-9-2020	t Zand	52,88	4,77	14	3	9-9-2020	Petten	52,77	4,66
NH	29206	M	ad	4-9-2020	t Zand	52,85	4,77	8	26	30-9-2020	Eendenkooi t Zand	52,84	4,77
NH	29197	M	ad	8-9-2020	Wildrijk	52,79	4,7	7	42	16-9-2020	Huiberts	52,78	4,71
NH	29234	F	juv	8-9-2020	Wildrijk	52,79	4,7	14	2	10-9-2020	Westkapelle	51,53	3,45

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	29263	M	juv	8-9-2020	Noorderhaven	52,88	4,77	17	3	24-9-2020	Oostvoorne	51,92	4,06
NH	29192	F	juv	11-9-2020	Noorderhaven	52,88	4,77	17	6	17-9-2020	Kennemerwind	52,74	4,69
NH	29202	M	ad	11-9-2020	Noorderhaven	52,88	4,77	6	4	15-9-2020	Julianadorp - vuurtoren	52,88	4,71
NH	29217	M	ad	11-9-2020	Noorderhaven	52,88	4,77	6	27	28-9-2020	Noorderhaven	52,88	4,76
NH	29225	M	ad	11-9-2020	Noorderhaven	52,88	4,77	NA	NA	NA	NA	NA	NA
NH	29294	F	juv	11-9-2020	Noorderhaven	52,88	4,77	18	30	10-10-2020	Noordwijk	52,24	4,43
NH	29179	M	ad	13-9-2020	Wildrijk	52,79	4,7	12	3	14-9-2020	Koksijde	51,12	2,65
NH	29185	F	ad	13-9-2020	Callantsoog	52,84	4,71	11	1	13-9-2020	Julianadorp - vuurtoren	52,88	4,71
NH	29194	F	ad	13-9-2020	t Zand	52,85	4,77	11	2	14-9-2020	Zwanenwater	52,82	4,69
NH	29201	F	ad	13-9-2020	Callantsoog	52,84	4,71	14	3	16-9-2020	Breskens	51,41	3,52
NH	29214	M	ad	13-9-2020	Callantsoog	52,84	4,71	1	1	13-9-2020	Callantsoog	52,84	4,72
NH	29259	M	ad	13-9-2020	Callantsoog	52,84	4,71	22	25	7-10-2020	Eendenkooi t zand	52,84	4,77
NH	29280	F	ad	13-9-2020	Callantsoog	52,84	4,71	12	2	14-9-2020	Koksijde	51,12	2,65
NH	29172	F	juv	14-9-2020	Noorderhaven	52,88	4,77	4	2	13-10-2020	Heemskerk -Kieftenvlak	52,51	4,6
NH	29173	F	juv	14-9-2020	Noorderhaven	52,88	4,77	2	2	13-10-2020	Eendenkooi t zand	52,84	4,77
NH	29210	F	ad	14-9-2020	Noorderhaven	52,88	4,77	12	1	15-9-2020	Ijmuiden	52,46	4,58
NH	29220	F	ad	14-9-2020	Noorderhaven	52,88	4,77	9	19	1-10-2020	de Kooij	52,91	4,78
NH	29196	F	ad	15-9-2020	Callantsoog	52,84	4,71	11	1	15-9-2020	Camperduin	52,72	4,64
NH	29209	M	ad	15-9-2020	Callantsoog	52,84	4,71	14	12	29-9-2020	Julianadorp - vuurtoren	52,88	4,71
NH	29231	M	juv	15-9-2020	Callantsoog	52,84	4,71	8	2	19-9-2020	Zwanenwater	52,82	4,69
NH	29244	M	ad	15-9-2020	Callantsoog	52,84	4,71	7	58	21-9-2020	Callantsoog	52,84	4,72
NH	29253	M	ad	15-9-2020	Callantsoog	52,84	4,71	14	8	23-9-2020	Eendenkooi t zand	52,84	4,77
NH	29275	M	juv	15-9-2020	Callantsoog	52,84	4,71	13	23	8-10-2020	Kennemerwind	52,74	4,69
NH	29205	F	ad	16-9-2020	Wildrijk	52,79	4,7	8	6	20-9-2020	Castricum	52,56	4,61
NH	29188	F	juv	22-9-2020	Noorderhaven	52,88	4,77	6	1	22-9-2020	Texel - KNRM	53,17	4,87
NH	30072	F	juv	29-9-2020	Callantsoog	52,84	4,71	10	2	2-10-2020	Bergen aan Zee	52,67	4,64
NH	30076	F	juv	29-9-2020	Noorderhaven	52,88	4,77	9	19	4-11-2020	Petten	52,77	4,66

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	30084	M	ad	6-10-2020	Callantsoog	52,84	4,71	10	22	12-11-2020	Callantsoog	52,84	4,72
NH	29874	F	ad	7-10-2020	t Zand	52,85	4,77	10	29	4-11-2020	Heemskerk -Kieftenvlak	52,51	4,6
NH	30078	M	ad	7-10-2020	t Zand	52,85	4,77	4	12	17-10-2020	Eendenkooi t zand	52,84	4,77
NH	30082	M	ad	7-10-2020	t Zand	52,85	4,77	NA	NA	NA	NA	NA	NA
NH	30085	M	ad	7-10-2020	t Zand	52,85	4,77	14	53	27-11-2020	Eendenkooi t zand	52,84	4,77
NH	30086	F	ad	7-10-2020	t Zand	52,85	4,77	14	33	9-11-2020	Castricum	52,56	4,61
NH	30088	F	ad	7-10-2020	t Zand	52,85	4,77	6	10	23-10-2020	Hoek van Holland - Vinetaduin	51,98	4,12
NH	30087	F	ad	13-10-2020	t Zand	52,85	4,77	4	45	18-11-2020	Eendenkooi t zand	52,84	4,77
NH	35239	F	ad	21-8-2021	Callantsoog	52,84	4,71	11	2	23-8-2021	Hoek van Holland - Zeetoren	51,98	4,12
NH	35248	M	ad	21-8-2021	Noorderhaven	52,88	4,76	7	5	26-8-2021	Noorderhaven	52,88	4,76
NH	35274	F	ad	21-8-2021	Noorderhaven	52,88	4,76	3	12	2-9-2021	Noorderhaven	52,88	4,76
NH	35228	F	ad	8-9-2021	Wildrijk	52,79	4,71	5	2	13-9-2021	Kennemerwind	52,74	4,69
NH	35230	F	ad	8-9-2021	Wildrijk	52,79	4,71	20	4	12-9-2021	Noordwijk	52,24	4,43
NH	35238	F	ad	8-9-2021	Noorderhaven	52,88	4,76	16	3	10-9-2021	Van Ewijksluis	52,89	4,88
NH	35240	F	ad	8-9-2021	Noorderhaven	52,88	4,76	19	41	26-10-2021	Noorderhaven	52,88	4,76
NH	35243	F	juv	8-9-2021	Noorderhaven	52,88	4,76	5	1	8-9-2021	Julianadorp - vuurtoren	52,88	4,71
NH	35244	F	ad	8-9-2021	Noorderhaven	52,88	4,76	21	15	22-9-2021	Noorderhaven	52,88	4,76
NH	35249	F	ad	8-9-2021	Wildrijk	52,79	4,71	11	21	13-9-2021	Huiberts	52,78	4,71
NH	35255	M	ad	8-9-2021	Noorderhaven	52,88	4,76	24	11	26-9-2021	Noorderhaven	52,88	4,76
NH	35275	F	ad	8-9-2021	Wildrijk	52,79	4,71	19	6	13-9-2021	Castricum ringbaan	52,54	4,61
NH	35276	M	juv	8-9-2021	Wildrijk	52,79	4,71	25	6	17-9-2021	Castricum ringbaan	52,54	4,61
NH	35277	M	juv	8-9-2021	Wildrijk	52,79	4,71	12	2	9-9-2021	Zandmotor	52,05	4,18
NH	35279	M	ad	8-9-2021	Noorderhaven	52,88	4,76	2	7	15-9-2021	Noorderhaven	52,88	4,76
NH	35280	M	juv	8-9-2021	Wildrijk	52,79	4,71	20	6	13-9-2021	Brouwersdam	51,75	3,83
NH	35281	F	ad	8-9-2021	Wildrijk	52,79	4,71	14	8	15-9-2021	Kennemerwind	52,74	4,69
NH	35359	M	juv	8-9-2021	Wildrijk	52,79	4,71	12	2	9-9-2021	Den Oever	52,93	5,04
NH	35362	F	juv	8-9-2021	Wildrijk	52,79	4,71	21	20	28-9-2021	Huiberts	52,78	4,71

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	35372	M	juv	8-9-2021	Wildrijk	52,79	4,71	22	18	9-10-2021	t Zand	52,85	4,76
NH	35235	F	ad	9-9-2021	Noorderhaven	52,88	4,76	27	6	20-9-2021	Koksijde	51,12	2,65
NH	35237	F	ad	9-9-2021	Noorderhaven	52,88	4,76	19	12	20-9-2021	Ijmuiden - Eneco	52,46	4,57
NH	35245	F	ad	9-9-2021	Callantsoog	52,84	4,71	17	4	21-9-2021	Hoek van Holland - Zeetoren	51,98	4,12
NH	35246	F	ad	9-9-2021	Callantsoog	52,84	4,71	7	1	9-9-2021	t Zand	52,85	4,76
NH	35247	F	juv	9-9-2021	Callantsoog	52,84	4,71	7	2	14-9-2021	Koksijde	51,12	2,65
NH	35252	M	ad	9-9-2021	Noorderhaven	52,88	4,76	3	8	14-9-2021	Noorderhaven	52,88	4,76
NH	35254	F	ad	9-9-2021	Callantsoog	52,84	4,71	19	4	13-9-2021	Brandweer Maasvlakte	51,99	4,03
NH	35269	M	ad	9-9-2021	Noorderhaven	52,88	4,76	4	3	10-9-2021	Noorderhaven	52,88	4,76
NH	35271	F	ad	9-9-2021	Callantsoog	52,84	4,71	10	1	9-9-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	35366	F	juv	9-9-2021	Wildrijk	52,79	4,71	11	4	12-9-2021	Kennemerwind	52,74	4,69
NH	35367	M	juv	9-9-2021	Wildrijk	52,79	4,71	10	2	9-9-2021	Schagerbrug	52,81	4,73
NH	35560	M	juv	9-9-2021	Wildrijk	52,79	4,71	7	1	10-9-2021	Bergen aan Zee	52,67	4,64
NH	35562	F	ad	9-9-2021	Wildrijk	52,79	4,71	9	2	18-9-2021	Hoek van Holland - Vinetaduin	51,98	4,12
NH	35564	F	ad	9-9-2021	Wildrijk	52,79	4,71	8	3	16-9-2021	Schagerbrug	52,81	4,73
NH	35571	M	juv	9-9-2021	Wildrijk	52,79	4,71	9	5	16-9-2021	Zandmotor	52,05	4,18
NH	35572	M	juv	9-9-2021	Wildrijk	52,79	4,71	12	5	20-9-2021	Koksijde	51,12	2,65
NH	35578	F	ad	9-9-2021	Wildrijk	52,79	4,71	21	12	20-9-2021	Noordwijk	52,24	4,43
NH	35588	F	juv	9-9-2021	Wildrijk	52,79	4,71	8	2	18-9-2021	Zwin	51,36	3,35
NH	35257	M	ad	10-9-2021	Callantsoog	52,84	4,71	17	6	18-9-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	35266	F	ad	17-9-2021	Noorderhaven	52,88	4,76	12	33	12-11-2021	Julianadorp - vogelzand	52,89	4,74
NH	35561	M	juv	17-9-2021	Wildrijk	52,79	4,71	14	1	18-9-2021	Hoek van Holland - Vinetaduin	51,98	4,12
NH	35568	M	ad	17-9-2021	Wildrijk	52,79	4,71	8	20	24-9-2021	Kennemerwind	52,74	4,69
NH	35232	F	ad	18-9-2021	Noorderhaven	52,88	4,76	9	14	6-10-2021	Petten	52,77	4,66
NH	35267	M	ad	18-9-2021	Noorderhaven	52,88	4,76	17	4	27-9-2021	Zwin	51,36	3,35
NH	35272	F	ad	18-9-2021	Wildrijk	52,79	4,71	15	56	2-10-2021	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	35278	F	ad	18-9-2021	Wildrijk	52,79	4,71	15	15	6-10-2021	Kennemerwind	52,74	4,69

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	35567	M	juv	18-9-2021	Wildrijk	52,79	4,71	21	28	4-11-2021	Camperduin	52,72	4,64
NH	35577	M	ad	18-9-2021	Wildrijk	52,79	4,71	15	10	28-9-2021	Huiberts	52,78	4,71
NH	35581	M	ad	18-9-2021	Wildrijk	52,79	4,71	15	11	28-9-2021	Huiberts	52,78	4,71
NH	35582	F	ad	18-9-2021	Wildrijk	52,79	4,71	4	1	18-9-2021	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	35585	F	ad	18-9-2021	Wildrijk	52,79	4,71	11	2	19-9-2021	Neeltje Jans	51,62	3,67
NH	35586	M	juv	18-9-2021	Wildrijk	52,79	4,71	7	1	18-9-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	35587	F	juv	18-9-2021	Wildrijk	52,79	4,71	16	14	10-10-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	36029	M	juv	18-9-2021	Callantsoog	52,84	4,71	15	4	22-9-2021	Utlandshorn	53,56	7,11
NH	36039	F	ad	18-9-2021	Callantsoog	52,84	4,71	12	3	20-9-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	36047	M	ad	19-9-2021	Callantsoog	52,84	4,71	5	5	23-9-2021	Callantsoog	52,84	4,72
NH	36052	M	ad	19-9-2021	Callantsoog	52,84	4,71	6	3	22-9-2021	Den Oever	52,93	5,04
NH	35259	M	ad	23-9-2021	Noorderhaven	52,88	4,76	4	34	28-10-2021	Noorderhaven	52,88	4,76
NH	35261	M	ad	23-9-2021	Noorderhaven	52,88	4,76	NA	NA	NA	NA	NA	NA
NH	35264	M	ad	23-9-2021	Noorderhaven	52,88	4,76	5	5	23-10-2021	ECN	52,78	4,68
NH	36233	M	ad	23-9-2021	Noorderhaven	52,88	4,76	9	19	10-10-2021	Noorderhaven	52,88	4,76
NH	36237	F	juv	23-9-2021	Noorderhaven	52,88	4,76	16	13	6-10-2021	Ijmuiden - Eneco	52,46	4,57
NH	35253	F	ad	24-9-2021	Callantsoog	52,84	4,71	18	8	6-10-2021	Heemskerk -Kieftenvlak	52,51	4,6
NH	35258	M	ad	24-9-2021	Callantsoog	52,84	4,71	14	12	6-10-2021	Callantsoog	52,84	4,72
NH	35260	M	juv	24-9-2021	Callantsoog	52,84	4,71	9	1	25-9-2021	Zwanenwater	52,82	4,69
NH	35583	M	ad	24-9-2021	Callantsoog	52,84	4,71	10	7	4-10-2021	Zwanenwater	52,82	4,69
NH	36038	F	ad	24-9-2021	Wildrijk	52,79	4,71	10	3	25-9-2021	Hoenderdahl	52,86	4,84
NH	36044	M	ad	24-9-2021	Wildrijk	52,79	4,71	7	7	21-10-2021	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	36230	F	ad	24-9-2021	Wildrijk	52,79	4,71	8	2	24-9-2021	Hoenderdahl	52,86	4,84
NH	36234	F	ad	24-9-2021	Wildrijk	52,79	4,71	13	20	15-10-2021	Noordwijk	52,24	4,43
NH	35563	M	juv	28-9-2021	Wildrijk	52,79	4,71	6	2	30-9-2021	Huiberts	52,78	4,71
NH	35569	M	ad	28-9-2021	Wildrijk	52,79	4,71	11	34	13-11-2021	Camperduin	52,72	4,64
NH	35566	M	juv	10-10-2021	Wildrijk	52,79	4,71	7	43	25-11-2021	ECN	52,78	4,68

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	36239	F	ad	10-10-2021	Wildrijk	52,79	4,71	5	1	11-10-2021	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	36240	F	ad	10-10-2021	Wildrijk	52,79	4,71	5	12	28-10-2021	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	35570	F	ad	12-10-2021	Noorderhaven	52,88	4,76	7	2	13-10-2021	Brouwersdam	51,75	3,83
NH	35580	M	ad	12-10-2021	Noorderhaven	52,88	4,76	15	2	12-10-2021	Zandmotor	52,05	4,18
NH	35584	F	ad	12-10-2021	Noorderhaven	52,88	4,76	4	2	12-10-2021	Hoenderdahl	52,86	4,84
NH	36242	F	ad	12-10-2021	Noorderhaven	52,88	4,76	2	2	12-10-2021	t Zand	52,85	4,76
NH	36332	F	ad	12-10-2021	Noorderhaven	52,88	4,76	4	2	12-10-2021	t Zand	52,85	4,76
NH	42200	M	juv	31-8-2022	Wildrijk	52,79	4,71	9	1	4-9-2022	Wenduine	51,29	3,07
NH	42203	M	juv	31-8-2022	Wildrijk	52,79	4,71	14	4	3-9-2022	Ijmuiden	52,46	4,58
NH	42216	M	juv	31-8-2022	Wildrijk	52,79	4,71	26	5	5-9-2022	Den Oever	52,93	5,04
NH	42217	M	juv	31-8-2022	Wildrijk	52,79	4,71	6	2	3-9-2022	Hoenderdahl	52,86	4,84
NH	42218	F	juv	31-8-2022	Wildrijk	52,79	4,71	8	2	2-9-2022	Heemskerk -Kieftenvlak	52,51	4,6
NH	42231	F	ad	31-8-2022	Wildrijk	52,79	4,71	14	33	2-10-2022	Bergen aan Zee	52,67	4,64
NH	42232	F	ad	31-8-2022	Wildrijk	52,79	4,71	17	4	4-9-2022	Haringvlietdam	51,83	4,04
NH	42235	F	juv	31-8-2022	Wildrijk	52,79	4,71	21	5	4-9-2022	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	42236	M	juv	31-8-2022	Wildrijk	52,79	4,71	20	4	4-9-2022	Brouwersdam	51,75	3,83
NH	42239	M	juv	31-8-2022	Wildrijk	52,79	4,71	2	1	1-9-2022	Huiberts	52,78	4,71
NH	42249	F	ad	31-8-2022	Callantsoog	52,84	4,71	7	3	2-9-2022	Van Ewijksluis	52,89	4,88
NH	42251	M	juv	31-8-2022	Noorderhaven	52,88	4,76	12	1	1-9-2022	Heemskerk -Kieftenvlak	52,51	4,6
NH	42199	M	juv	1-9-2022	Callantsoog	52,84	4,71	9	3	7-9-2022	Den Oever	52,93	5,04
NH	42201	F	ad	1-9-2022	Noorderhaven	52,88	4,76	3	70	2-9-2022	Julianadorp - vogelzand	52,89	4,74
NH	42214	F	juv	1-9-2022	Noorderhaven	52,88	4,76	17	3	1-9-2022	Heemskerk -Kieftenvlak	52,51	4,6
NH	42220	F	juv	1-9-2022	Noorderhaven	52,88	4,76	12	4	10-9-2022	Caister	52,65	1,74
NH	42222	M	juv	1-9-2022	Noorderhaven	52,88	4,76	9	5	11-9-2022	Koksijde	51,12	2,65
NH	42233	F	juv	1-9-2022	Callantsoog	52,84	4,71	11	5	5-9-2022	Julianadorp - vuurtoren	52,88	4,71
NH	42246	F	ad	1-9-2022	Callantsoog	52,84	4,71	14	1	1-9-2022	Ijmuiden - Eneco	52,46	4,57
NH	42247	F	Juv	1-9-2022	Noorderhaven	52.88	4.76	19	3	4-9-2022	Hoek van Holland – Vinetaduin	51,98	4,12

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	42248	F	juv	1-9-2022	Callantsoog	52,84	4,71	10	4	13-9-2022	Koksijde	51,12	2,65
NH	42250	F	juv	1-9-2022	Noorderhaven	52,88	4,76	6	2	1-9-2022	Van Ewijksluis	52,89	4,88
NH	42252	F	juv	1-9-2022	Callantsoog	52,84	4,71	17	5	13-9-2022	Oostvoorne	51,92	4,06
NH	42259	M	juv	1-9-2022	Wildrijk	52,79	4,71	6	2	2-9-2022	Heemskerk -Kieftenvlak	52,51	4,6
NH	42260	M	juv	1-9-2022	Wildrijk	52,79	4,71	18	3	3-9-2022	Zwin	51,36	3,35
NH	42266	M	juv	1-9-2022	Wildrijk	52,79	4,71	16	4	4-9-2022	Huiberts	52,78	4,71
NH	42270	F	ad	1-9-2022	Wildrijk	52,79	4,71	13	11	24-9-2022	Den Helder - Ankerpark	52,96	4,78
NH	42274	F	juv	1-9-2022	Wildrijk	52,79	4,71	27	24	24-9-2022	Hoek van Holland - Vinetaduin	51,98	4,12
NH	42276	M	juv	1-9-2022	Wildrijk	52,79	4,71	13	6	9-9-2022	Den Oever	52,93	5,04
NH	42277	M	juv	1-9-2022	Wildrijk	52,79	4,71	11	1	2-9-2022	Van Ewijksluis	52,89	4,88
NH	42278	F	juv	1-9-2022	Wildrijk	52,79	4,71	11	4	8-9-2022	Ijmuiden	52,46	4,58
NH	42293	F	juv	1-9-2022	Callantsoog	52,84	4,71	1	1	1-9-2022	Schagerbrug	52,81	4,73
NH	42294	F	ad	1-9-2022	Callantsoog	52,84	4,71	12	8	9-9-2022	Zwanenwater	52,82	4,69
NH	42296	M	juv	1-9-2022	Callantsoog	52,84	4,71	10	2	2-9-2022	Ijmuiden	52,46	4,58
NH	42297	F	juv	1-9-2022	Callantsoog	52,84	4,71	8	3	4-9-2022	Den Oever	52,93	5,04
NH	42298	M	juv	1-9-2022	Callantsoog	52,84	4,71	21	6	7-9-2022	Den Oever	52,93	5,04
NH	42234	M	juv	2-9-2022	Noorderhaven	52,88	4,76	2	1	2-9-2022	Van Ewijksluis	52,89	4,88
NH	42263	M	juv	2-9-2022	Wildrijk	52,79	4,71	12	6	13-9-2022	Camperduin	52,72	4,64
NH	42292	F	juv	2-9-2022	Callantsoog	52,84	4,71	11	4	4-9-2022	St Ewijksluis	52,89	4,88
NH	42227	M	juv	5-9-2022	Wildrijk	52,79	4,71	11	2	8-9-2022	Zandmotor	52,05	4,18
NH	42261	F	ad	5-9-2022	Wildrijk	52,79	4,71	11	11	28-9-2022	Fedderwardersiel	53,6	8,35
NH	42272	F	juv	5-9-2022	Wildrijk	52,79	4,71	11	8	12-9-2022	Huiberts	52,78	4,71
NH	42206	M	juv	6-9-2022	Noorderhaven	52,88	4,76	15	6	14-9-2022	Neeltje Jans	51,62	3,67
NH	42207	M	juv	6-9-2022	Callantsoog	52,84	4,71	10	2	8-9-2022	Van Ewijksluis	52,89	4,88
NH	42209	F	ad	6-9-2022	Callantsoog	52,84	4,71	11	3	8-9-2022	Noordwijk	52,24	4,43
NH	42212	M	ad	6-9-2022	Noorderhaven	52,88	4,76	3	17	29-9-2022	Noorderhaven	52,88	4,76
NH	42215	F	ad	6-9-2022	Callantsoog	52,84	4,71	22	6	11-9-2022	Koksijde	51,12	2,65

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	42221	F	juv	6-9-2022	Noorderhaven	52,88	4,76	22	9	13-9-2022	Hoek van Holland - Vinetaduin	51,98	4,12
NH	42224	M	juv	6-9-2022	Callantsoog	52,84	4,71	7	9	10-9-2022	Callantsoog	52,84	4,72
NH	42226	F	juv	6-9-2022	Callantsoog	52,84	4,71	10	1	6-9-2022	Castricum ringbaan	52,54	4,61
NH	42238	M	juv	6-9-2022	Noorderhaven	52,88	4,76	17	16	21-9-2022	Noorderhaven	52,88	4,76
NH	42313	F	ad	6-9-2022	Wildrijk	52,79	4,71	16	19	3-10-2022	Hoenderdahl	52,86	4,84
NH	42314	F	ad	6-9-2022	Wildrijk	52,79	4,71	15	10	15-9-2022	Huiberts	52,78	4,71
NH	42324	F	juv	6-9-2022	Wildrijk	52,79	4,71	11	3	8-9-2022	Texel - Krassekeet	53,1	4,9
NH	42310	M	juv	7-9-2022	Wildrijk	52,79	4,71	13	2	8-9-2022	St Ewijksluis	52,89	4,88
NH	42311	F	juv	7-9-2022	Wildrijk	52,79	4,71	9	5	11-9-2022	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	42312	M	juv	7-9-2022	Wildrijk	52,79	4,71	12	17	23-9-2022	Huiberts	52,78	4,71
NH	42315	M	juv	7-9-2022	Wildrijk	52,79	4,71	15	37	23-9-2022	Huiberts	52,78	4,71
NH	42316	F	juv	7-9-2022	Wildrijk	52,79	4,71	17	2	11-9-2022	Neeltje Jans	51,62	3,67
NH	42317	F	juv	7-9-2022	Wildrijk	52,79	4,71	15	11	24-9-2022	Hoenderdahl	52,86	4,84
NH	42204	M	juv	12-9-2022	Callantsoog	52,84	4,71	19	29	31-10-2022	Huiberts	52,78	4,71
NH	42225	M	juv	12-9-2022	Callantsoog	52,84	4,71	9	14	26-9-2022	Eendenkooi t zand	52,84	4,77
NH	42229	M	juv	12-9-2022	Callantsoog	52,84	4,71	15	4	15-9-2022	Zwanenwater	52,82	4,69
NH	42202	F	ad	14-9-2022	Noorderhaven	52,88	4,76	6	11	24-9-2022	Castricum ringbaan	52,54	4,61
NH	42205	F	ad	14-9-2022	Noorderhaven	52,88	4,76	7	19	23-11-2022	Noorderhaven	52,88	4,76
NH	42300	M	juv	14-9-2022	Wildrijk	52,79	4,71	22	19	7-10-2022	Huiberts	52,78	4,71
NH	42309	F	ad	14-9-2022	Noorderhaven	52,88	4,76	3	23	14-10-2022	Noorderhaven	52,88	4,76
NH	42323	M	juv	14-9-2022	Noorderhaven	52,88	4,76	10	1	22-9-2022	Bergen aan Zee	52,67	4,64
NH	42299	F	juv	15-9-2022	Wildrijk	52,79	4,71	4	3	21-9-2022	Zwanenwater	52,82	4,69
NH	42301	M	juv	20-9-2022	Wildrijk	52,79	4,71	18	11	8-10-2022	Zandmotor	52,05	4,18
NH	42306	M	ad	20-9-2022	Wildrijk	52,79	4,71	6	5	30-9-2022	Zurich	53,1	5,38
NH	42307	M	juv	20-9-2022	Wildrijk	52,79	4,71	5	7	9-10-2022	Zurich	53,1	5,38
NH	42308	M	ad	20-9-2022	Wildrijk	52,79	4,71	7	68	26-11-2022	Huiberts	52,78	4,71
NH	42289	M	juv	21-9-2022	Callantsoog	52,84	4,71	3	1	21-9-2022	Huiberts	52,78	4,71

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
NH	42290	F	juv	21-9-2022	Callantsoog	52,84	4,71	9	3	24-9-2022	Hoek van Holland - Zeetoren	51,98	4,12
NH	42305	M	juv	21-9-2022	Wildrijk	52,79	4,71	5	1	21-9-2022	Camperduin	52,72	4,64
NH	42421	F	juv	21-9-2022	Wildrijk	52,79	4,71	4	2	22-9-2022	Zurich	53,1	5,38
NH	42434	F	ad	21-9-2022	Wildrijk	52,79	4,71	19	37	28-10-2022	Schagerbrug	52,81	4,73
NH	42441	M	juv	21-9-2022	Wildrijk	52,79	4,71	7	10	30-9-2022	Huiberts	52,78	4,71
NH	42258	F	ad	22-9-2022	Callantsoog	52,84	4,71	7	14	6-10-2022	Julianadorp - vuurtoren	52,88	4,71
NH	42271	F	juv	22-9-2022	Callantsoog	52,84	4,71	8	9	18-10-2022	Neeltje Jans	51,62	3,67
NH	42275	M	ad	22-9-2022	Callantsoog	52,84	4,71	12	4	25-9-2022	Callantsoog	52,84	4,72
NH	42318	F	juv	22-9-2022	Callantsoog	52,84	4,71	2	1	22-9-2022	St Maartensvlotbrug - parallelweg	52,8	4,71
NH	42320	F	ad	22-9-2022	Noorderhaven	52,88	4,76	18	7	29-9-2022	Julianadorp - vuurtoren	52,88	4,71
NH	42321	F	juv	22-9-2022	Noorderhaven	52,88	4,76	8	1	23-9-2022	Camperduin	52,72	4,64
NH	42326	M	ad	22-9-2022	Noorderhaven	52,88	4,76	3	3	24-9-2022	t Zand	52,85	4,76
NH	42327	F	ad	22-9-2022	Noorderhaven	52,88	4,76	5	4	2-10-2022	Emden	53,38	7,04
NH	42328	F	ad	22-9-2022	Noorderhaven	52,88	4,76	10	27	18-10-2022	Camperduin	52,72	4,64
NH	42295	M	ad	25-9-2022	Wildrijk	52,79	4,71	8	46	29-10-2022	Huiberts	52,78	4,71
ZH	18823	F	ad	23-8-2018	Hoek van Holland	51,98	4,12	1	1	23-8-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18839	M	ad	23-8-2018	Hoek van Holland	51,98	4,12	3	34	30-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18819	F	ad	30-8-2018	Hoek van Holland	51,98	4,12	2	1	30-8-2018	Brandweer Maasvlakte	51,99	4,03
ZH	18821	F	ad	30-8-2018	Hoek van Holland	51,98	4,12	1	11	30-10-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18833	F	ad	30-8-2018	Hoek van Holland	51,98	4,12	NA	NA	NA	NA	NA	NA
ZH	18835	M	ad	30-8-2018	Hoek van Holland	51,98	4,12	1	8	6-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18837	M	ad	30-8-2018	Hoek van Holland	51,98	4,12	1	21	19-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18815	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	2	11	6-10-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18816	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	3	2	5-9-2018	Breskens	51,41	3,52
ZH	18817	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	7	8	8-9-2018	Koksijde	51,12	2,65
ZH	18818	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	4	6	7-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18827	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	1	1	4-9-2018	Hoek van Holland - Zeetoren	51,99	4,12

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
ZH	18829	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	3	2	5-9-2018	Breskens	51,41	3,52
ZH	18830	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	1	1	4-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18831	F	juv	4-9-2018	Hoek van Holland	51,98	4,12	4	2	5-9-2018	Heist	51,34	3,24
ZH	18832	F	juv	4-9-2018	Hoek van Holland	51,98	4,12	6	3	6-9-2018	Koksijde	51,12	2,65
ZH	18836	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	2	1	4-9-2018	Haringvlietdam	51,83	4,04
ZH	18838	F	ad	4-9-2018	Hoek van Holland	51,98	4,12	1	1	4-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	18825	F	ad	8-9-2018	Hoek van Holland	51,98	4,12	3	4	17-9-2018	Breskens	51,41	3,52
ZH	19122	F	ad	8-9-2018	Hoek van Holland	51,98	4,12	2	1	9-9-2018	Zandmotor	52,05	4,18
ZH	19126	F	juv	8-9-2018	Hoek van Holland	51,98	4,12	3	3	12-9-2018	Westkapelle	51,53	3,45
ZH	19131	F	juv	8-9-2018	Hoek van Holland	51,98	4,12	1	2	8-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	19134	F	juv	8-9-2018	Hoek van Holland	51,98	4,12	2	2	8-9-2018	Zandmotor	52,05	4,18
ZH	19137	M	ad	8-9-2018	Hoek van Holland	51,98	4,12	1	12	16-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	19138	F	ad	8-9-2018	Hoek van Holland	51,98	4,12	7	3	13-9-2018	Koksijde	51,12	2,65
ZH	18822	F	juv	13-9-2018	Hoek van Holland	51,98	4,12	1	1	16-9-2018	Breskens	51,41	3,52
ZH	18824	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	3	2	14-9-2018	Koksijde	51,12	2,65
ZH	18828	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	5	4	19-9-2018	Breskens	51,41	3,52
ZH	18834	F	juv	13-9-2018	Hoek van Holland	51,98	4,12	4	3	19-9-2018	Haringvlietdam	51,83	4,04
ZH	19113	M	ad	13-9-2018	Hoek van Holland	51,98	4,12	1	4	17-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	19125	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	2	1	13-9-2018	Breskens	51,41	3,52
ZH	19129	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	14	3	17-9-2018	Den Helder - Vuurtoren	52,96	4,73
ZH	19130	F	juv	13-9-2018	Hoek van Holland	51,98	4,12	1	1	13-9-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	19132	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	4	2	14-9-2018	Koksijde	51,12	2,65
ZH	19133	F	ad	13-9-2018	Hoek van Holland	51,98	4,12	2	2	14-9-2018	Breskens	51,41	3,52
ZH	19114	M	ad	24-9-2018	Hoek van Holland	51,98	4,12	3	18	10-10-2018	Hoek van Holland - Zeetoren	51,99	4,12
ZH	19118	M	juv	24-9-2018	Hoek van Holland	51,98	4,12	3	13	7-10-2018	Brandweer Maasvlakte	51,99	4,03
ZH	19124	F	juv	24-9-2018	Hoek van Holland	51,98	4,12	NA	NA	NA	NA	NA	NA
ZH	19128	F	ad	24-9-2018	Hoek van Holland	51,98	4,12	2	4	28-9-2018	Hoek van Holland - Zeetoren	51,99	4,12

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
ZH	25082	M	ad	20-8-2019	Hoek van Holland	51,99	4,12	4	4	23-8-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25100	M	ad	20-8-2019	Hoek van Holland	51,99	4,12	2	9	28-8-2019	Hoek van Holland - Zeetoren	51,99	4,12
ZH	25113	M	ad	20-8-2019	Hoek van Holland	51,99	4,12	2	4	23-8-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25099	M	juv	27-8-2019	Hoek van Holland	51,99	4,12	4	3	27-8-2019	Oostvoorne	51,92	4,06
ZH	25111	M	ad	27-8-2019	Hoek van Holland	51,99	4,12	2	9	4-9-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25125	F	juv	27-8-2019	Hoek van Holland	51,99	4,12	3	2	27-8-2019	Zandmotor	52,05	4,18
ZH	25139	F	juv	27-8-2019	Hoek van Holland	51,99	4,12	4	1	27-8-2019	Maasvlakte - KNRM	51,93	3,98
ZH	25140	F	ad	27-8-2019	Hoek van Holland	51,99	4,12	7	2	27-8-2019	Breskens	51,41	3,52
ZH	25160	F	juv	27-8-2019	Hoek van Holland	51,99	4,12	NA	NA	NA	NA	NA	NA
ZH	25169	M	ad	27-8-2019	Hoek van Holland	51,99	4,12	2	12	4-9-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25170	F	juv	27-8-2019	Hoek van Holland	51,99	4,12	4	2	28-8-2019	Westkapelle	51,53	3,45
ZH	25181	M	ad	27-8-2019	Hoek van Holland	51,99	4,12	2	35	4-9-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25182	F	ad	27-8-2019	Hoek van Holland	51,99	4,12	1	2	27-8-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25225	M	juv	27-8-2019	Hoek van Holland	51,99	4,12	2	2	27-8-2019	Oostvoorne	51,92	4,06
ZH	25226	F	ad	27-8-2019	Hoek van Holland	51,99	4,12	5	2	27-8-2019	Breskens	51,41	3,52
ZH	25096	F	juv	10-9-2019	Hoek van Holland	51,99	4,12	5	4	18-9-2019	Castricum	52,56	4,61
ZH	25953	M	ad	15-9-2019	Hoek van Holland	51,99	4,12	2	5	19-9-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25955	F	juv	15-9-2019	Hoek van Holland	51,99	4,12	2	2	16-9-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25102	M	ad	24-9-2019	Hoek van Holland	51,99	4,12	2	3	25-9-2019	Hoek van Holland - Zeetoren	51,99	4,12
ZH	25084	M	ad	1-10-2019	Hoek van Holland	51,99	4,12	2	39	26-10-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25085	F	juv	1-10-2019	Hoek van Holland	51,99	4,12	2	2	1-10-2019	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	25145	M	juv	1-10-2019	Hoek van Holland	51,99	4,12	8	6	20-10-2019	Koksijde	51,12	2,65
ZH	25172	M	ad	1-10-2019	Hoek van Holland	51,99	4,12	2	17	17-10-2019	Hoek van Holland - Zeetoren	51,99	4,12
ZH	25968	F	ad	1-10-2019	Hoek van Holland	51,99	4,12	3	3	5-10-2019	Breskens	51,41	3,52
ZH	29178	F	ad	25-8-2020	Hoek van Holland	51,99	4,12	3	4	25-8-2020	Zandmotor	52,05	4,18
ZH	29269	F	ad	25-8-2020	Hoek van Holland	51,99	4,12	2	2	26-8-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29177	F	ad	1-9-2020	Hoek van Holland	51,99	4,12	11	6	14-9-2020	Noordwijk	52,24	4,43

Tagged								Detected		Last detection			
Province	**Deployment**	**Sex**	**Age**	**Date**	**Location**	**Latitude**	**Longitude**	**Receivers**	**Days**	**Date**	**Location**	**Latitude**	**Longitude**
ZH	29195	F	juv	1-9-2020	Hoek van Holland	51,99	4,12	5	3	2-9-2020	Koksijde	51,12	2,65
ZH	29203	F	ad	1-9-2020	Hoek van Holland	51,99	4,12	2	2	1-9-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29212	F	juv	1-9-2020	Hoek van Holland	51,99	4,12	21	2	14-9-2019	Texel - KNRM	53,17	4,87
ZH	29227	F	juv	1-9-2020	Hoek van Holland	51,99	4,12	2	1	1-9-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29233	F	juv	1-9-2020	Hoek van Holland	51,99	4,12	4	2	2-9-2020	Koksijde	51,12	2,65
ZH	29247	F	juv	1-9-2020	Hoek van Holland	51,99	4,12	2	1	1-9-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29277	F	juv	4-9-2020	Hoek van Holland	51,99	4,12	4	5	9-9-2020	Zwin	51,36	3,35
ZH	29175	F	juv	13-9-2020	Hoek van Holland	51,99	4,12	2	1	14-9-2020	Zwin	51,36	3,35
ZH	29186	F	juv	13-9-2020	Hoek van Holland	51,99	4,12	2	1	13-9-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29200	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	3	1	15-9-2020	Brouwersdam	51,75	3,83
ZH	29204	F	ad	15-9-2020	Hoek van Holland	51,99	4,12	4	1	15-9-2020	Zandmotor	52,05	4,18
ZH	29213	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	4	3	22-9-2020	Sandwich Bay	51,27	1,37
ZH	29215	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	3	5	15-9-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29224	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	3	2	15-9-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29243	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	2	1	15-9-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29262	F	juv	15-9-2020	Hoek van Holland	51,99	4,12	5	1	16-9-2020	Breskens	51,41	3,52
ZH	29174	F	ad	22-9-2020	Hoek van Holland	51,99	4,12	20	6	29-9-2019	IJmuiden	52,46	4,58
ZH	29219	F	juv	22-9-2020	Hoek van Holland	51,99	4,12	4	3	29-9-2020	Westkapelle	51,53	3,45
ZH	29229	F	juv	22-9-2020	Hoek van Holland	51,99	4,12	3	3	22-9-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29183	M	ad	7-10-2020	Hoek van Holland	51,99	4,12	2	34	14-11-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29199	M	ad	7-10-2020	Hoek van Holland	51,99	4,12	2	2	8-10-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29235	F	ad	7-10-2020	Hoek van Holland	51,99	4,12	2	1	7-10-2020	Hoek van Holland - Zeetoren	51,99	4,12
ZH	29207	M	ad	13-10-2020	Hoek van Holland	51,99	4,12	6	2	14-10-2020	Breskens	51,41	3,52
ZH	29221	F	juv	13-10-2020	Hoek van Holland	51,99	4,12	2	2	16-10-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29230	M	ad	13-10-2020	Hoek van Holland	51,99	4,12	3	4	13-10-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29232	F	ad	13-10-2020	Hoek van Holland	51,99	4,12	3	57	17-12-2020	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	29248	M	ad	13-10-2020	Hoek van Holland	51,99	4,12	2	42	2-12-2020	Hoek van Holland - Vinetaduin	51,98	4,12

Tagged								Detected		Last detection			
Province	Deployment	Sex	Age	Date	Location	Latitude	Longitude	Receivers	Days	Date	Location	Latitude	Longitude
ZH	35234	F	juv	22-9-2021	Hoek van Holland	51,99	4,12	1	1	22-9-2021	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	35250	M	juv	22-9-2021	Hoek van Holland	51,99	4,12	1	2	23-9-2021	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	35263	M	ad	22-9-2021	Hoek van Holland	51,99	4,12	1	47	10-11-2021	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	36243	M	ad	15-10-2021	Hoek van Holland	51,99	4,12	1	49	14-12-2021	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	36244	M	ad	15-10-2021	Hoek van Holland	51,99	4,12	1	6	21-10-2021	Hoek van Holland - Vinetaduin	51,98	4,12
ZH	36335	F	ad	15-10-2021	Hoek van Holland	51,99	4,12	1	22	19-11-2021	Hoek van Holland - Vinetaduin	51,98	4,12

Annex 13: MOTUS receivers

32 receivers were funded by Wozep (Rijkswaterstaat) and 30 receivers were funded with KB means and WMR investment funds. A total of 6 receivers has been decommissioned. The main funding for maintenance and performance monitoring was provided by Wozep.

Nr	Lat	Long	Location	Operational from	Remote control
1	52.56	4.61	Castricum aan Zee	30-09-2017	Nee
2	52.72	4.64	Camperduin	30-09-2017	Yes
3	52.77	4.66	Petten	30-09-2017	Yes
4	52.78	4.68	ECN	30-09-2017	Yes
5	52.82	4.69	Zwanewater	30-09-2017	Yes
6	52.81	4.73	Schagerbrug - de stolpen (decommisioned)	11-10-2017	No
7	52.46	4.58	Vuurtoren IJmuiden	12-10-2017	No
8	52.88	4.71	Vuurtoren Julianadorp	19-04-2018	Yes
9	52.96	4.73	Vuurtoren den Helder	02-05-2018	Yes
10	51.41	3.52	Breskens (decommissioned)	15-05-2018	No
11	51.53	3.45	Westkapelle	15-05-2018	No
12	51.93	3.98	KNRM Maasvlakte	24-05-2018	No
13	52.88	4.76	Noorderhaven	07-06-2018	Yes
14	52.05	4.18	Argusmast Zandmotor	14-06-2018	No
15	51.83	4.04	Haringvlietdam	27-06-2018	No
16	51.99	4.03	Brandweer Maasvlakte	27-06-2018	No
17	51.99	4.12	Zeetoren Hoek van Holland (decommissioned)	28-06-2018	No
18	52.67	4.64	Bergen aan Zee	12-11-2018	No
19	52.91	4.78	De Kooij	11-07-2019	Yes
20	51.92	4.06	Oostvoorne	22-07-2019	Yes
21	52.85	4.76	’t Zand Oostwouder	25-07-2019	Yes
22	52.80	4.71	Wildrijk (paralelweg N9)	30-07-2019	Yes
23	52.84	4.72	Callantsoog	31-07-2019	Yes
24	51.98	4.12	Vinetaduin Hoek van Holland	20-08-2019	Yes
25	51.62	3.67	Neeltje Jans	27-08-2019	Yes
26	51.75	3.83	Brouwersdam	05-09-2019	Yes
27	52.84	4.77	’t Zand Eendenkooi (decommissioned)	17-09-2019	Yes
28	52.93	5.04	Den Oever	18-02-2021	Yes
29	52.25	1.61	Minsmere (UK)	21-04-2021	Yes
30	52.46	4.57	IJmuiden Eneco	08-07-2021	Yes
31	53.10	5.38	Zurich	20-07-2021	Yes
32	52.40	1.73	Benacre (UK)	17-09-2021	Yes

Nr	Lat	Long	Location	Operational from	Remote control
1	52.28	4.59	Hillegom (decommissioned)	02-10-2018	No
2	52.78	4.71	St Maartensvlotbrug bollenbedrijf Huiberts	13-09-2018	No
3	52.74	4.69	Zijpersluis Kennemerwind,	24-09-2018	Yes
4	53.30	5.05	Vlieland Strandhotel	19-12-2018	Yes
5	53.45	5.77	Ameland Natuurmuseum	20-12-2018	Yes
6	53.11	4.77	Texel paal 9	05-04-2019	Yes
7	52.65	1.74	Caister (UK)	23-04-2019	Yes
8	52.46	1.74	Lowersoft (UK)	25-04-2019	Yes
9	51.94	1.32	Landguard (UK)	25-04-2019	Yes
10	52.80	4.75	Schagerbrug	19-07-2019	Yes
11	53.17	4.87	Texel KNRM	03-08-2020	Yes
12	52.24	4.43	Noordwijk Huis ter Duin	15-08-2019	Yes
13	52.25	1.63	Dunwich (UK)	16-08-2019	Yes
14	52.84	4.69	Callantsoog reddingsbrigade	22-08-2019	Yes
15	52.86	4.70	Groote Keeten reddingsbrigade	22-08-2019	Yes
16	52.92	4.72	Julianadorp – Middenvliet (decommissioned)	30-07-2020	Yes
17	52.89	4.74	Julianadorp – Vogelzand (decommissioned)	21-08-2020	Yes
18	53.25	4.94	Vlieland Kazerne	21-09-2020	Yes
19	52.54	4.61	Castricum - ringbaan	08-10-2020	Yes
20	52.51	4.60	Heemskerk - Kieftenvlak	08-10-2020	Yes
21	52.96	4.78	Den Helder - Zeevaartschool	09-12-2020	Yes
22	53.00	4.79	Texel - NIOZ	19-03-2021	Yes
23	53.10	4.90	Texel - Krassekeet	22-04-2021	Yes
24	52.89	4.88	Van Ewijksluis	07-07-2021	Yes
25	52.86	4.84	Hoenderdael	09-07-2021	Yes
26	53.11	4.77	Texel – Paal 21	12-10-2021	Yes
27	53.01	5.19	Afsluitdijk Noord	21-07-2022	Yes
28	52.99	5.15	Afsluitdijk Zuid	21-07-2022	Yes
29	55.34	21.19	Ventes Ragas (LIT)	20-08-2021	Yes
30	51.49	4.06	Yerseke - NIOZ	20-04-2023	Yes

Annex 14: Calibration

The data of 14 common noctules, simultaneously tagged with a GPS logger and MOTUS tag, was used for the calibration dataset (see Lagerveld & Mostert 2023 for details). Virtually all flight activity occurred in the study area (figure A13-1).

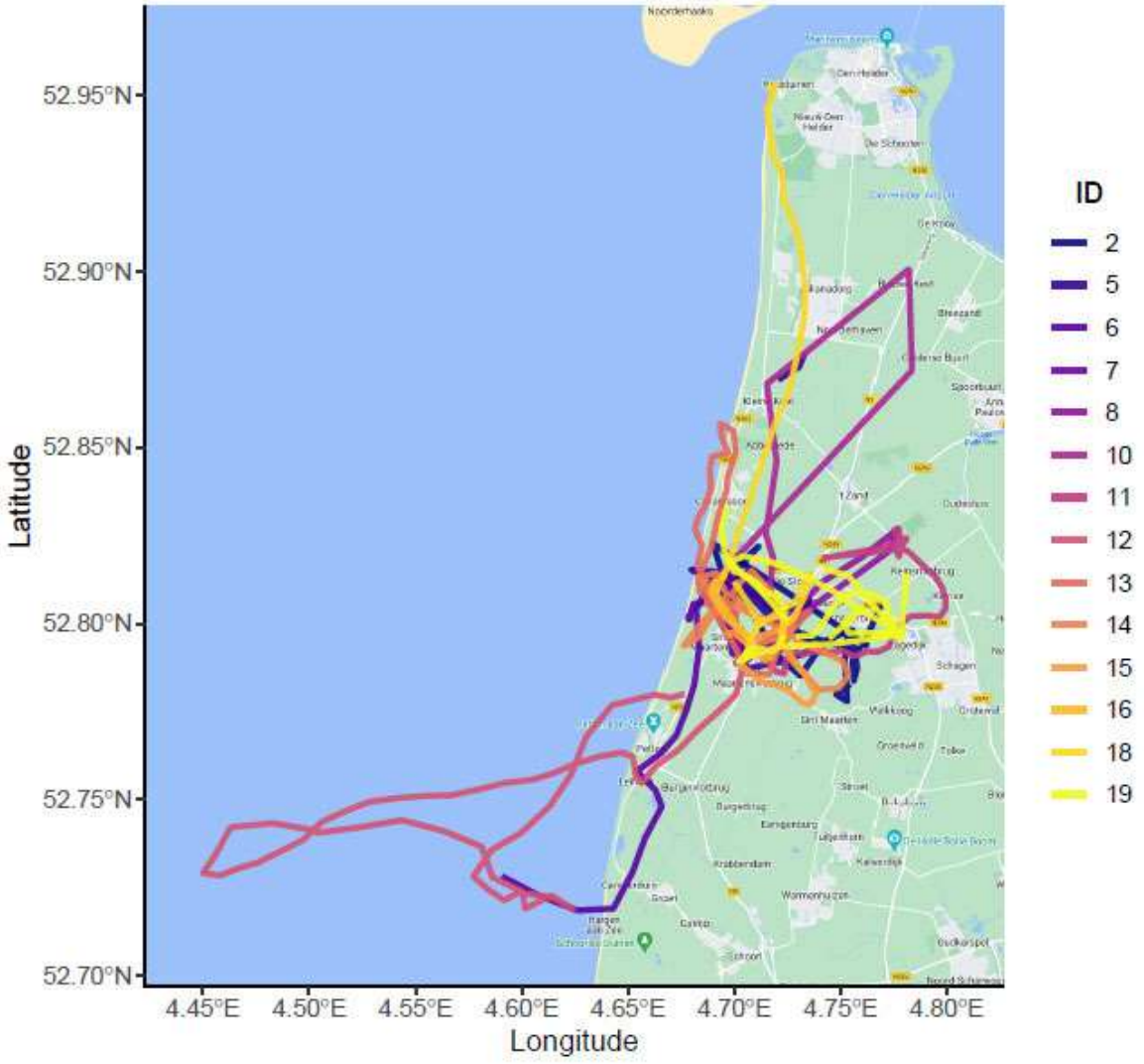


***Figure A13-1**: flight activity of 14 common noctules (reproduced from Lagerveld & Mostert 2023)*

Each noctule will have multiple device deployments: one GPS deployment and one MOTUS transmitter deployment. One individuals was tagged twice, resulting in two GPS deployments and two MOTUS transmitter deployments. For each individual a unique identifier was specified and assigned to both datasets (GPS and motus). This way both data sets can be joined based on this identifier and the timestamp that is available in both data sets. As both devices may not be 100% accurately synchronised and as they may not transmit at exactly the same moment, the timestamps are joined when their difference was no more than 5 seconds. Note that the maximum groundspeed of common noctule is 20 m/s (Bruderer and Popa-Lisseanu 2005), resulting in a maximum GPS error of 100 m.

The dataset included 1026 MOTUS detections and 258 GPS location-fixes. When GPS location fixes are rotated in the direction of the receiving MOTUS antenna the antenna beam becomes visible. Most detections occur in the front-lobe within 2 km, whereas relatively few bats have been detected in the back-lobe. High signal strengths are received in the front lobe relatively close to the receiver. Lower signal strengths occur in areas further away in the direction of the antenna, in the back-lobe and in the sides of the beam. Note also that the front-lobe is relatively wide in a 6-element Yagi antenna (figure A13-2).

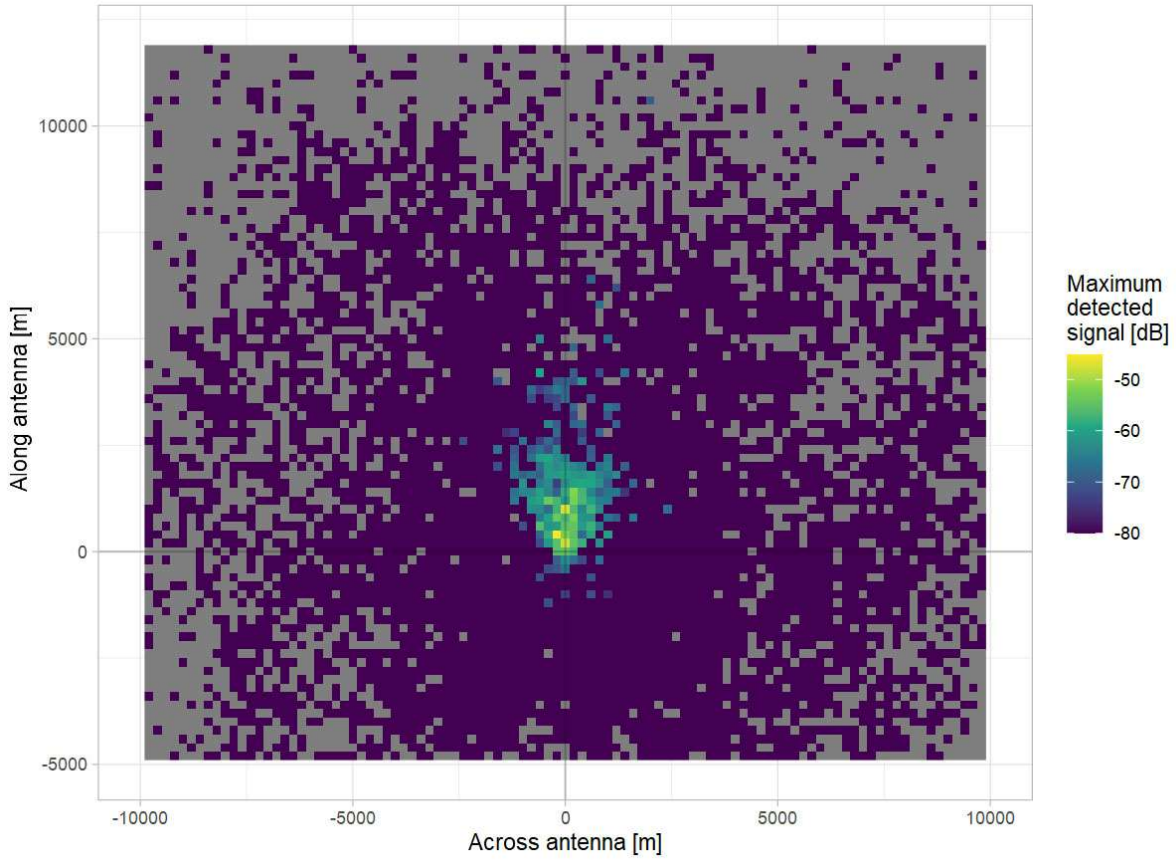


Figure A13-2: *Simultaneous GPS and MOTUS detections rotated in the direction of the receiving MOTUS antenna. The data is grided and only the maximum detected MOTUS signal is displayed for each cell (200[m] x 200[m]). This illustration also shows 'null' detections (where there is a GPS location fix but no MOTUS detection) as -80 [dB] (dark blue). Areas with no MOTUS detections and GPS location fixes are shown as grey.*

Using the joined data we have a known location (based on GPS) and a received signal by a MOTUS antenna at the same moment. This data is transformed such that the known location is expressed relatively to the

MOTUS receiver. This means that the MOTUS receiver will form the origin of the location and it is rotated in the direction of the antenna. That way, we have information on the received signal strength relative to the position of the antenna. This information is used to formulate a general detection function for the antenna which can be reversely to estimate an individual's position relative to the antenna based on the received signals. We normalized the signal strength (S), using a minimum signal strength (Smin)of -80 dB and a maximum signal strength (Smax) of -30 dB. In order to be able to fit a decay function we removed 9% of the data: negative distance values (from the backloop of the antenna: 4.5% of the data) as well as 4.5 % of the maximum values.

The fitted relation between the distance from the receiver in the direction of the antenna (D) and the normalized signal strength (Sn) is given by D = -1017.65 * ln (Sn), with F-statistic: 2734 on 1 and 926 DF, p-value: < 2.2e-16. Figure A13-3 shows the relationship graphically, including the measurements.

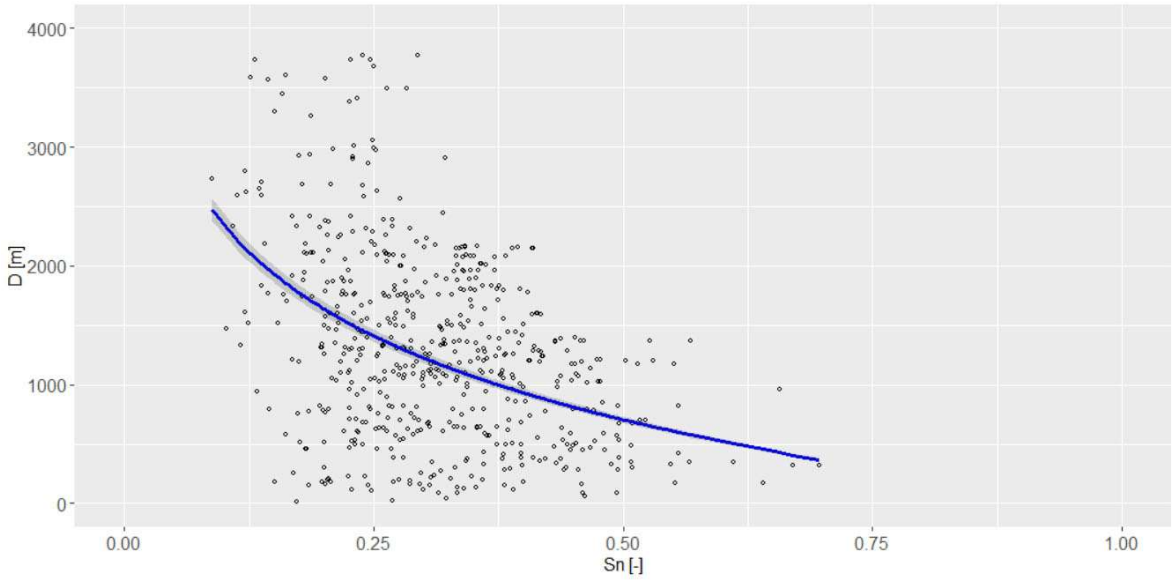


Figure A13-3: *predictor effect plot of the relation between normalized signal strength (Sn) and distance from the receiver in the direction of the antenna (D). The dots represent the measurements.*

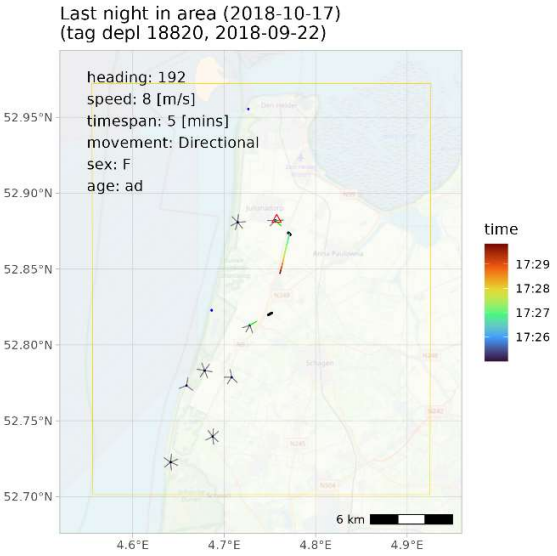
It is assumed that the most likely position is in the extension of the antenna orientation and the distance from the receiver is determined by detected signal strength and the detection function. For omnidirectional antennas it is assumed that the location of the individual is identical to the receiver location. This was assumed because monopole antennas have a short detection range (up to 250 m, cf Lagerveld et al 2017b), and calibration data for monopiles was not available. When there are multiple simultaneous detections (less than 3 seconds apart), the mean location (mean of x and y coordinate) is taken for that timestamp.

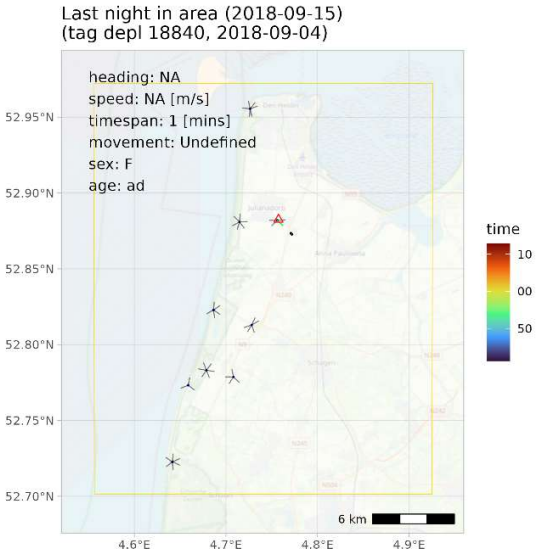
Annex 15: False positives manually filtered

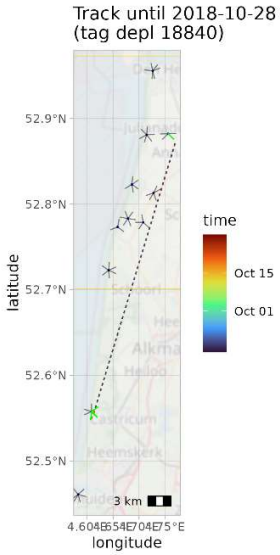
Year	Tag Deployment	Receiver Deployment	Receiver	Dates	Comments
2018	18844	4315	Castricum aan zee	all	lots of false positives on this receiver in 2018 (likely caused by cell phone mast)
2018	18840	4638	Den Helder Vuurtoren	all	during daylights hours
2018	18840	4454	Ijmuiden vuurtoren	all	lots of false positives on this receiver from 31/10 onwards (also tags from abroad)
2018	18840	4469	13_Ruthenstrom	all	during daylights hours
2018	18840	4130	Bremerhaven	all	lots of false positives on this receiver in 2018
2018	19023	3702	23_Carolinensiel	all	unlikely
2018	19095	3943	08_Büsum	all	false positives of 5 tags on the same day (9/10/2018)
2018	19099	3943	08_Büsum	all	false positives of 5 tags on the same day (9/10/2018)
2018	19107	3943	08_Büsum	all	false positives of 5 tags on the same day (9/10/2018)
2018	19100	4556	Borkum 1	all	unlikely
2018	18859	4454	Ijmuiden vuurtoren	all	1 unlikely, 1 during daylight hours
2018	18859	4315	Castricum aan zee	after 23/8/2018	1 detection on 23/8/2018 is credible, remaining unlikely, many during daylight hours.
2018	19092	4532	HelgolandFG1	all	1 unlikely (15/10, together with deployment 19119)
2018	19093	4817	Jomfruland Bird Observatory	all	unlikely (in Norway), also during daylight hours
2018	19101	3943	08_Büsum	all	false positives of 5 tags on the same day (9/10/2018)
2018	19119	4532	HelgolandFG1	all	1 unlikely, (15/10, together with deployment 19092)
2019	25136	4532	HelgolandFG1	all	1 unlikely (10/9 during daylight hours)
2019	26155	5376	Ekologihuset	all	unlikely (in Sweden), also during daylight hours
2019	25079	5624	Single RX receiver_2 (Lund)	all	unlikely (in Sweden), also during daylight hours
2019	25079	5376	Ekologihuset	all	unlikely (in Sweden), also during daylight hours, and during the time frame it was detected in the Netherlands
2020	29214	7341	Castricum Ringbaan	all	from 7/11 onwards, numerous false positives of various tags from several countries, caused by the presense of several tags at the ringing site
2020	29220	7315	Vlieland Kazerne	all	Likely caused by tagged songbirds present al this location (08/11/2020)
2020	29231	7341	Castricum Ringbaan	all	from 7/11 onwards, numerous false positives of various tags from several countries, caused by the presense of several tags at the ringing site
2020	29275	7341	Castricum Ringbaan	all	from 7/11 onwards, numerous false positives of various tags from several countries, caused by the presense of several tags at the ringing site
2020	29280	7341	Castricum Ringbaan	all	from 7/11 onwards, numerous false positives of various tags from several countries, caused by the presense of several tags at the ringing site
2021	36052	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2021	35259	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2021	35567	7709	Safari	all	unlikely
2021	35572	7692	Norderney 3	all	unlikely, probably caused by the presense of various tagged wheatears
2022	42224	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42252	7315	Vlieland Kazerne	all	during daylight hours (19/10), caused by tagged songbirds present al this location
2022	42258	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42205	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42214	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2022	42214	7315	Vlieland Kazerne	all	Likely caused by tagged songbirds present al this location (21/10/2022)
2022	42222	7709	Safari	all	same day detections in Noord Holland
2022	42234	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42320	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42320	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2022	42323	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42326	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42326	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2022	42200	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42216	7315	Vlieland Kazerne	all	unlikely (4/11), caused by tagged songbirds present al this location
2022	42259	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42261	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42263	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42311	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2022	42315	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42316	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42317	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards
2022	42317	7351	17_Fedderwardersiel	all	numerous false positives of various tags from several countries
2022	42434	8886	Borkum 1	all	numerous false positives of various tags from several countries from 1/10/2022 onwards

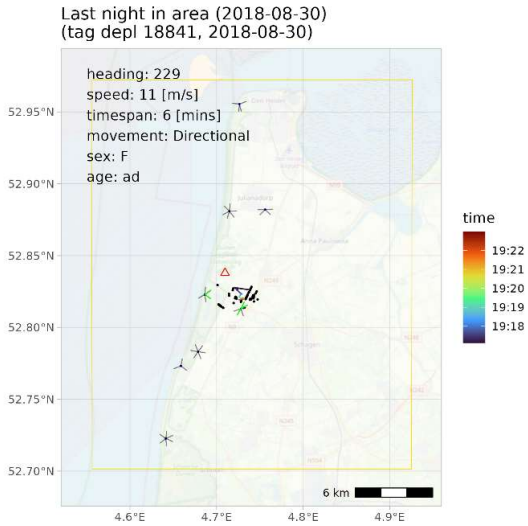
Annex 16: Movements all individuals

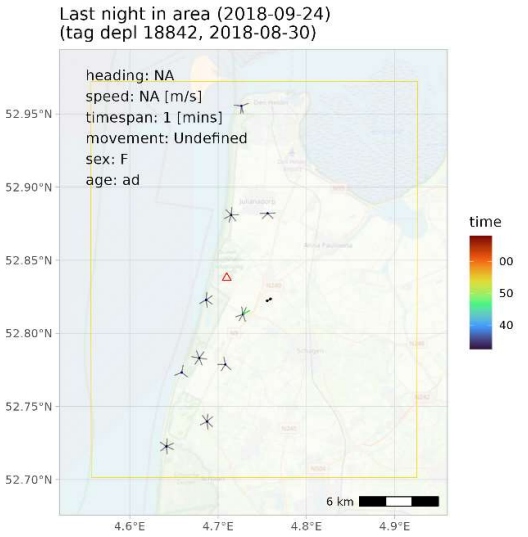
Movements of all individuals in the last night in the study area, as well as the movements after departure from the study area.

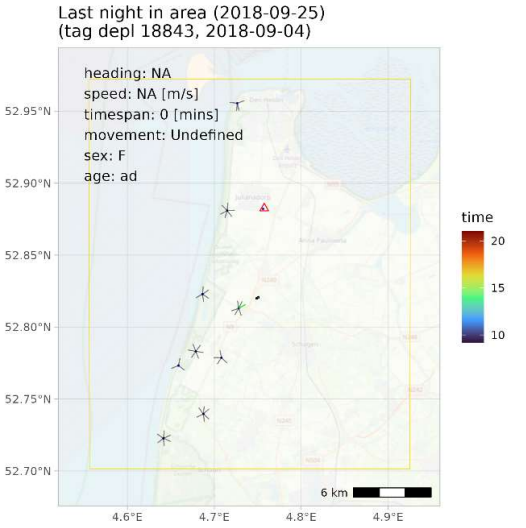


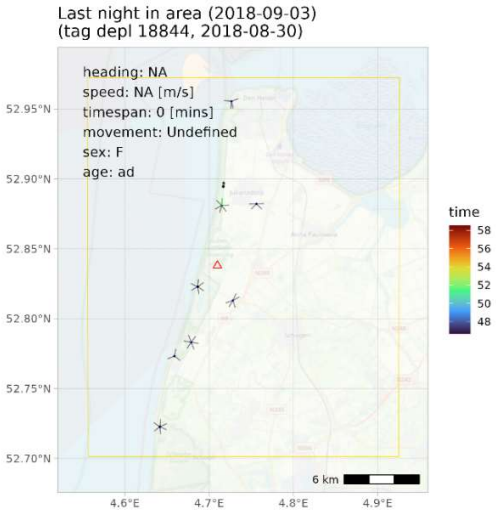


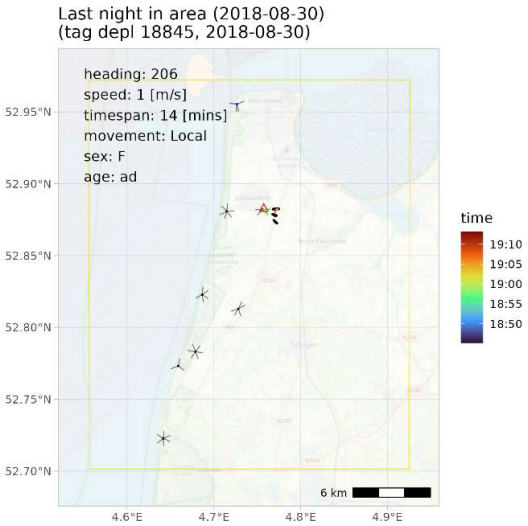


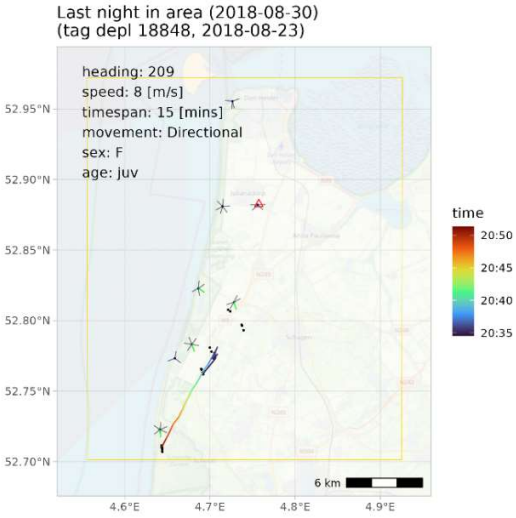

Last night in area (2018-08-30)
(tag depl 18841, 2018-08-30)
heading: 229
speed: 11 [m/s]
timespan: 6 [mins]
movement: Directional
sex: F
age: ad
time
19:22
19:21
19:20
19:19
19:18
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

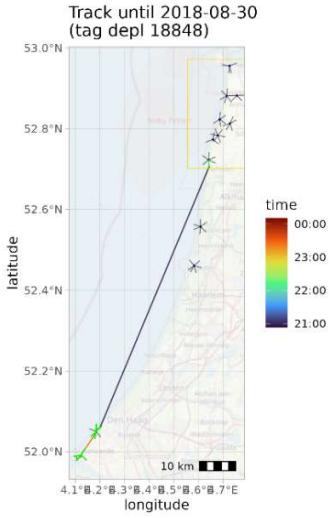

Last night in area (2018-09-24)
(tag depl 18842, 2018-08-30)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
00
50
40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-09-25)
(tag depl 18843, 2018-09-04)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
20
15
10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E



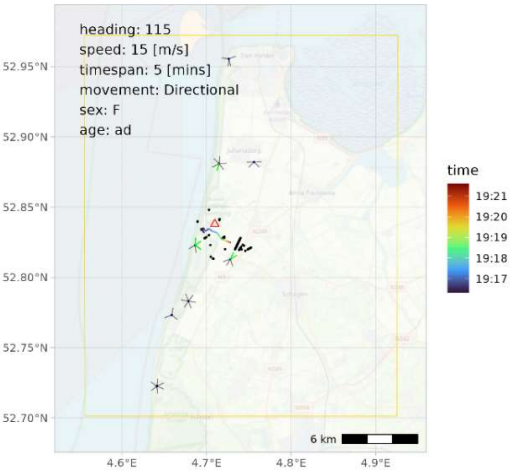




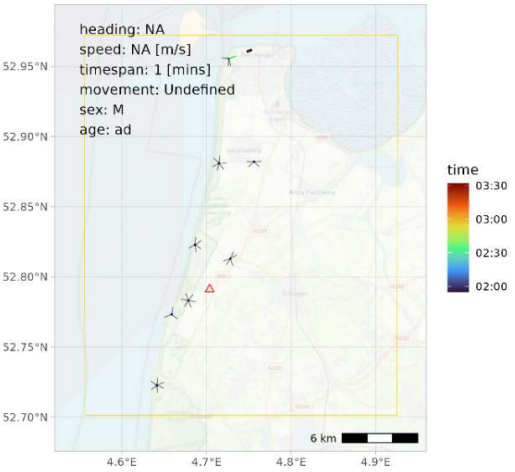


note the possible shortcut over sea

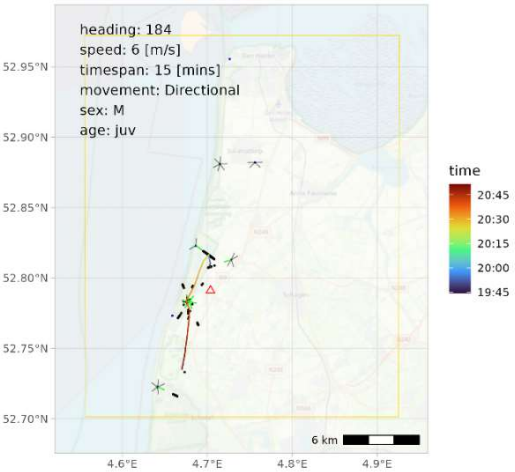
Last night in area (2018-08-30)
(tag depl 18849, 2018-08-30)

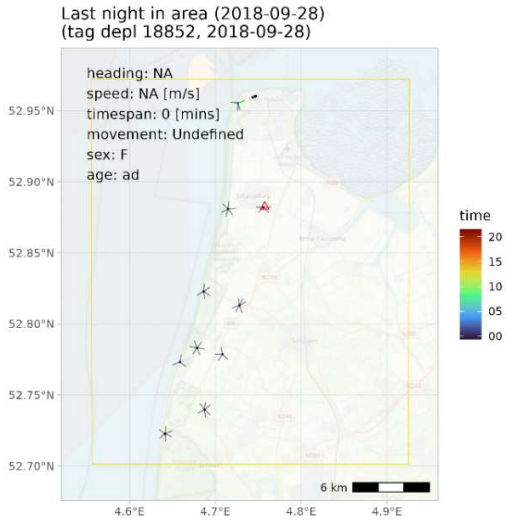


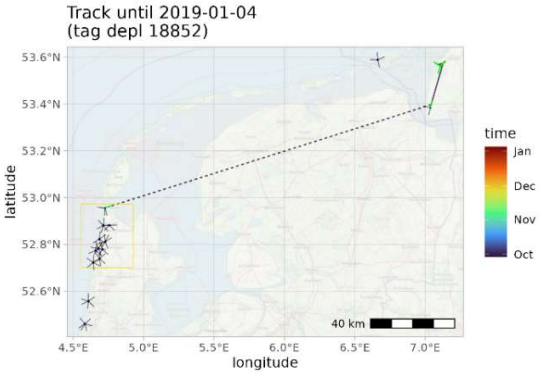
Last night in area (2018-09-05)
(tag depl 18850, 2018-08-30)

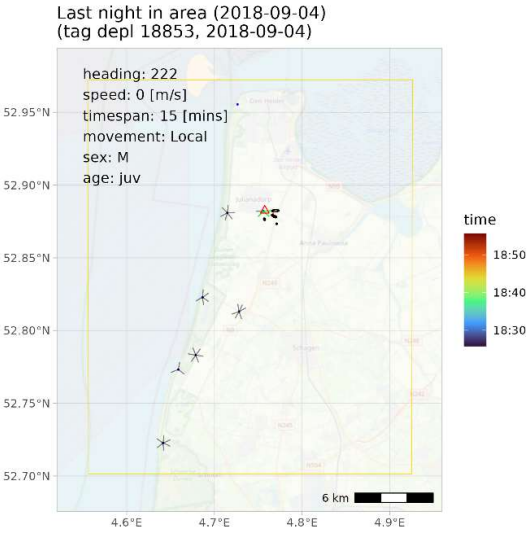


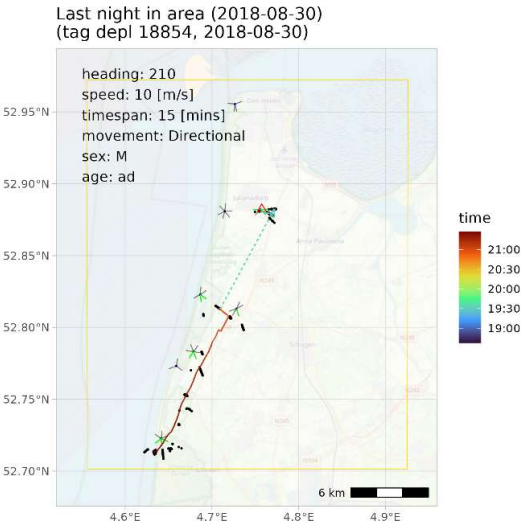
Last night in area (2018-08-23)
(tag depl 18851, 2018-08-23)

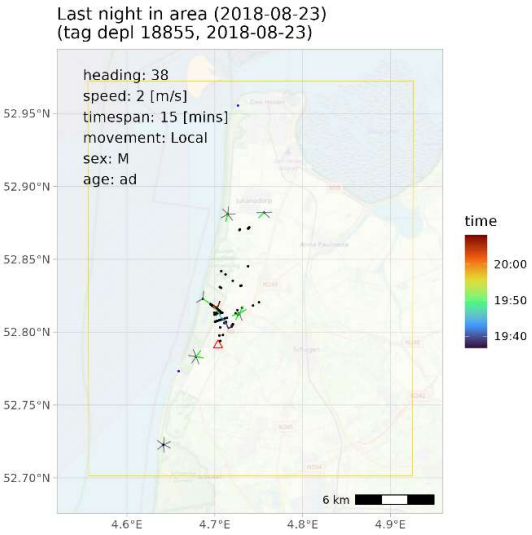


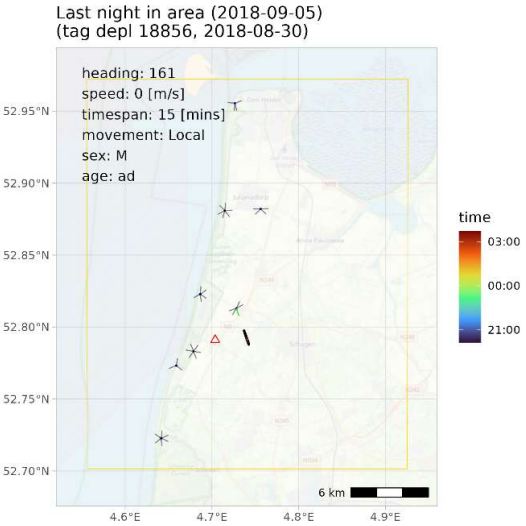

Last night in area (2018-09-28)
(tag depl 18852, 2018-09-28)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
20
15
10
05
00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

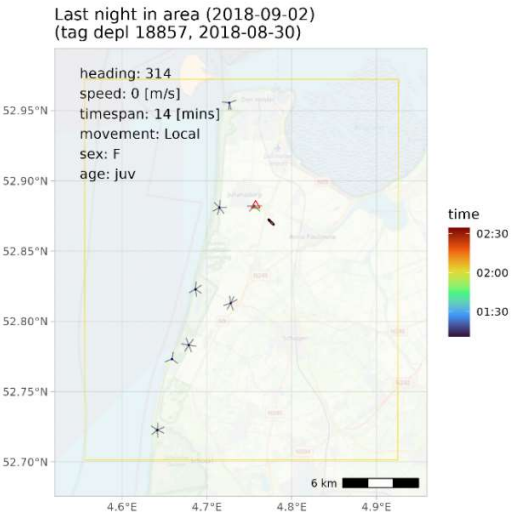

Track until 2019-01-04
(tag depl 18852)
time
Jan
Dec
Nov
Oct
latitude
longitude
53.6°N
53.4°N
53.2°N
53.0°N
52.8°N
52.6°N
4.5°E
5.0°E
5.5°E
6.0°E
6.5°E
7.0°E
40 km

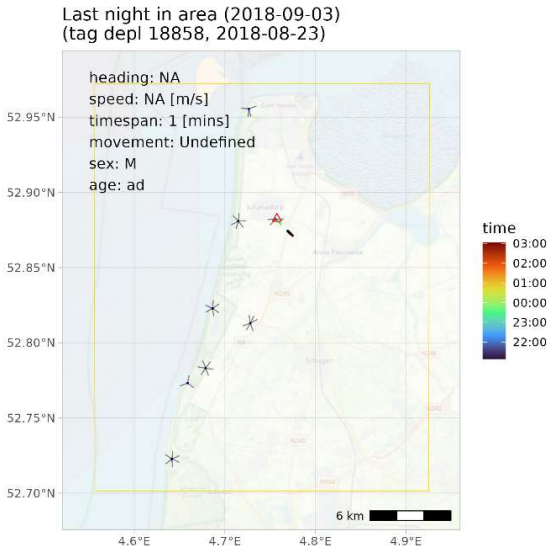

Last night in area (2018-09-04)
(tag depl 18853, 2018-09-04)
heading: 222
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
18:50
18:40
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

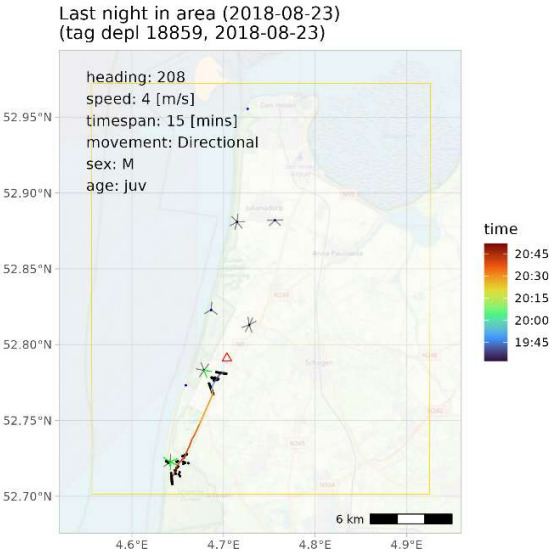

Last night in area (2018-08-30)
(tag depl 18854, 2018-08-30)
heading: 210
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
21:00
20:30
20:00
19:30
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

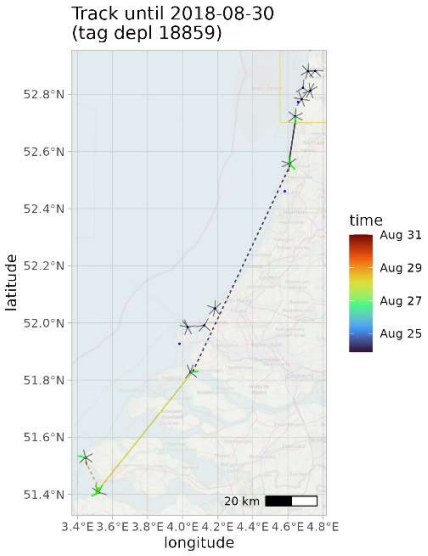

Last night in area (2018-08-23)
(tag depl 18855, 2018-08-23)
heading: 38
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
20:00
19:50
19:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-09-05)
(tag depl 18856, 2018-08-30)
heading: 161
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-09-02)
(tag depl 18857, 2018-08-30)
heading: 314
speed: 0 [m/s]
timespan: 14 [mins]
movement: Local
sex: F
age: juv
time
02:30
02:00
01:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

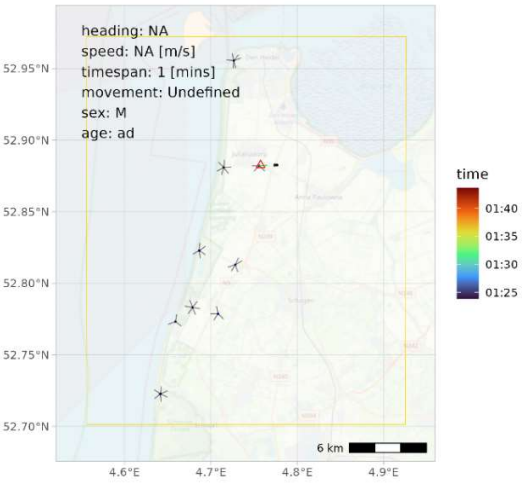




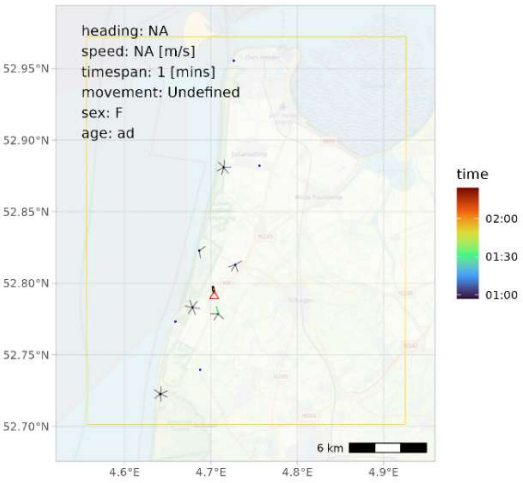


despite relatively low estimated speed (4.0 m/s) this flight was classified as directional as the bats was subsequently recorded at Bergen aan Zee. Note the apparent departure over sea at Westkapelle.

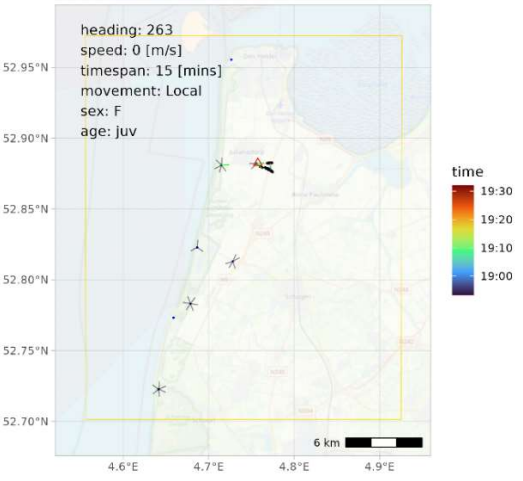
Last night in area (2018-09-14)
(tag depl 18860, 2018-09-04)



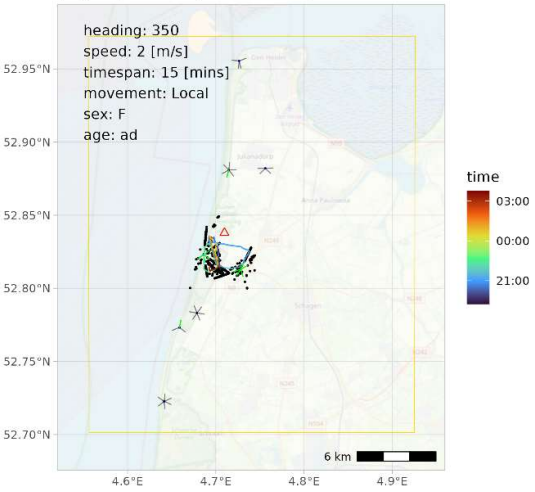
Last night in area (2018-11-01)
(tag depl 18861, 2018-08-23)



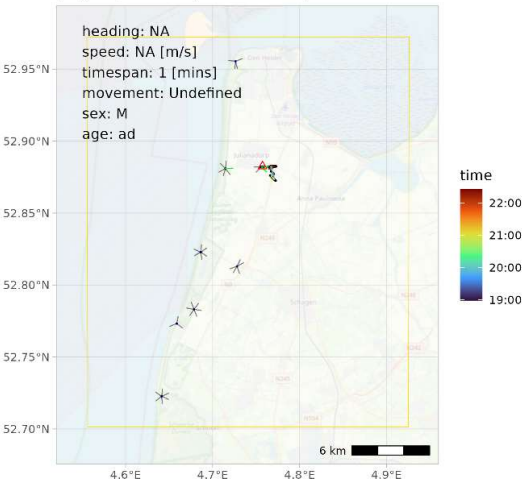
Last night in area (2018-08-23)
(tag depl 18862, 2018-08-23)



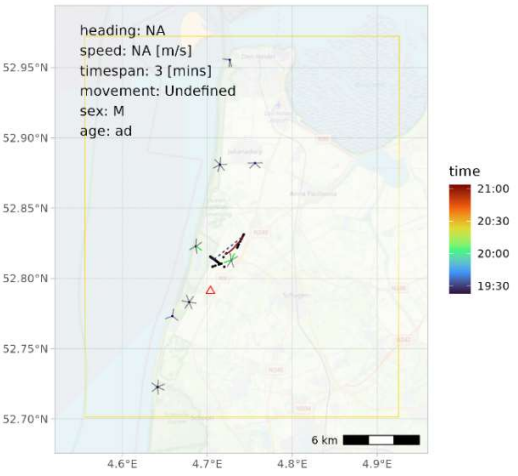
Last night in area (2018-09-02)
(tag depl 18863, 2018-08-30)

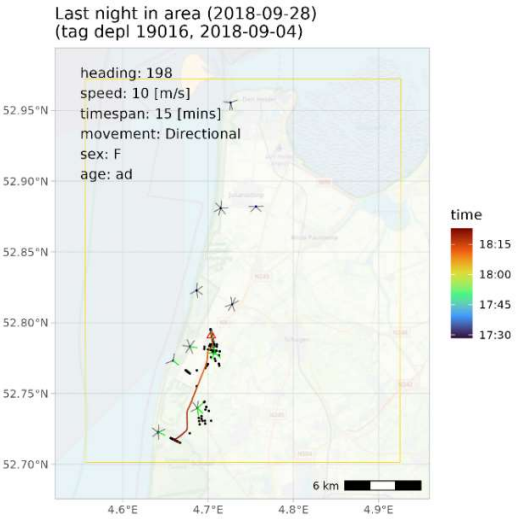


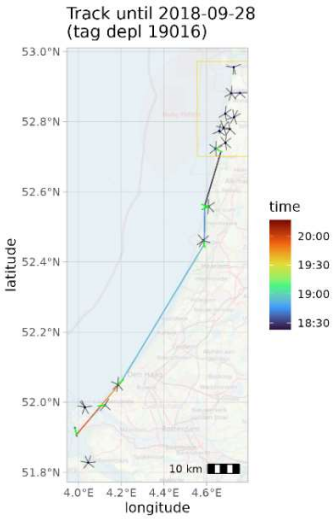
Last night in area (2018-09-03)
(tag depl 18864, 2018-08-30)

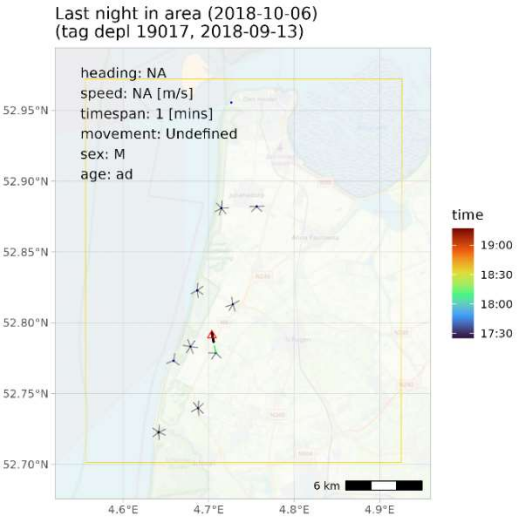


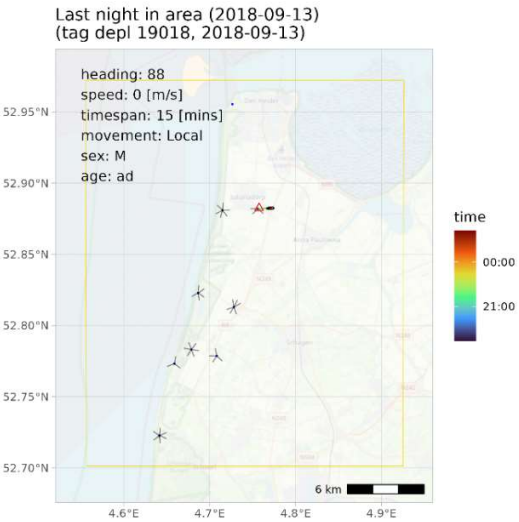
Last night in area (2018-09-06)
(tag depl 19015, 2018-09-04)

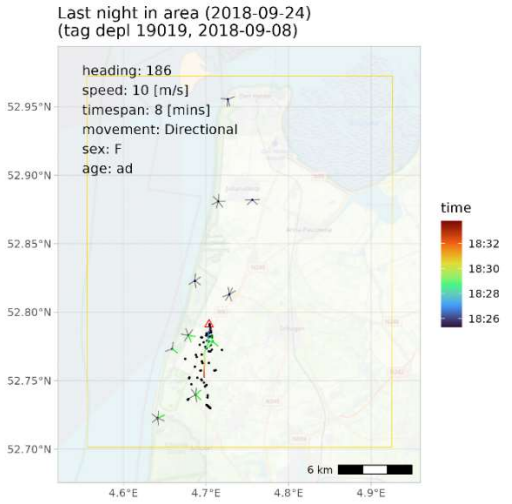


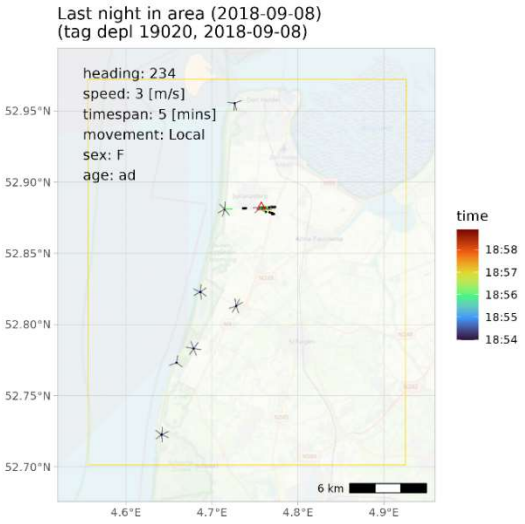

Last night in area (2018-09-28)
(tag depl 19016, 2018-09-04)
heading: 198
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
18:15
18:00
17:45
17:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

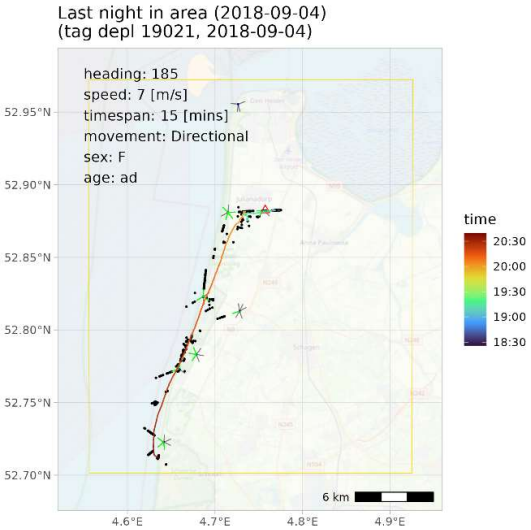

Track until 2018-09-28
(tag depl 19016)
time
20:00
19:30
19:00
18:30
10 km
latitude
longitude
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
51.8°N
4.0°E
4.2°E
4.4°E
4.6°E

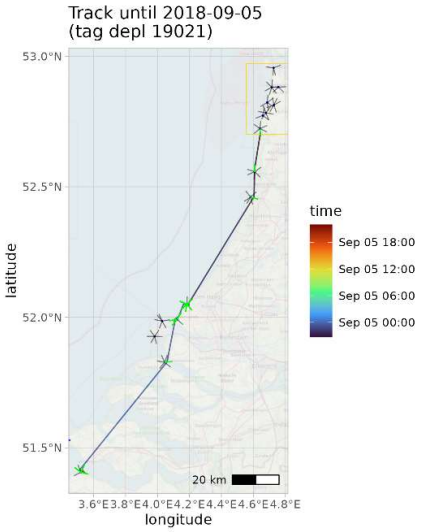

Last night in area (2018-10-06)
(tag depl 19017, 2018-09-13)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
19:00
18:30
18:00
17:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

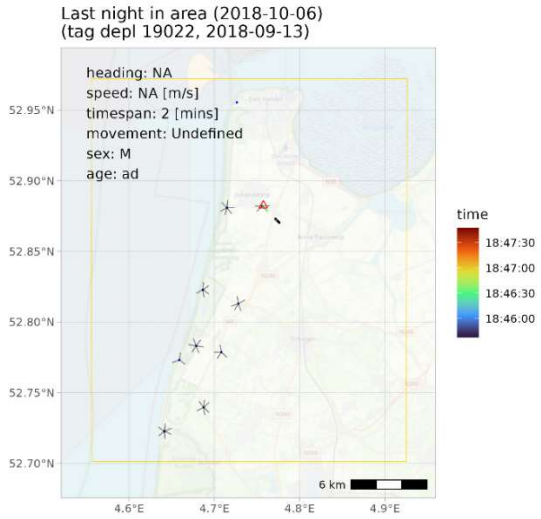

Last night in area (2018-09-13)
(tag depl 19018, 2018-09-13)
heading: 88
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
00:00
21:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-09-24)
(tag depl 19019, 2018-09-08)
heading: 186
speed: 10 [m/s]
timespan: 8 [mins]
movement: Directional
sex: F
age: ad
time
18:32
18:30
18:28
18:26
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

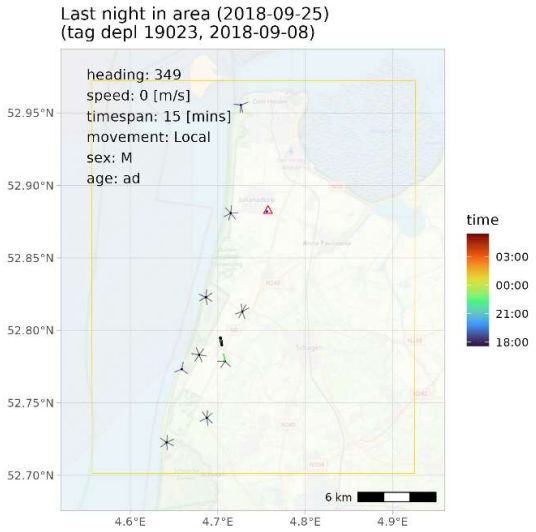

Last night in area (2018-09-08)
(tag depl 19020, 2018-09-08)
heading: 234
speed: 3 [m/s]
timespan: 5 [mins]
movement: Local
sex: F
age: ad
time
18:58
18:57
18:56
18:55
18:54
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

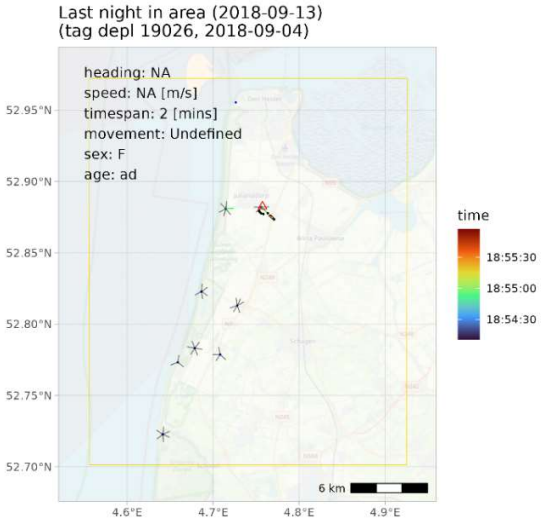

Last night in area (2018-09-04)
(tag depl 19021, 2018-09-04)
heading: 185
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
20:30
20:00
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

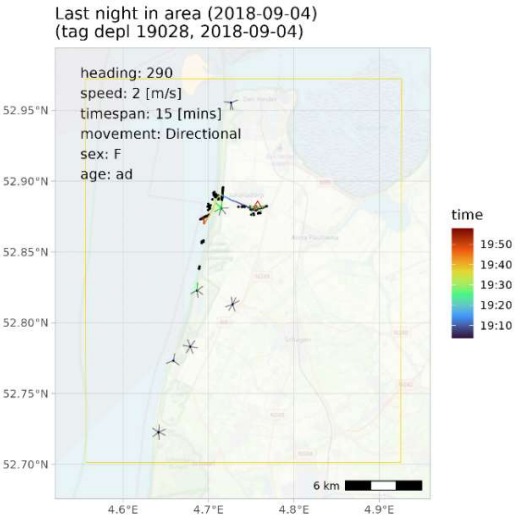

Track until 2018-09-05
(tag depl 19021)
time
Sep 05 18:00
Sep 05 12:00
Sep 05 06:00
Sep 05 00:00
53.0°N
52.5°N
52.0°N
51.5°N
latitude
20 km
3.6°E
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E
longitude

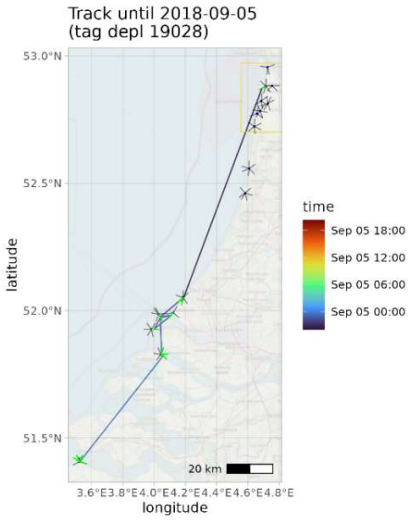


tag found 2018-10-09

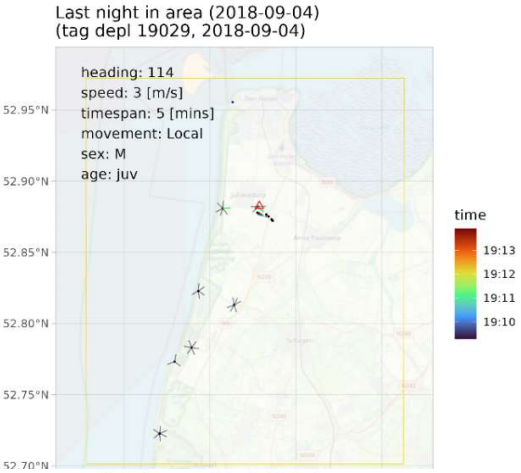


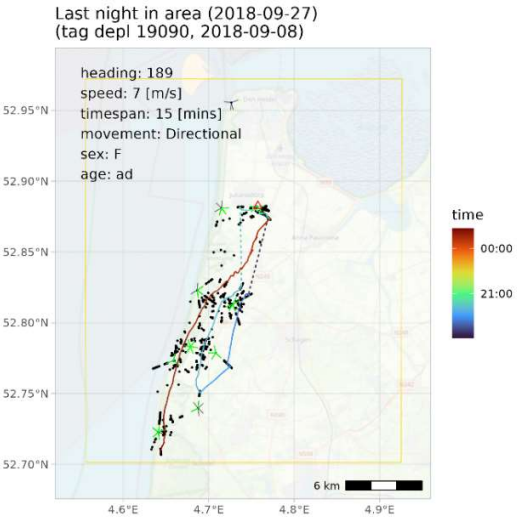


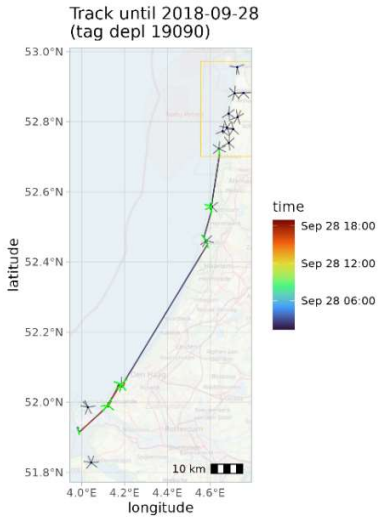




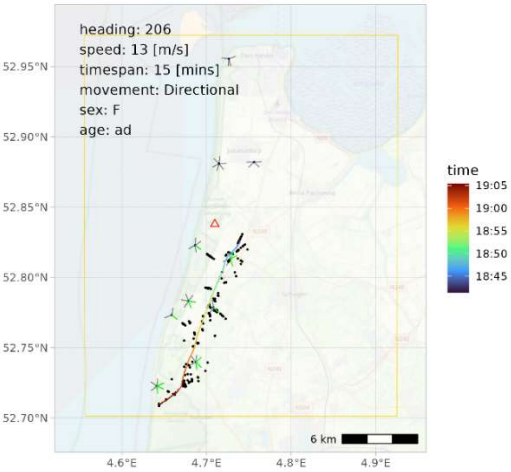
despite relatively low estimated speed (2 m/s) a definite departure over sea. Note the shortcut over sea.



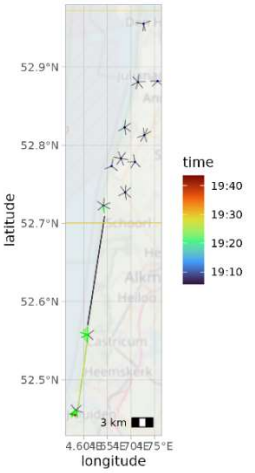




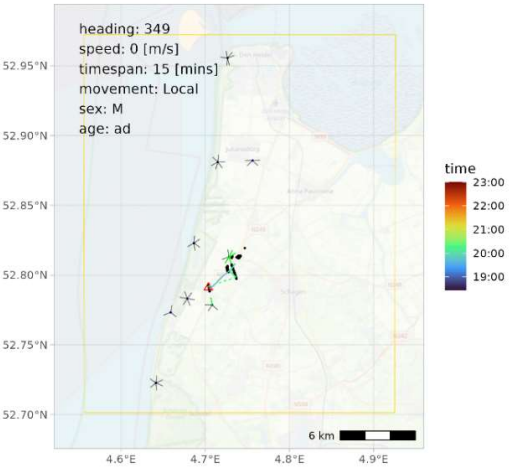
Last night in area (2018-09-28)
(tag depl 19092, 2018-09-13)



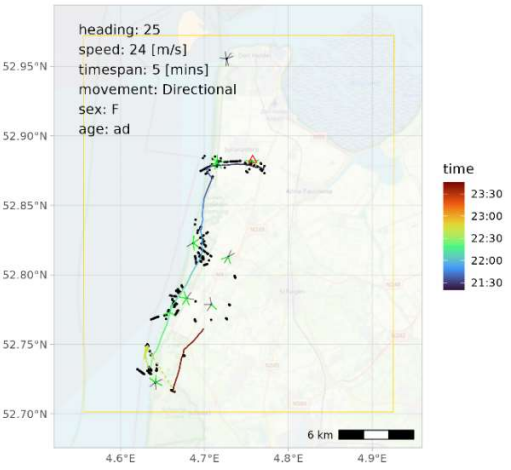
Track until 2018-09-28
(tag depl 19092)



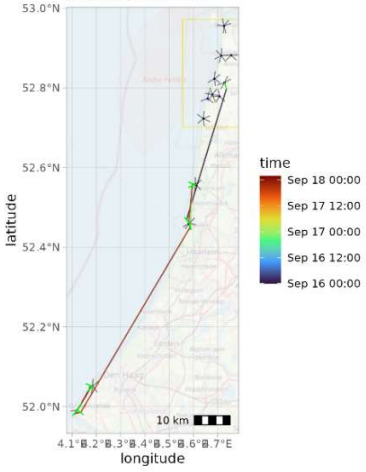
Last night in area (2018-09-17)
(tag depl 19093, 2018-09-13)

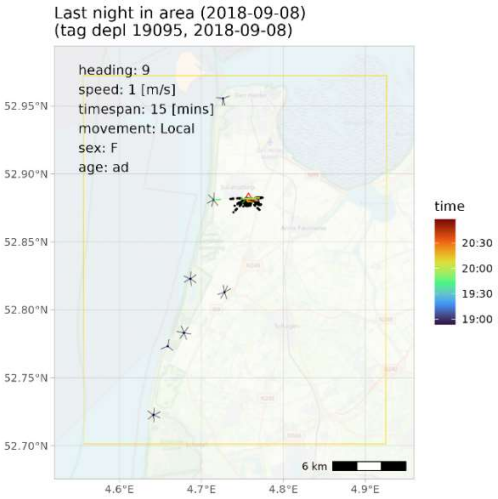


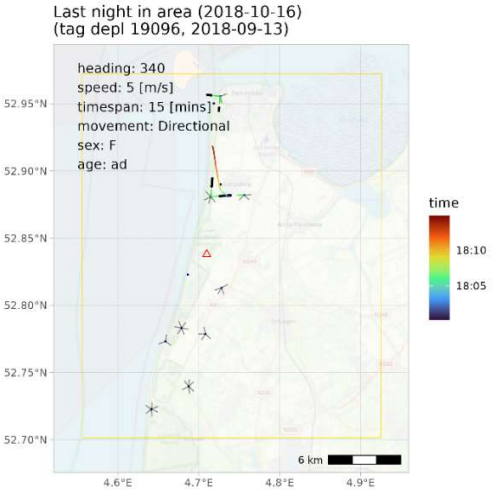
Last night in area (2018-09-15)
(tag depl 19094, 2018-09-08)

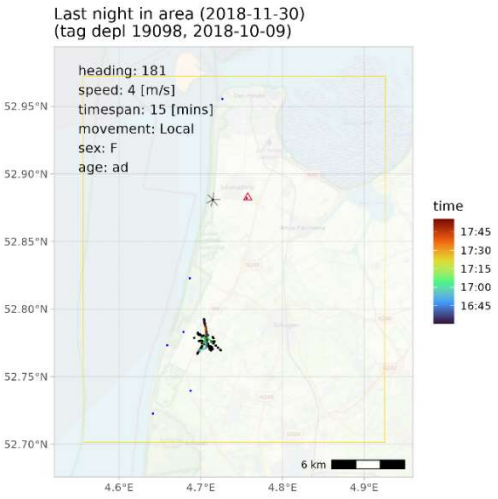


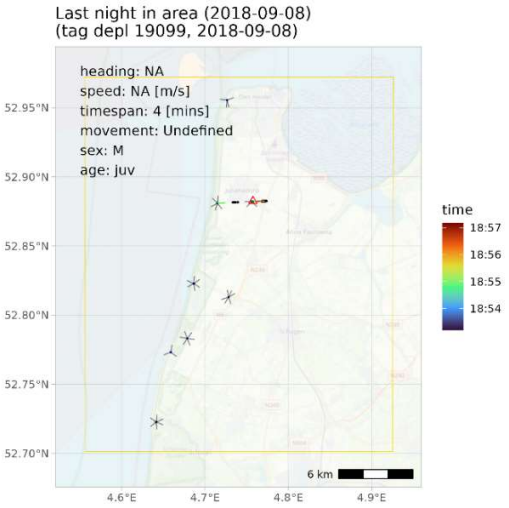
Track until 2018-09-17
(tag depl 19094)

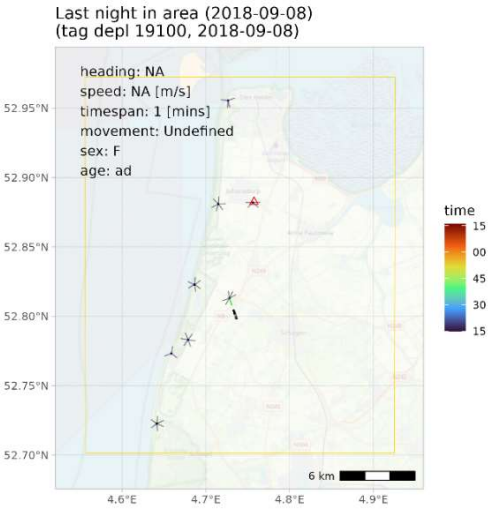


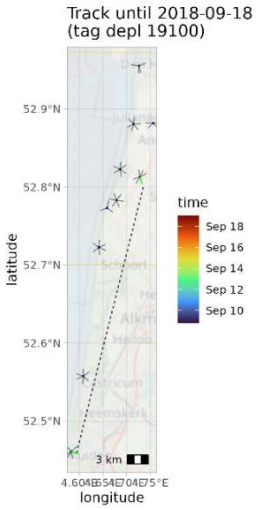

Last night in area (2018-09-08)
(tag depl 19095, 2018-09-08)
heading: 9
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
20:30
20:00
19:30
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

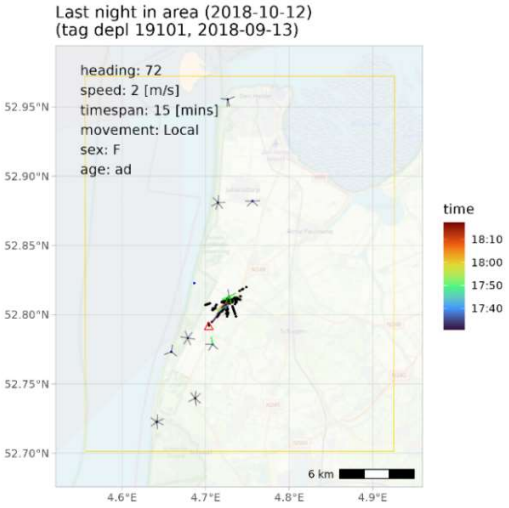

Last night in area (2018-10-16)
(tag depl 19096, 2018-09-13)
heading: 340
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
18:10
18:05
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

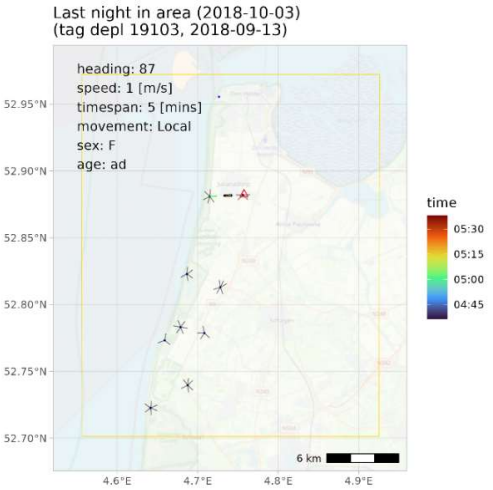

Last night in area (2018-11-30)
(tag depl 19098, 2018-10-09)
heading: 181
speed: 4 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
17:45
17:30
17:15
17:00
16:45
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

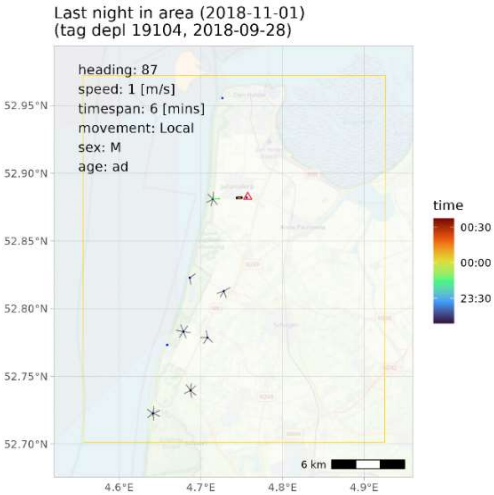

Last night in area (2018-09-08)
(tag depl 19099, 2018-09-08)
heading: NA
speed: NA [m/s]
timespan: 4 [mins]
movement: Undefined
sex: M
age: juv
time
18:57
18:56
18:55
18:54
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

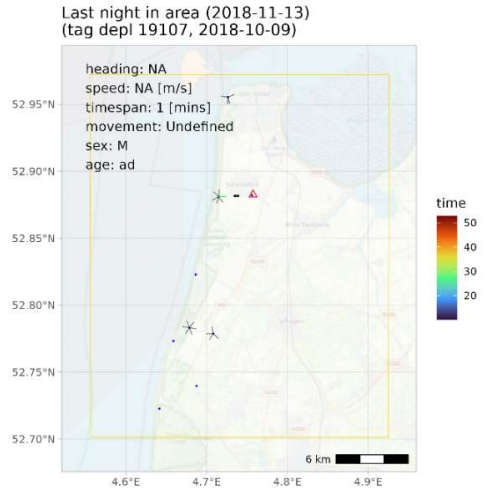

Last night in area (2018-09-08)
(tag depl 19100, 2018-09-08)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
15
00
45
30
15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2018-09-18
(tag depl 19100)
time
Sep 18
Sep 16
Sep 14
Sep 12
Sep 10
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
3 km
longitude

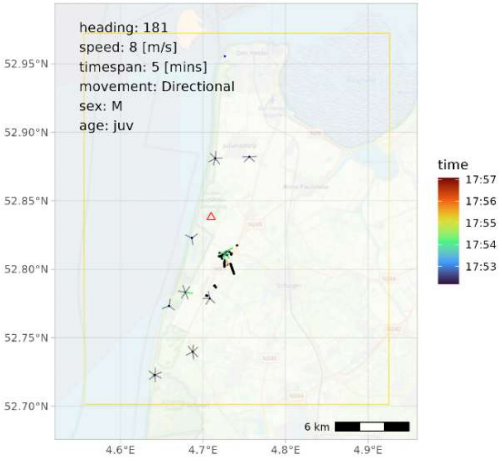

Last night in area (2018-10-12)
(tag depl 19101, 2018-09-13)
heading: 72
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
18:10
18:00
17:50
17:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-10-03)
(tag depl 19103, 2018-09-13)
heading: 87
speed: 1 [m/s]
timespan: 5 [mins]
movement: Local
sex: F
age: ad
time
05:30
05:15
05:00
04:45
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

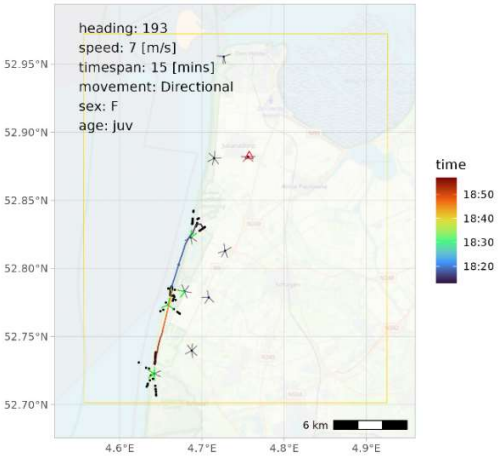

Last night in area (2018-11-01)
(tag depl 19104, 2018-09-28)
heading: 87
speed: 1 [m/s]
timespan: 6 [mins]
movement: Local
sex: M
age: ad
time
00:30
00:00
23:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-11-13)
(tag depl 19107, 2018-10-09)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
50
40
30
20
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

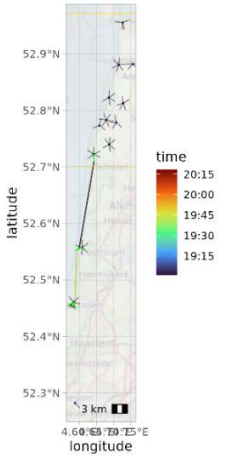
Last night in area (2018-10-25)
(tag depl 19108, 2018-09-28)



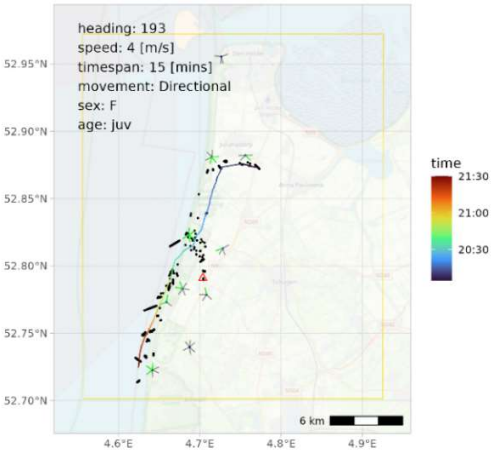
Last night in area (2018-10-10)
(tag depl 19110, 2018-09-08)

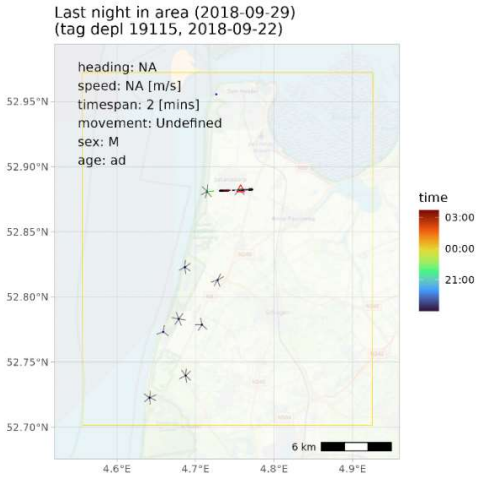


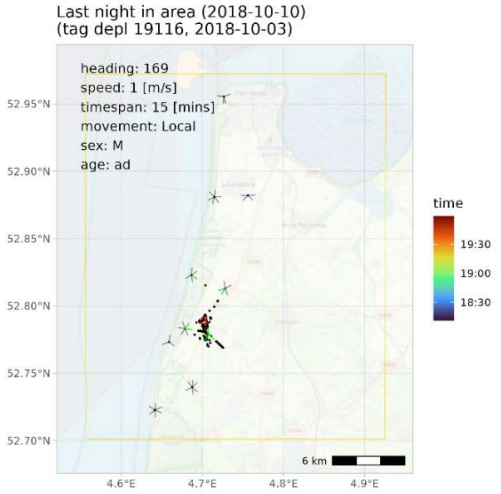
Track until 2018-10-10
(tag depl 19110)

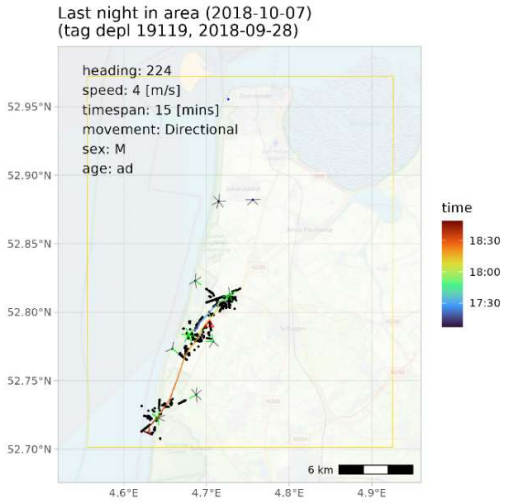


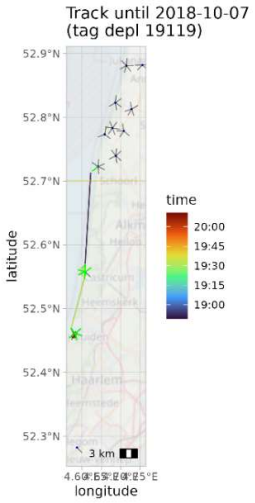
Last night in area (2018-10-05)
(tag depl 19111, 2018-10-03)

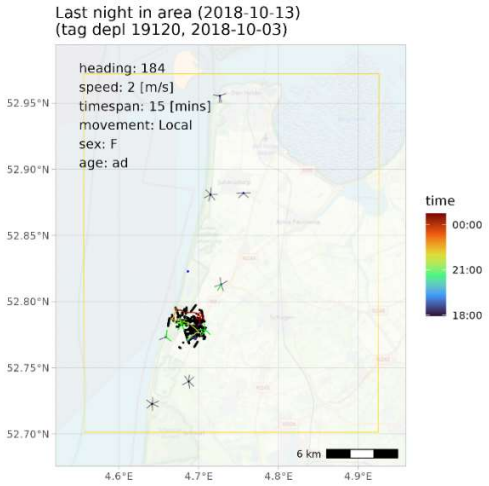



Last night in area (2018-09-29)
(tag depl 19115, 2018-09-22)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

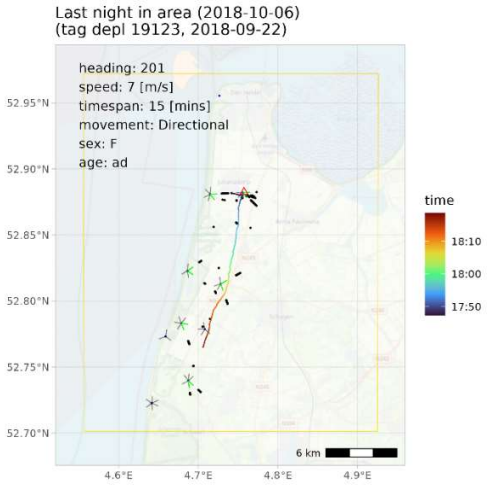

Last night in area (2018-10-10)
(tag depl 19116, 2018-10-03)
heading: 169
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

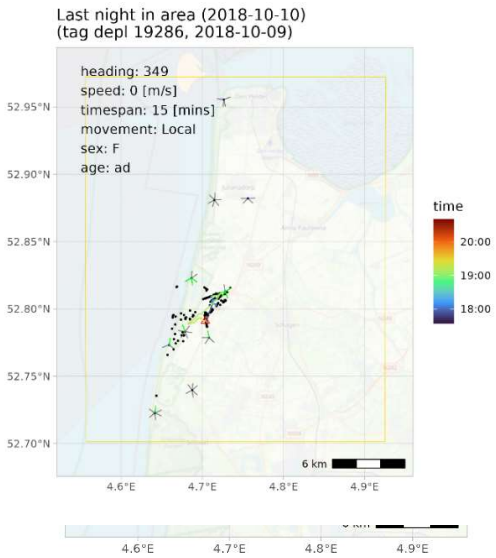

Last night in area (2018-10-07)
(tag depl 19119, 2018-09-28)
heading: 224
speed: 4 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
18:30
18:00
17:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

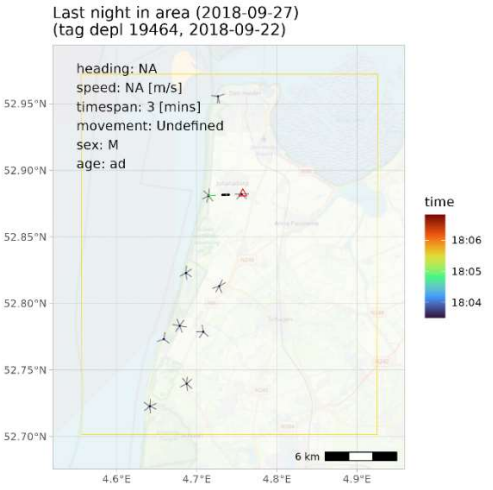

Track until 2018-10-07
(tag depl 19119)
time
20:00
19:45
19:30
19:15
19:00
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
52.4°N
52.3°N
latitude
3 km
longitude

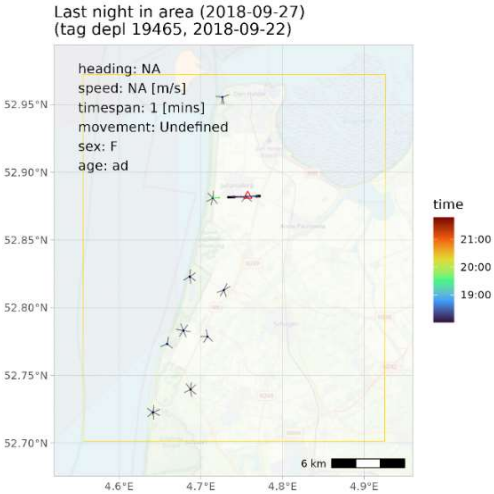


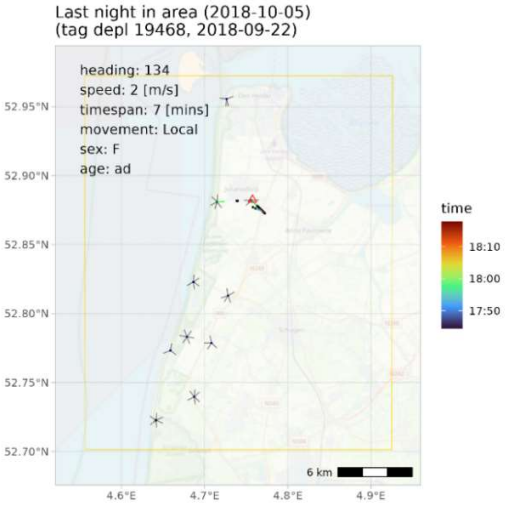
tag found 2018-11-03

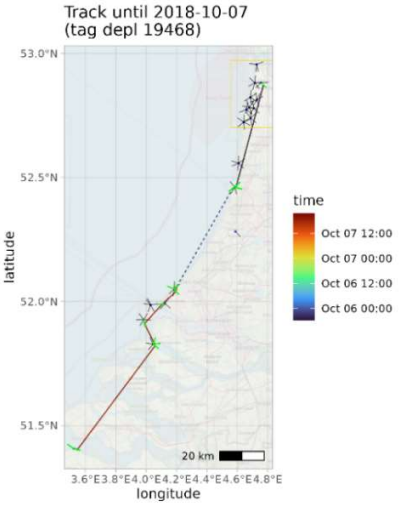




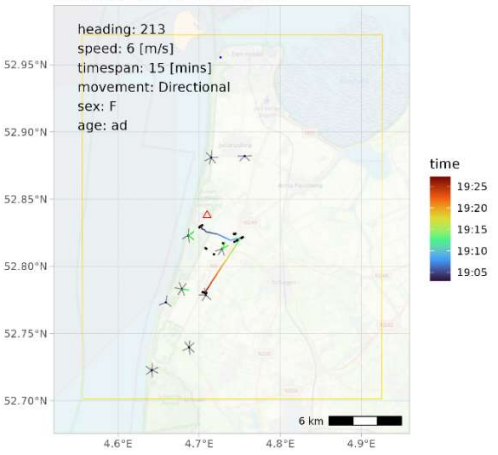

Last night in area (2018-09-27)
(tag depl 19464, 2018-09-22)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
18:06
18:05
18:04
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2018-09-27)
(tag depl 19465, 2018-09-22)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

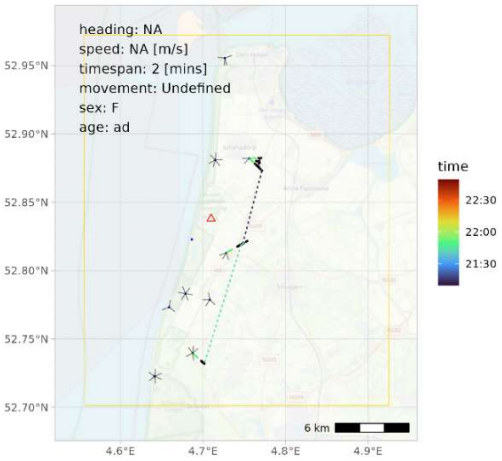

Last night in area (2018-10-05)
(tag depl 19468, 2018-09-22)
heading: 134
speed: 2 [m/s]
timespan: 7 [mins]
movement: Local
sex: F
age: ad
time
18:10
18:00
17:50
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2018-10-07
(tag depl 19468)
time
Oct 07 12:00
Oct 07 00:00
Oct 06 12:00
Oct 06 00:00
53.0°N
52.5°N
52.0°N
51.5°N
latitude
20 km
3.6°E
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E
longitude

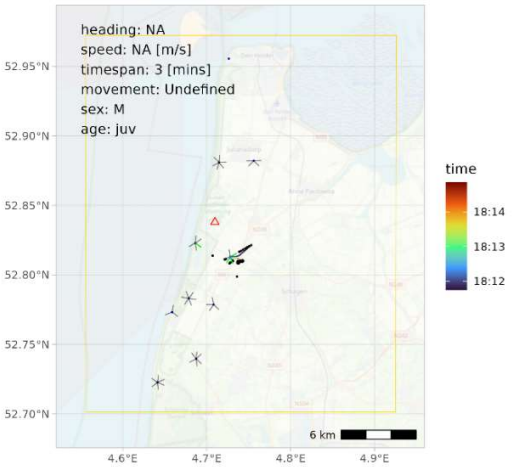
Last night in area (2018-09-30)
(tag depl 19470, 2018-09-23)



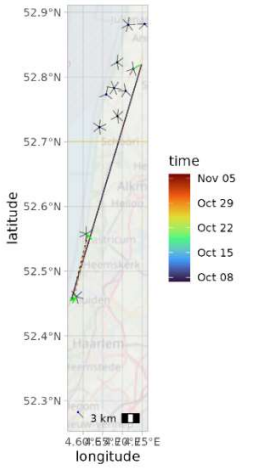
Last night in area (2018-10-14)
(tag depl 19471, 2018-09-23)



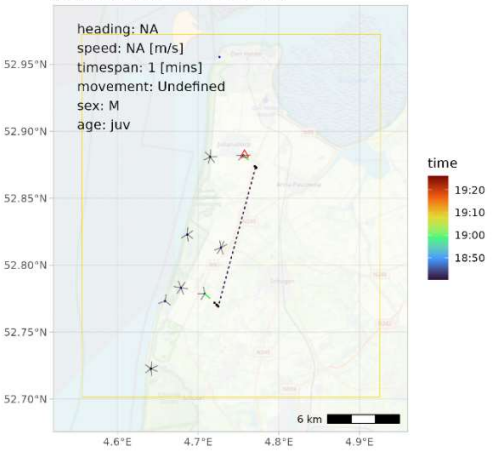
Last night in area (2018-10-06)
(tag depl 19473, 2018-09-23)



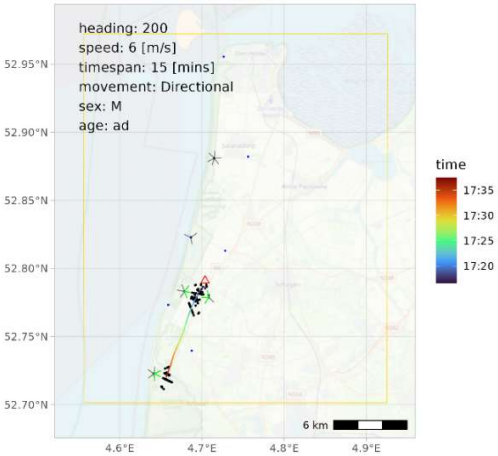
Track until 2018-11-05
(tag depl 19473)



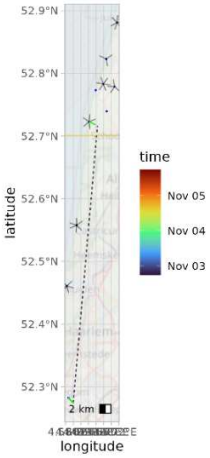
Last night in area (2018-09-22)
(tag depl 19476, 2018-09-22)



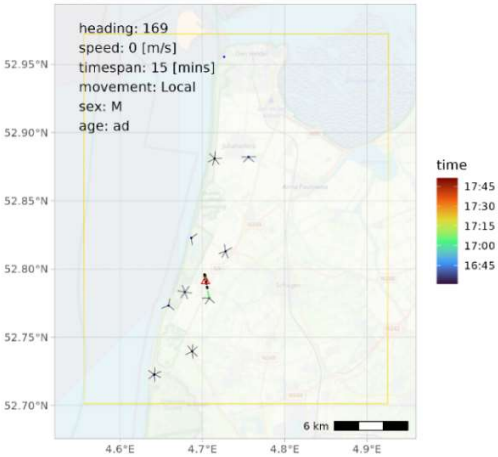
Last night in area (2018-11-02)
(tag depl 19479, 2018-10-09)



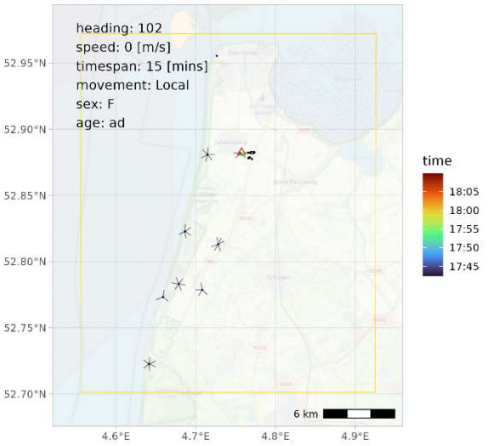
Track until 2018-11-05
(tag depl 19479)



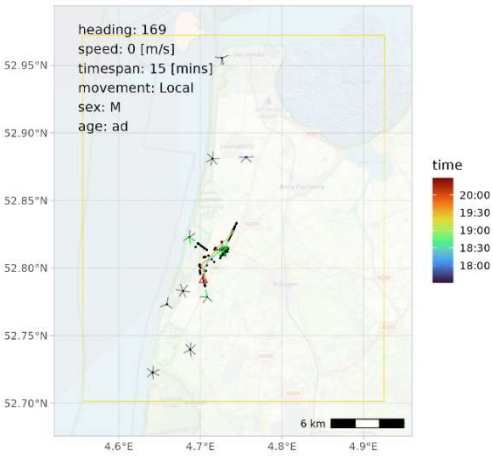
Last night in area (2018-10-23)
(tag depl 19480, 2018-09-22)



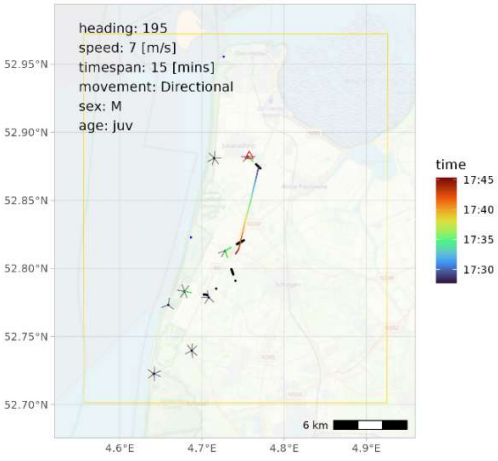
Last night in area (2018-09-22)
(tag depl 19482, 2018-09-22)

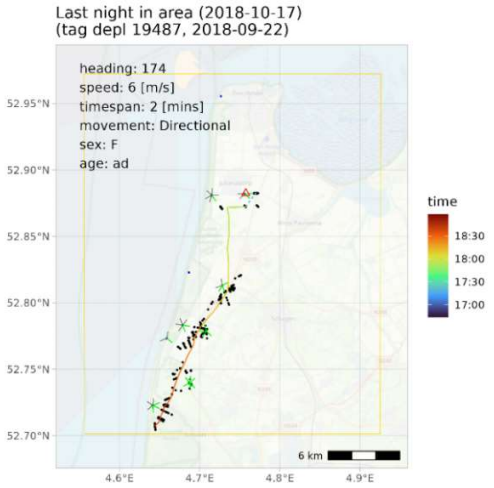


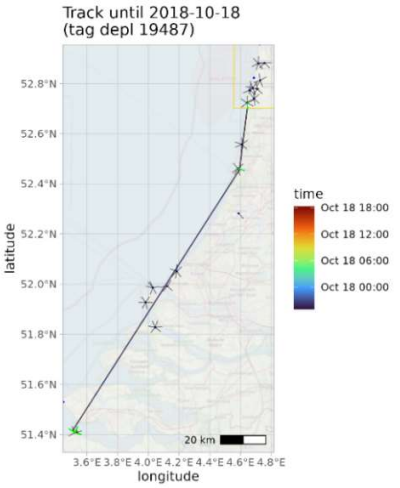
Last night in area (2018-09-28)
(tag depl 19483, 2018-09-22)



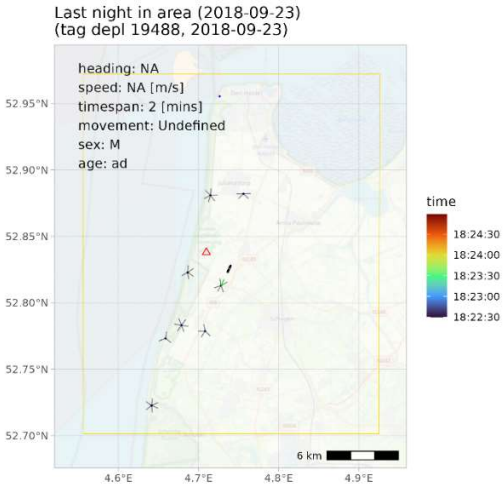
Last night in area (2018-10-17)
(tag depl 19486, 2018-09-22)

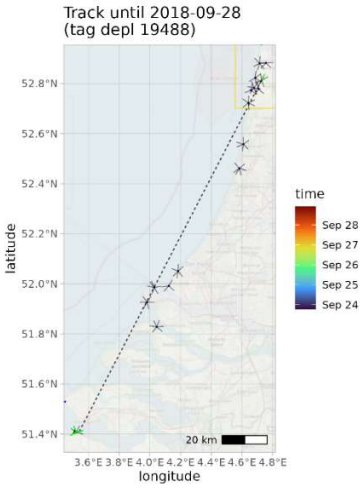


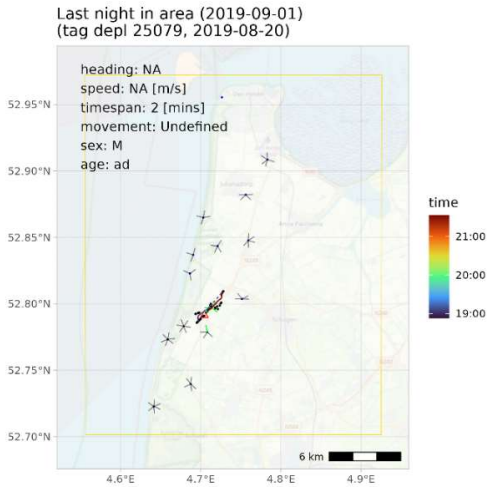




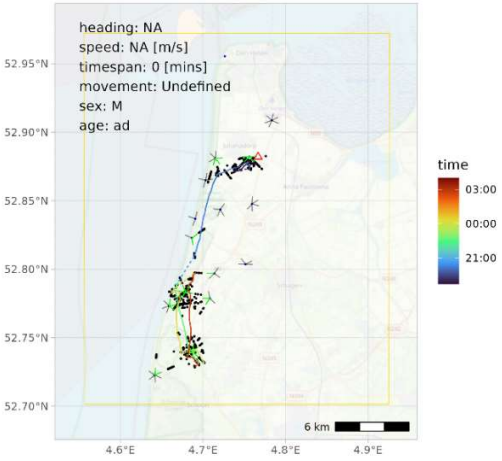
This is a directional flight, small timeframe is caused by a gap in detections over 15 min at Camperduin



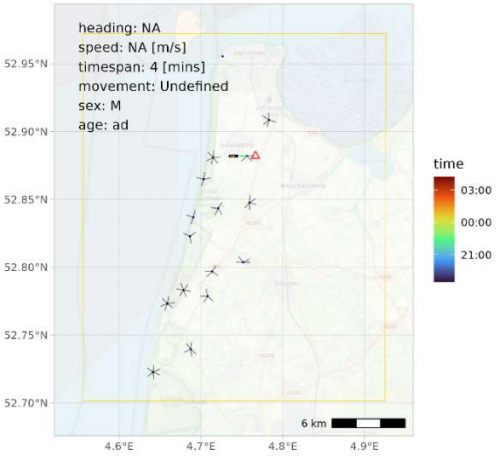




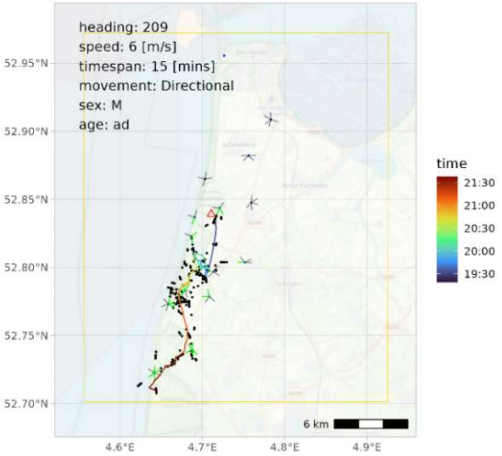
Last night in area (2019-09-13)
(tag depl 25086, 2019-09-03)



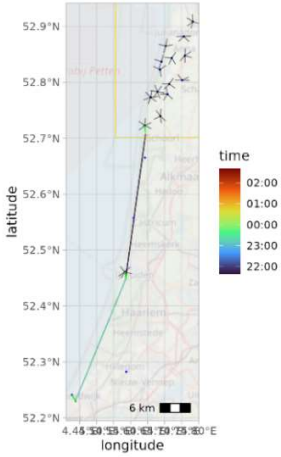
Last night in area (2019-09-03)
(tag depl 25087, 2019-09-03)

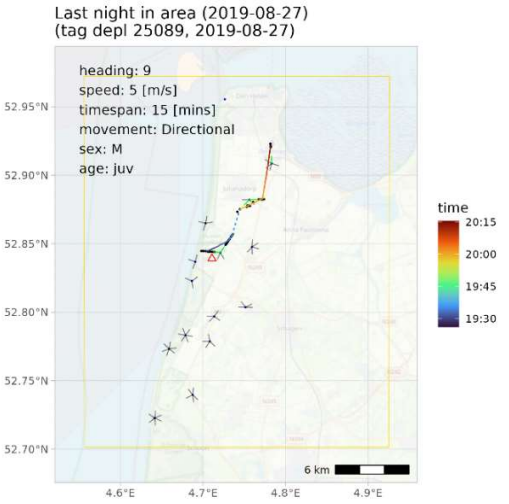


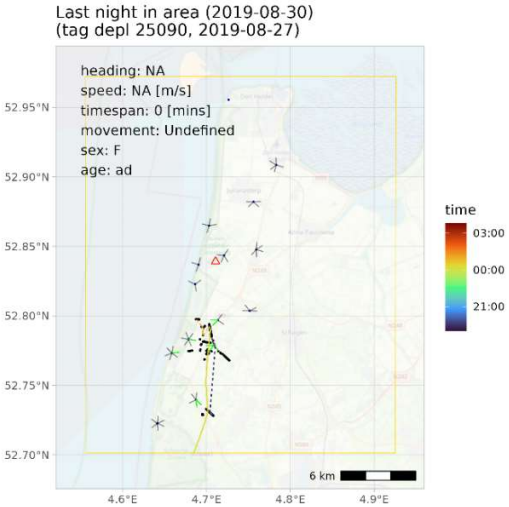
Last night in area (2019-08-27)
(tag depl 25088, 2019-08-27)

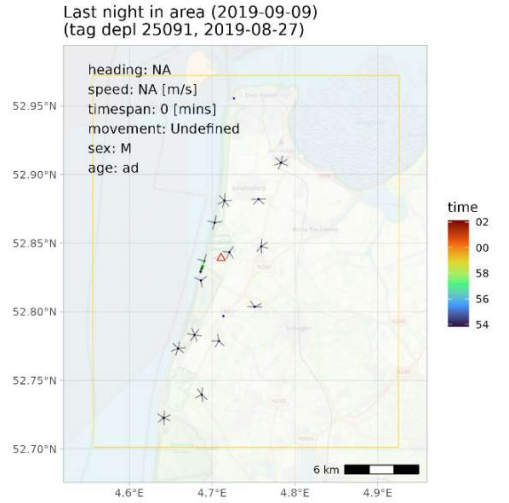


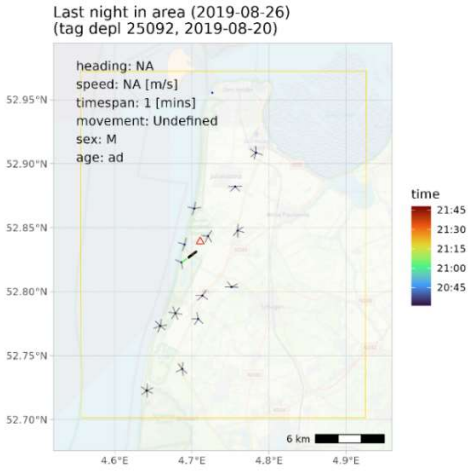
Track until 2019-08-27
(tag depl 25088)

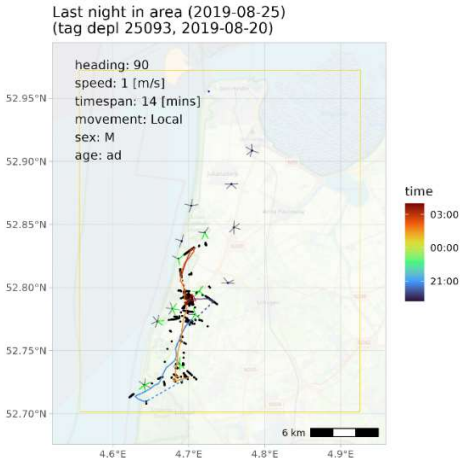


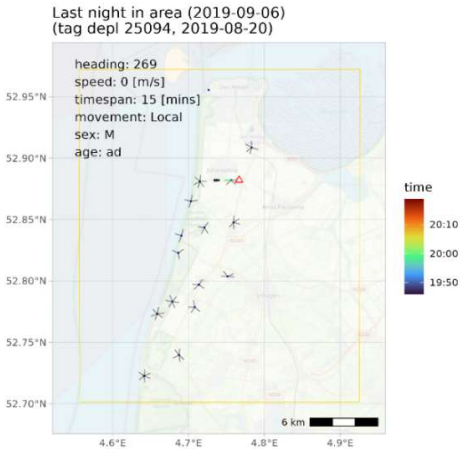

Last night in area (2019-08-27)
(tag depl 25089, 2019-08-27)
heading: 9
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
20:15
20:00
19:45
19:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-08-30)
(tag depl 25090, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

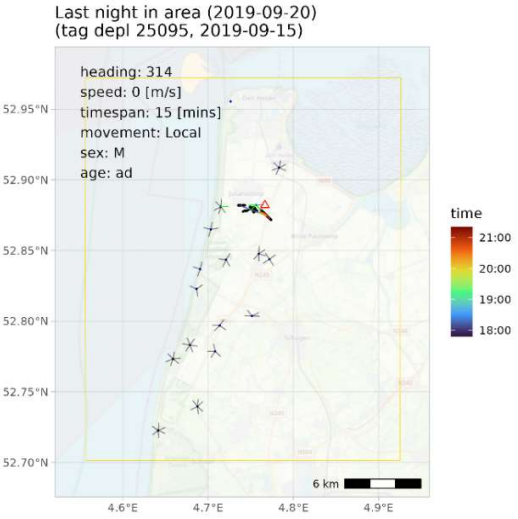

Last night in area (2019-09-09)
(tag depl 25091, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
02
00
58
56
54
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

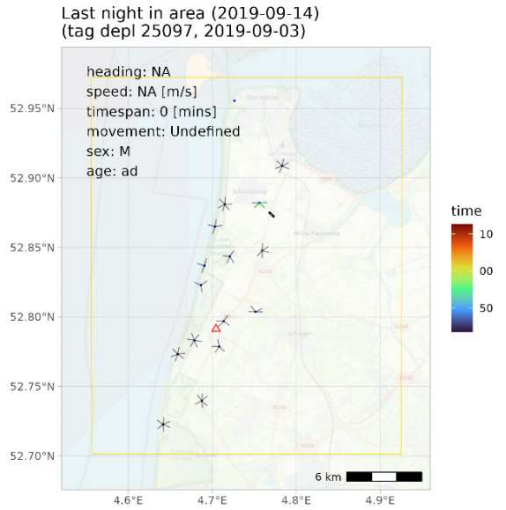


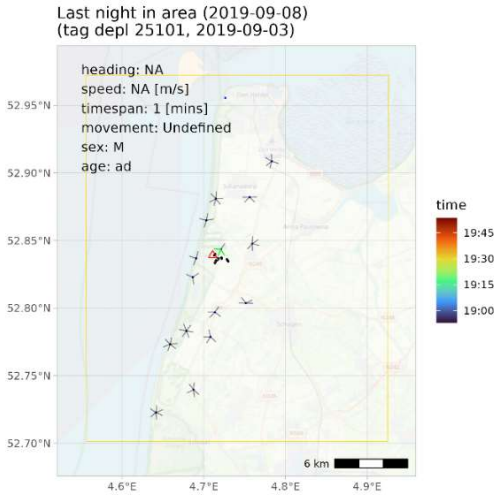




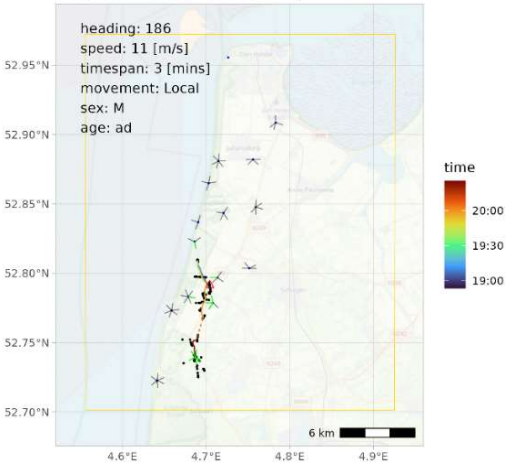
Tag found 2019-09-07


Last night in area (2019-09-20)
(tag depl 25095, 2019-09-15)
heading: 314
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
21:00
20:00
19:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

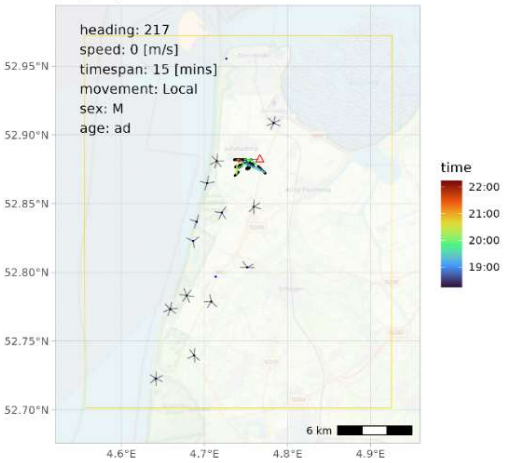

Last night in area (2019-09-14)
(tag depl 25097, 2019-09-03)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
10
00
50
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-09-08)
(tag depl 25101, 2019-09-03)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
19:45
19:30
19:15
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

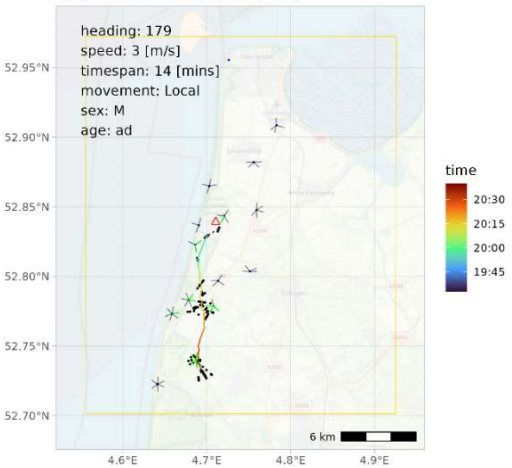
Last night in area (2019-09-03)
(tag depl 25103, 2019-08-27)

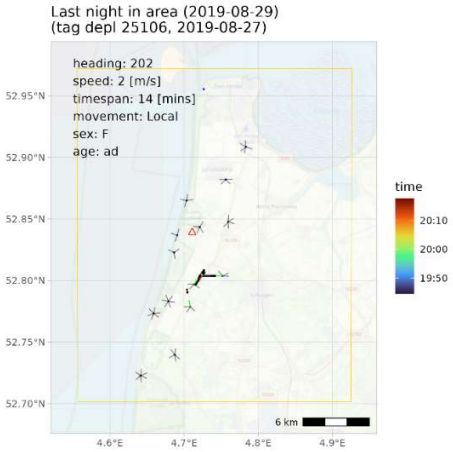


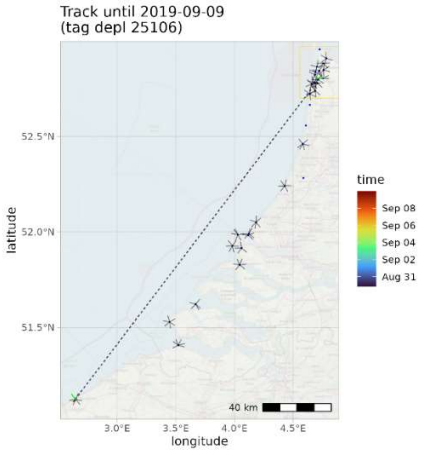
Last night in area (2019-09-09)
(tag depl 25104, 2019-08-27)

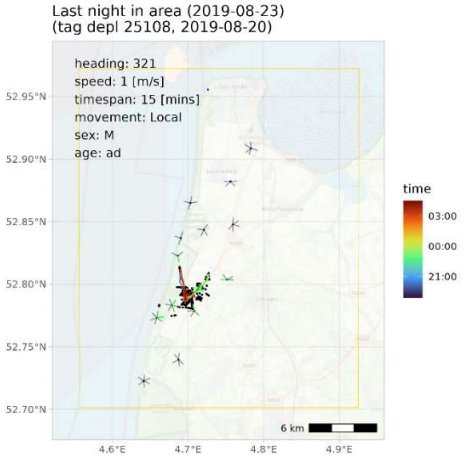


Last night in area (2019-08-30)
(tag depl 25105, 2019-08-27)

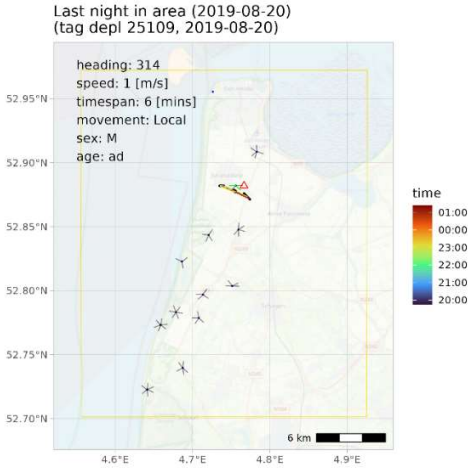


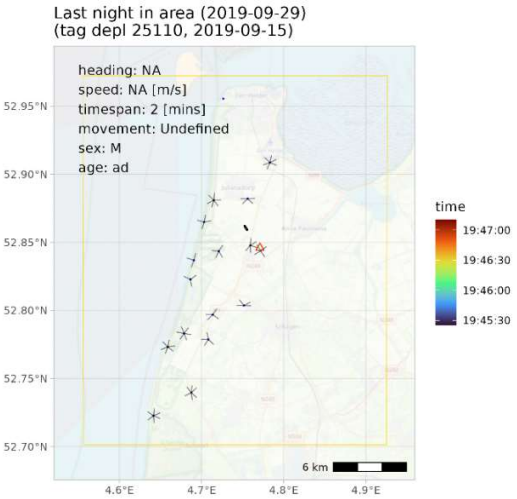


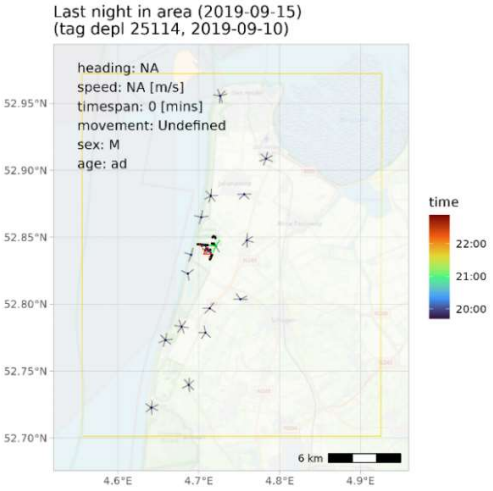


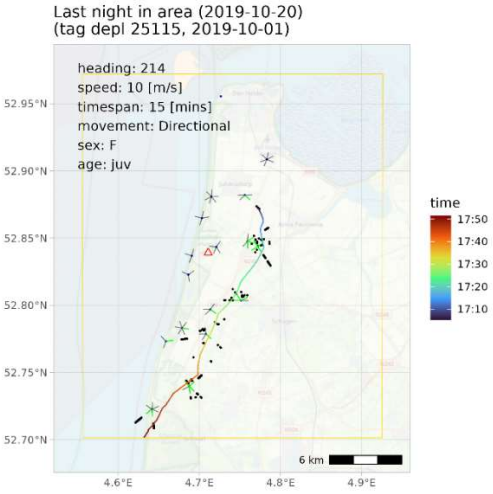


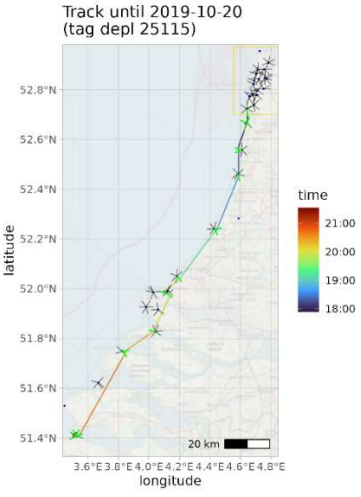
Tag found 2019-09-07

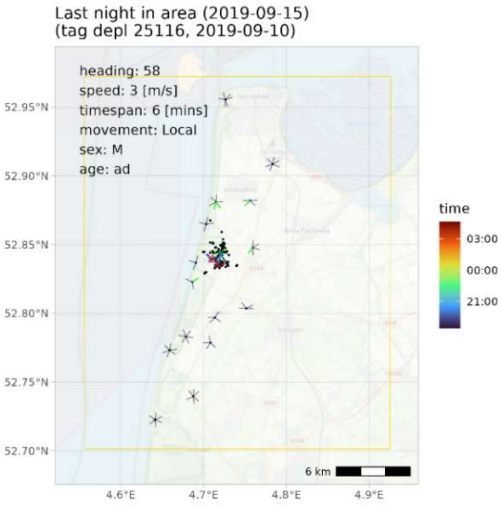


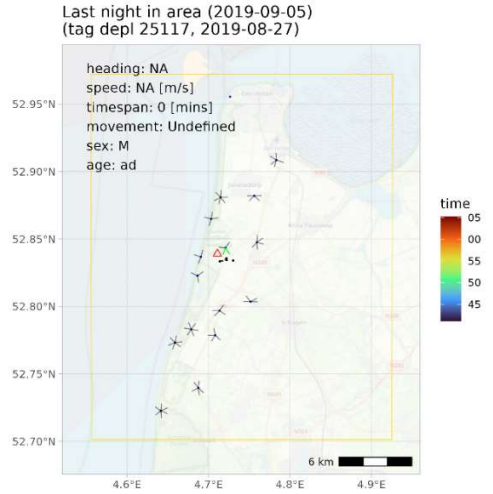

Last night in area (2019-09-29)
(tag depl 25110, 2019-09-15)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: M
age: ad
time
19:47:00
19:46:30
19:46:00
19:45:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

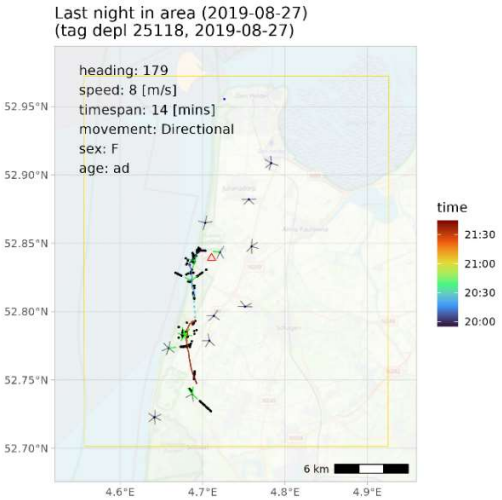

Last night in area (2019-09-15)
(tag depl 25114, 2019-09-10)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

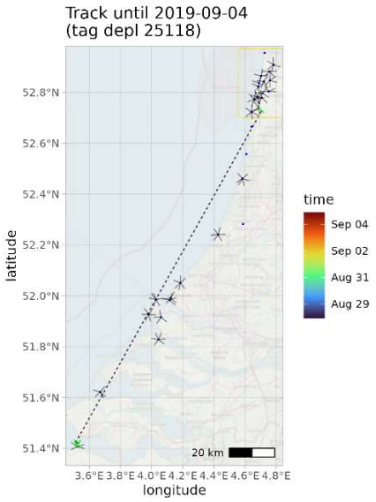

Last night in area (2019-10-20)
(tag depl 25115, 2019-10-01)
heading: 214
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
17:50
17:40
17:30
17:20
17:10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

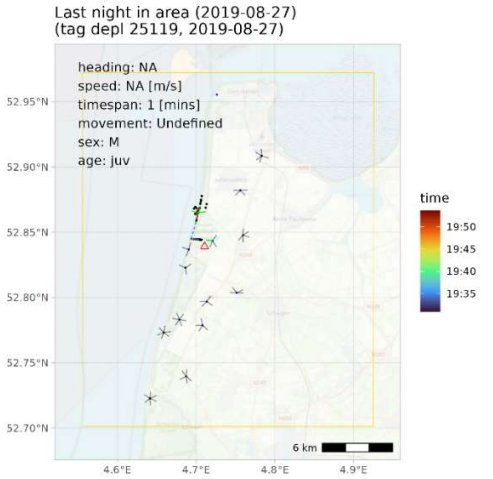

Track until 2019-10-20
(tag depl 25115)
time
21:00
20:00
19:00
18:00
latitude
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
51.8°N
51.6°N
51.4°N
3.6°E
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E
longitude
20 km

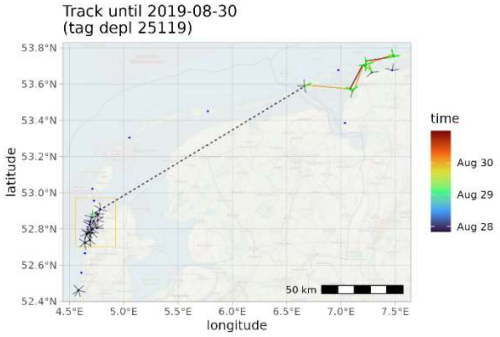

Last night in area (2019-09-15)
(tag depl 25116, 2019-09-10)
heading: 58
speed: 3 [m/s]
timespan: 6 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

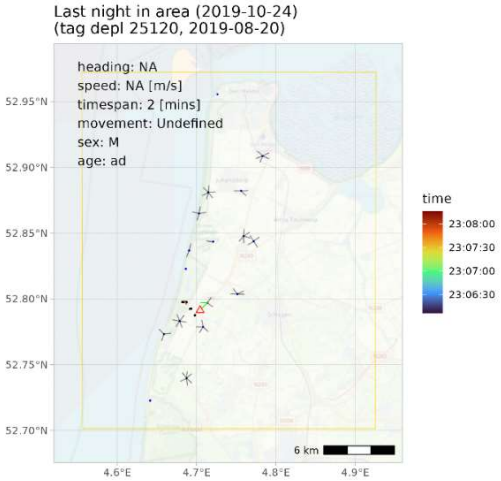

Last night in area (2019-09-05)
(tag depl 25117, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
05
00
55
50
45
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

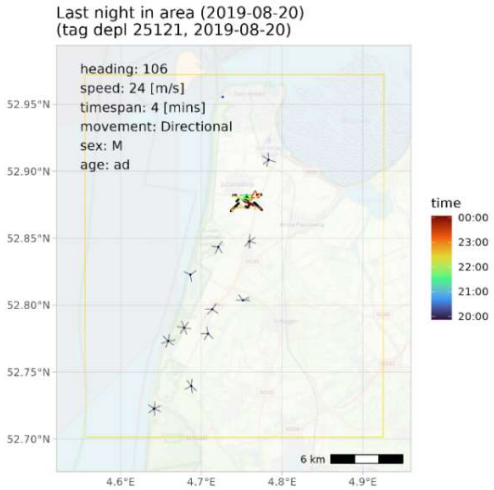

Last night in area (2019-08-27)
(tag depl 25118, 2019-08-27)
heading: 179
speed: 8 [m/s]
timespan: 14 [mins]
movement: Directional
sex: F
age: ad
time
21:30
21:00
20:30
20:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

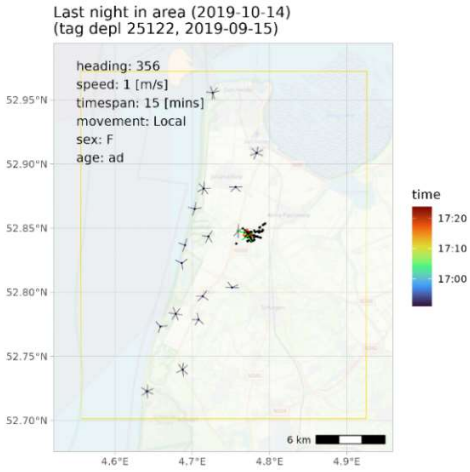

Track until 2019-09-04
(tag depl 25118)
time
Sep 04
Sep 02
Aug 31
Aug 29
latitude
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
51.8°N
51.6°N
51.4°N
20 km
3.6°E 3.8°E 4.0°E 4.2°E 4.4°E 4.6°E 4.8°E
longitude

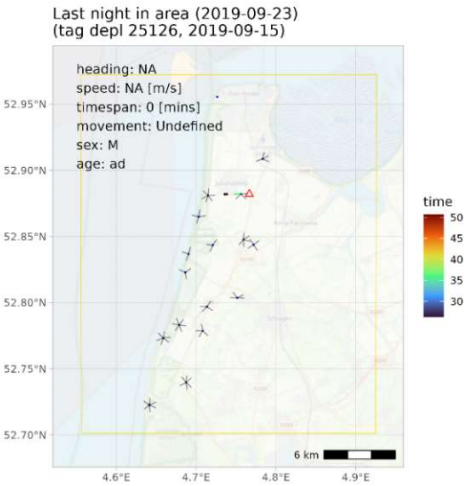

Last night in area (2019-08-27)
(tag depl 25119, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: juv
time
19:50
19:45
19:40
19:35
6 km


Track until 2019-08-30
(tag depl 25119)
latitude
longitude
time
Aug 30
Aug 29
Aug 28
50 km

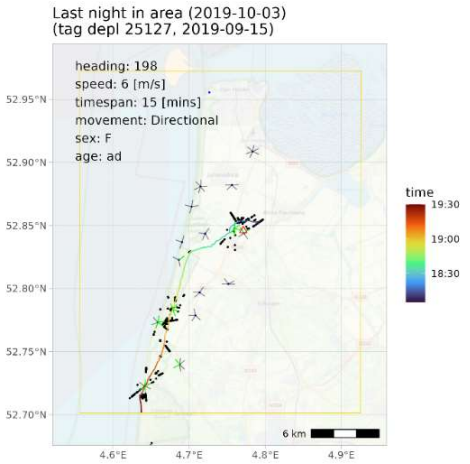

Last night in area (2019-10-24)
(tag depl 25120, 2019-08-20)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: M
age: ad
time
23:08:00
23:07:30
23:07:00
23:06:30
6 km

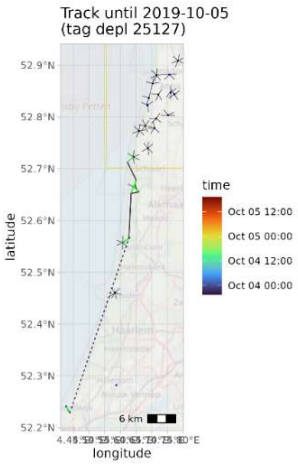

Last night in area (2019-08-20)
(tag depl 25121, 2019-08-20)
heading: 106
speed: 24 [m/s]
timespan: 4 [mins]
movement: Directional
sex: M
age: ad
time
00:00
23:00
22:00
21:00
20:00
6 km

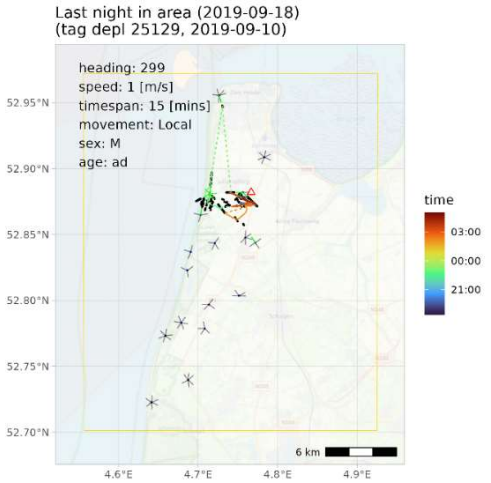


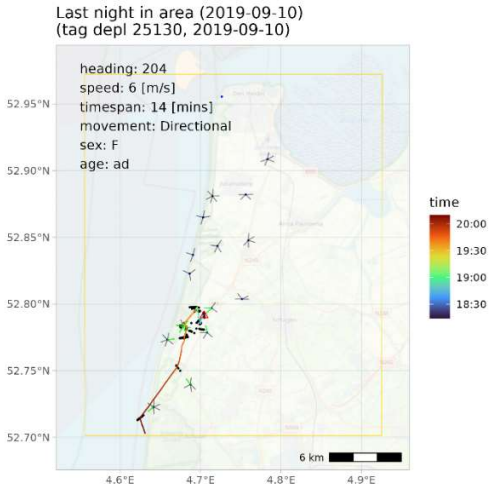


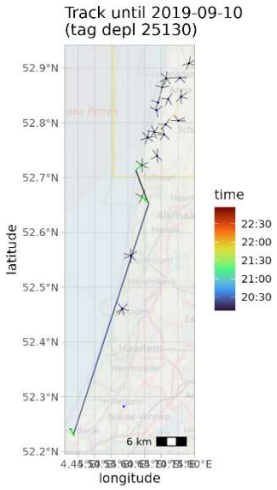
Tag removed when recaptured 2019-09-24 , animal appeared to be wounded

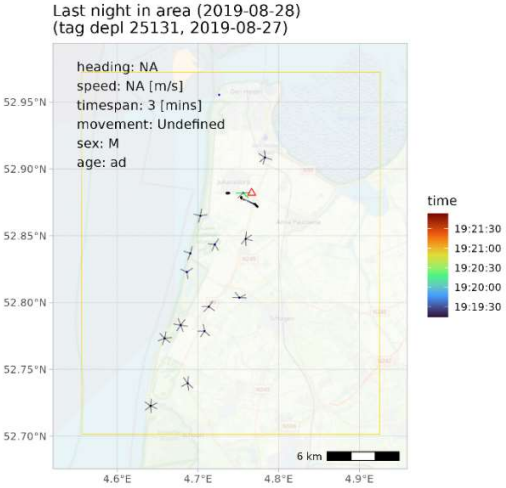


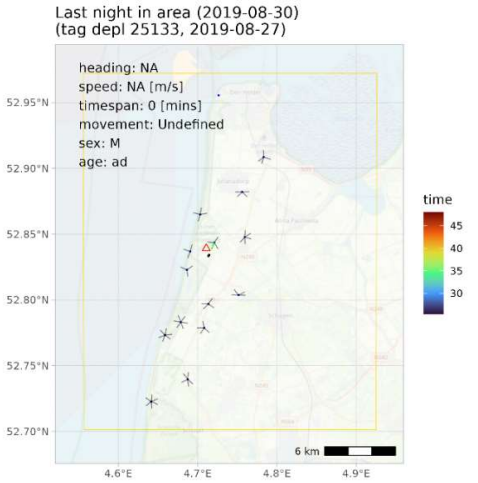


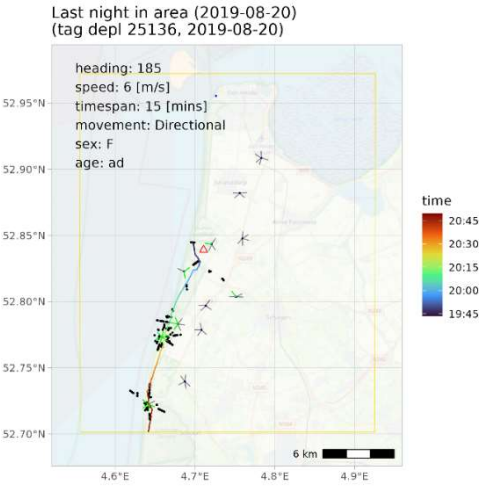

Last night in area (2019-09-18)
(tag depl 25129, 2019-09-10)
heading: 299
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

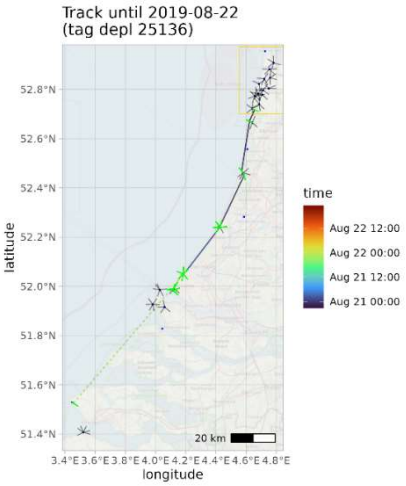

Last night in area (2019-09-10)
(tag depl 25130, 2019-09-10)
heading: 204
speed: 6 [m/s]
timespan: 14 [mins]
movement: Directional
sex: F
age: ad
time
20:00
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

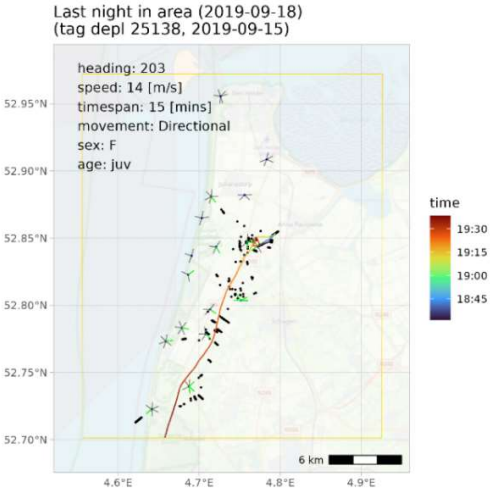

Track until 2019-09-10
(tag depl 25130)
time
22:30
22:00
21:30
21:00
20:30
latitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
52.4°N
52.3°N
52.2°N
longitude
6 km

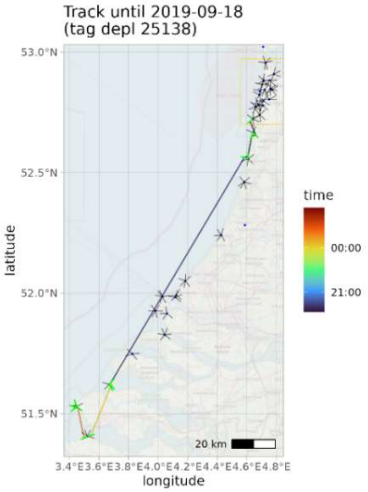

Last night in area (2019-08-28)
(tag depl 25131, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
19:21:30
19:21:00
19:20:30
19:20:00
19:19:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km





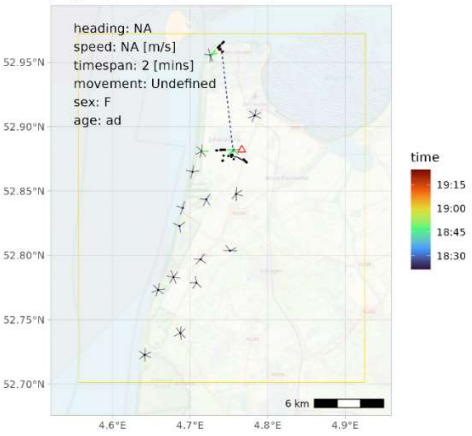




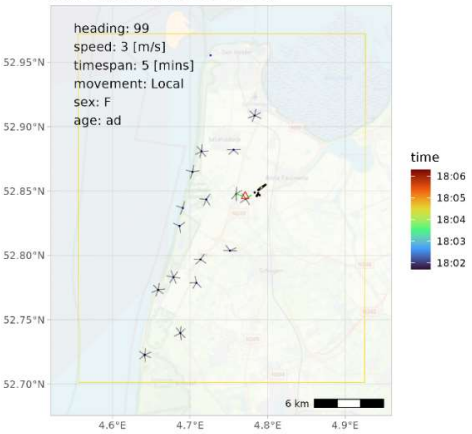


Likely departure over sea at Westkapelle

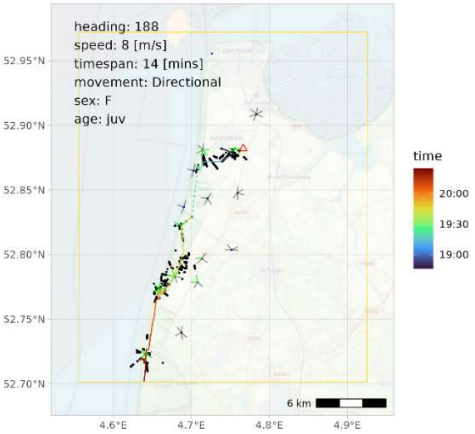
Last night in area (2019-09-15)
(tag depl 25142, 2019-09-15)



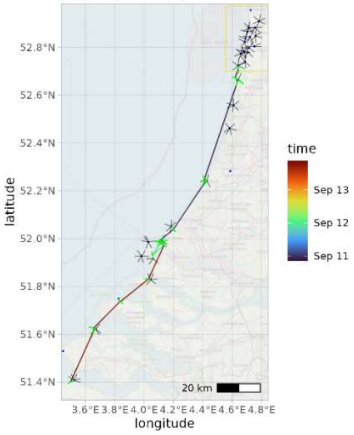
Last night in area (2019-10-05)
(tag depl 25143, 2019-09-15)



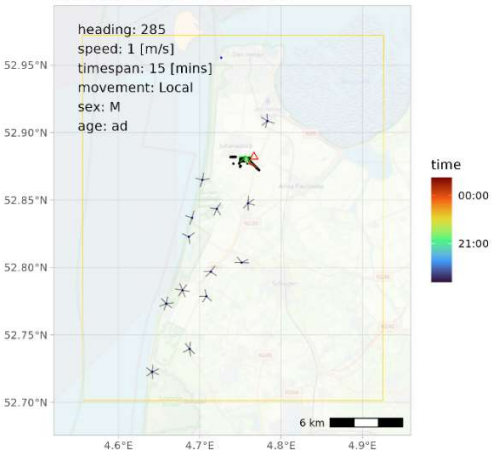
Last night in area (2019-09-10)
(tag depl 25146, 2019-09-10)



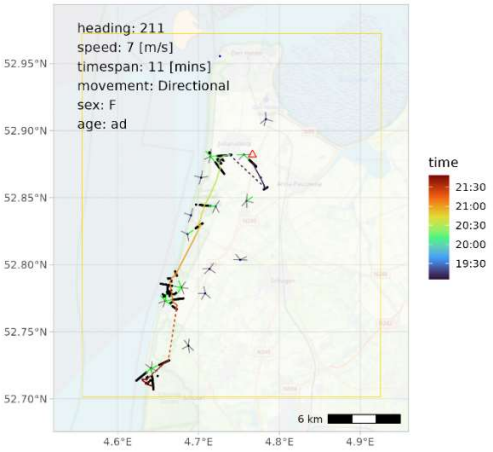
Track until 2019-09-13
(tag depl 25146)



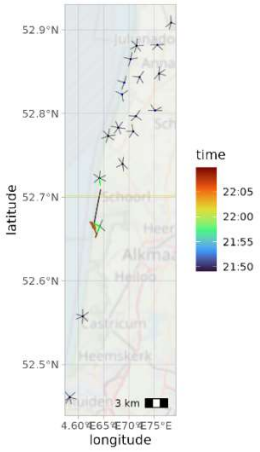
Last night in area (2019-08-31)
(tag depl 25148, 2019-08-27)



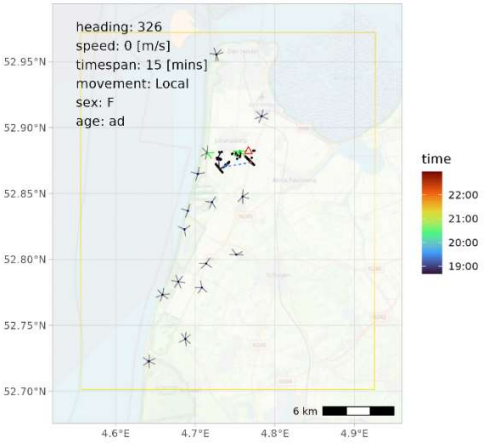
Last night in area (2019-09-03)
(tag depl 25149, 2019-09-03)

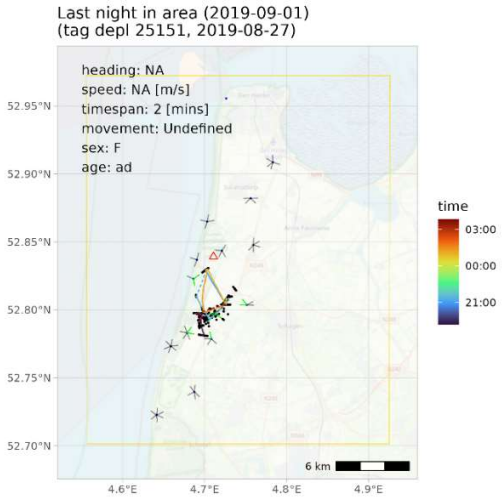


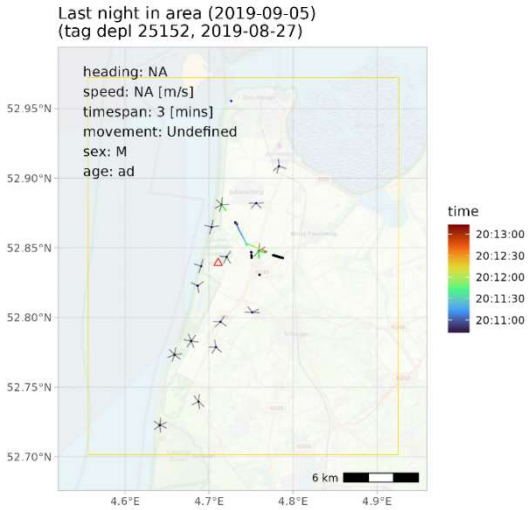
Track until 2019-09-03
(tag depl 25149)

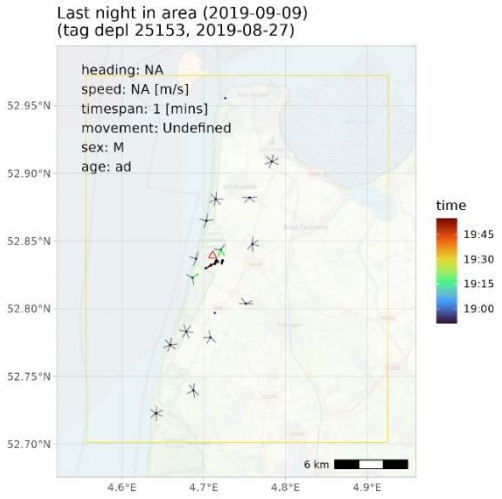


Last night in area (2019-09-15)
(tag depl 25150, 2019-08-27)

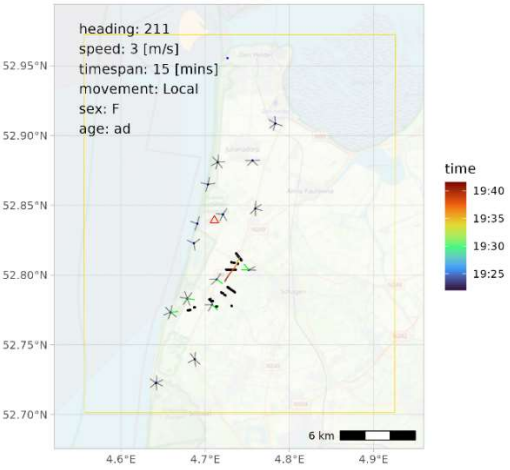



Last night in area (2019-09-01)
(tag depl 25151, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

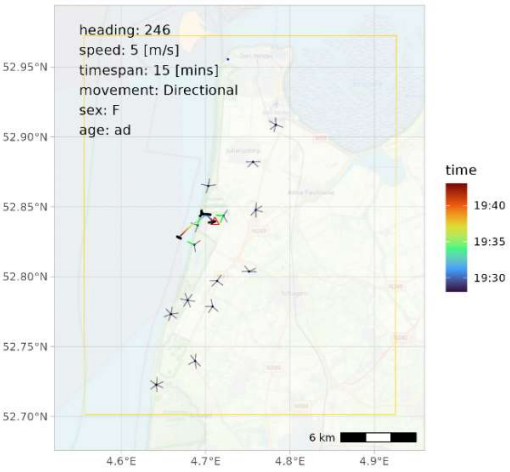

Last night in area (2019-09-05)
(tag depl 25152, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
20:13:00
20:12:30
20:12:00
20:11:30
20:11:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-09-09)
(tag depl 25153, 2019-08-27)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
19:45
19:30
19:15
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

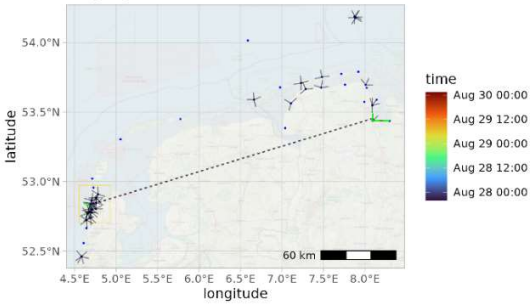
Last night in area (2019-09-05)
(tag depl 25154, 2019-08-27)



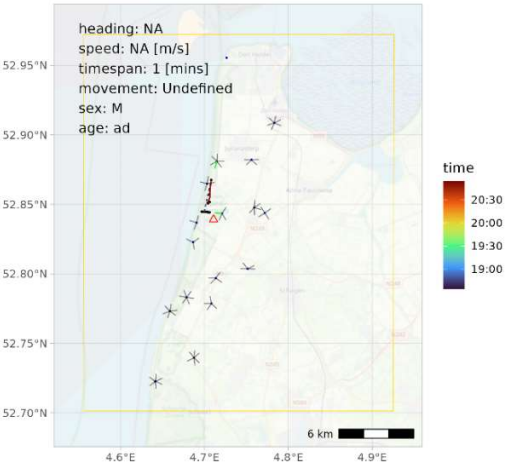
Last night in area (2019-08-27)
(tag depl 25155, 2019-08-27)

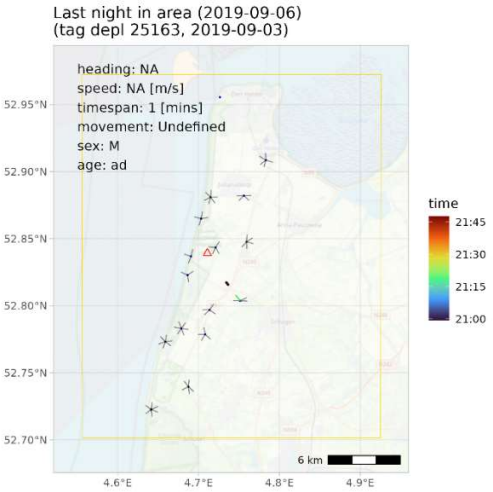


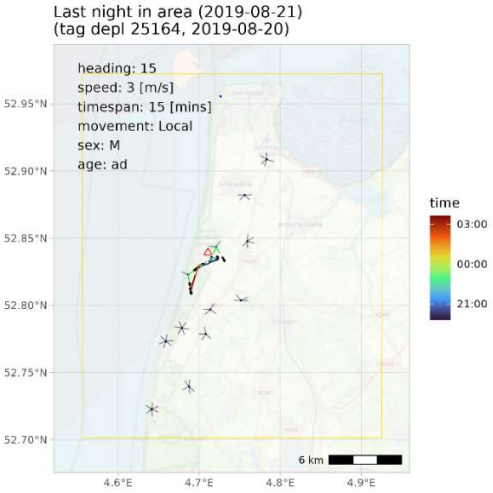
Track until 2019-08-29
(tag depl 25155)

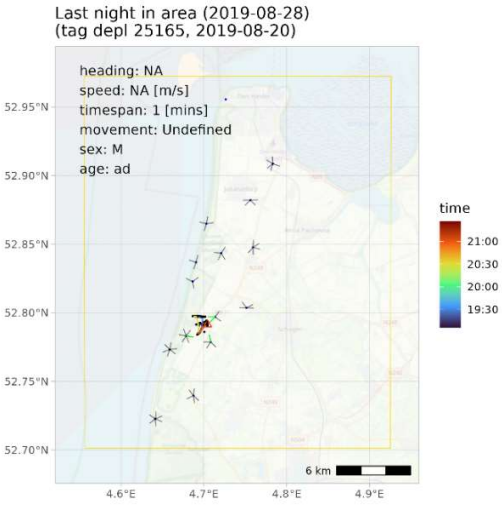


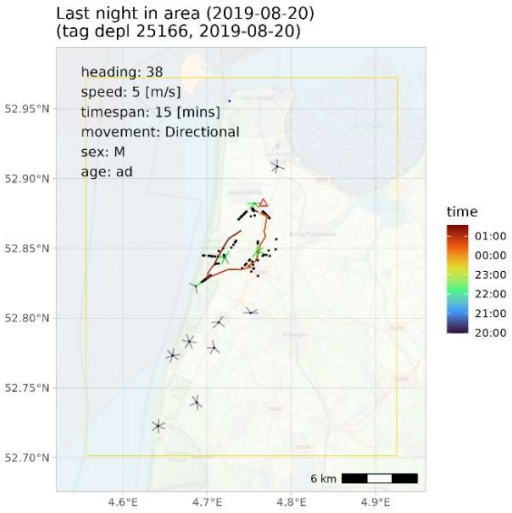
Last night in area (2019-09-17)
(tag depl 25162, 2019-09-10)

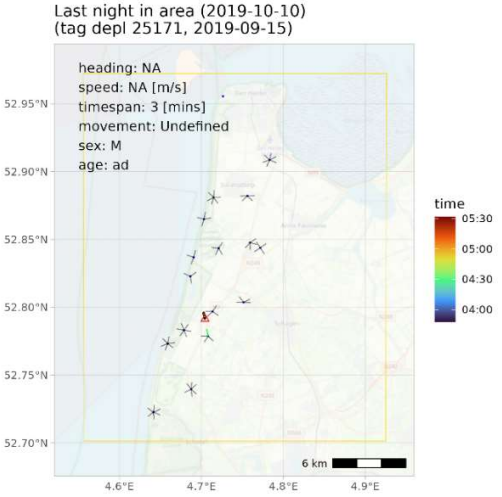


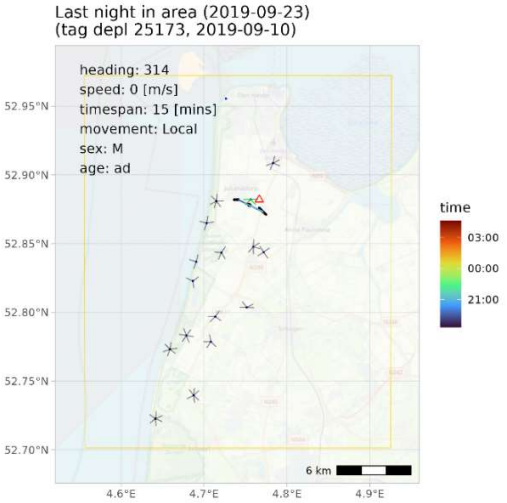

Last night in area (2019-09-06)
(tag depl 25163, 2019-09-03)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
21:45
21:30
21:15
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-08-21)
(tag depl 25164, 2019-08-20)
heading: 15
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

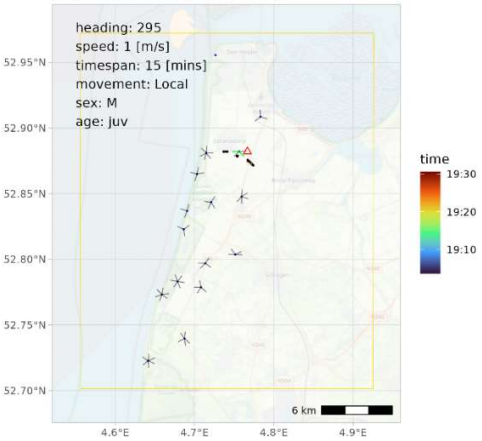

Last night in area (2019-08-28)
(tag depl 25165, 2019-08-20)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
21:00
20:30
20:00
19:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-08-20)
(tag depl 25166, 2019-08-20)
heading: 38
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
01:00
00:00
23:00
22:00
21:00
20:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

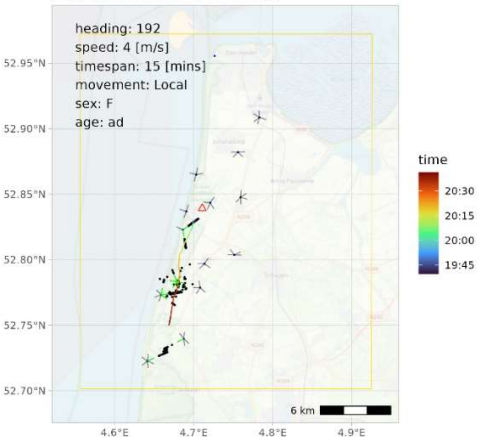

Last night in area (2019-10-10)
(tag depl 25171, 2019-09-15)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
05:30
05:00
04:30
04:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-09-23)
(tag depl 25173, 2019-09-10)
heading: 314
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

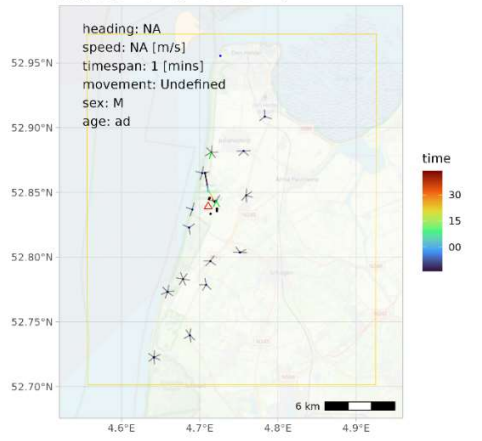
Last night in area (2019-09-07)
(tag depl 25174, 2019-09-03)

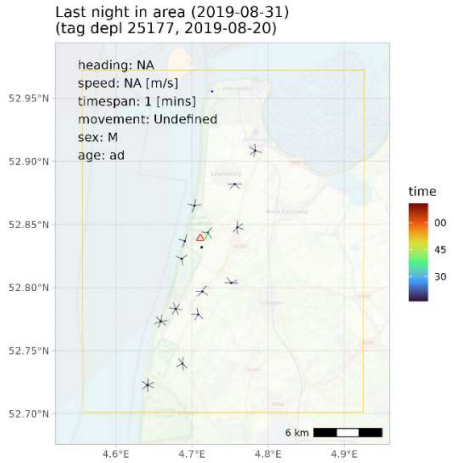


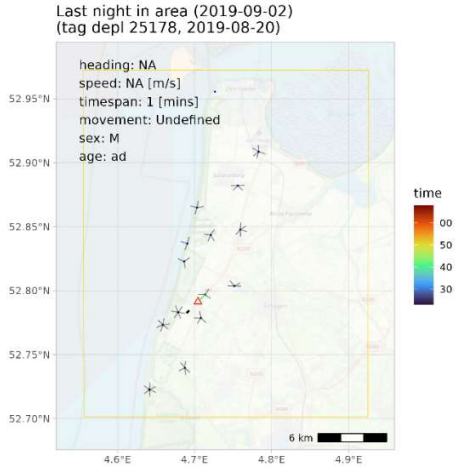
Last night in area (2019-08-27)
(tag depl 25175, 2019-08-27)

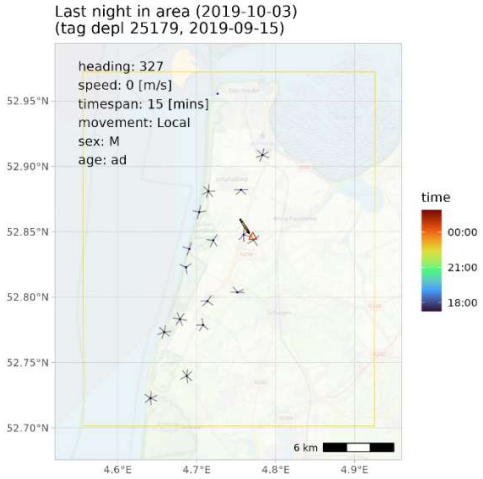


Last night in area (2019-09-07)
(tag depl 25176, 2019-08-27)

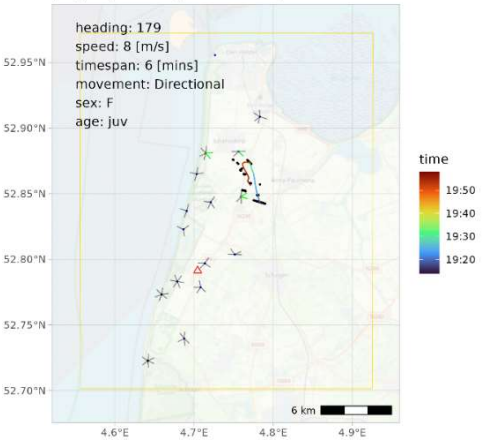



Last night in area (2019-08-31)
(tag depl 25177, 2019-08-20)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
00
45
30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

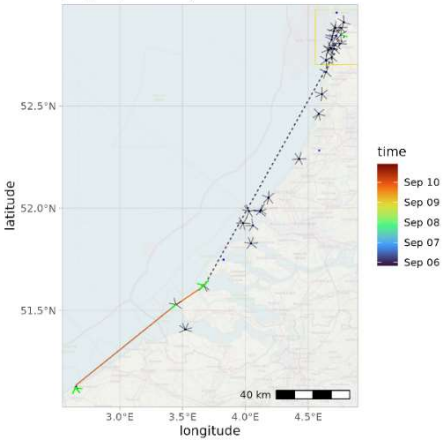

Last night in area (2019-09-02)
(tag depl 25178, 2019-08-20)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
00
50
40
30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-10-03)
(tag depl 25179, 2019-09-15)
heading: 327
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

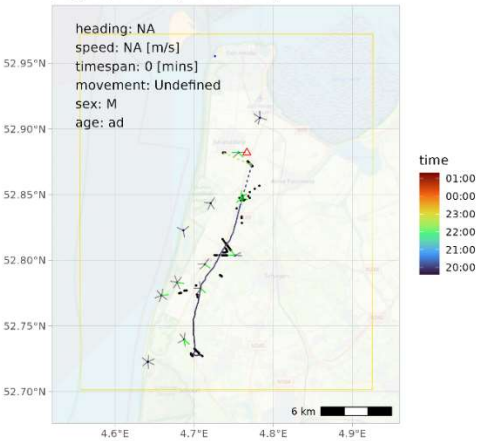
Last night in area (2019-09-05)
(tag depl 25180, 2019-09-03)



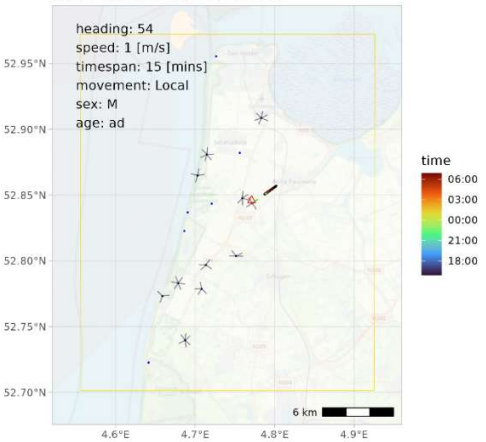
Track until 2019-09-10
(tag depl 25180)

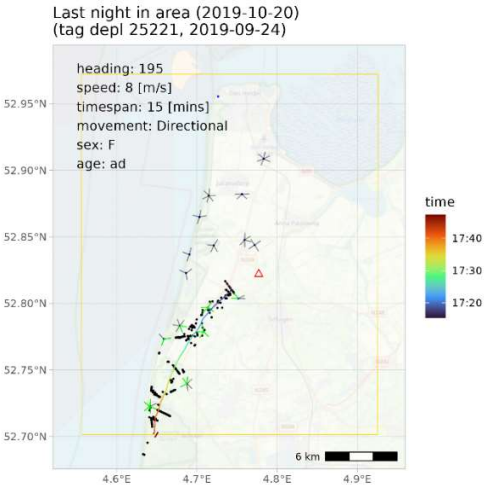


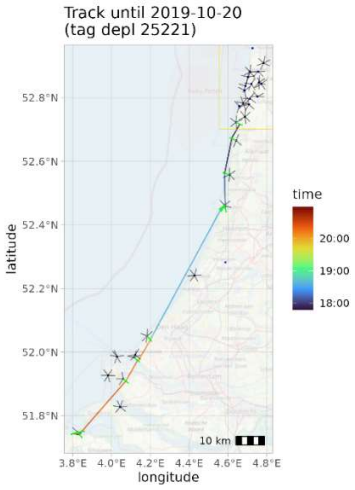
Last night in area (2019-08-21)
(tag depl 25183, 2019-08-20)

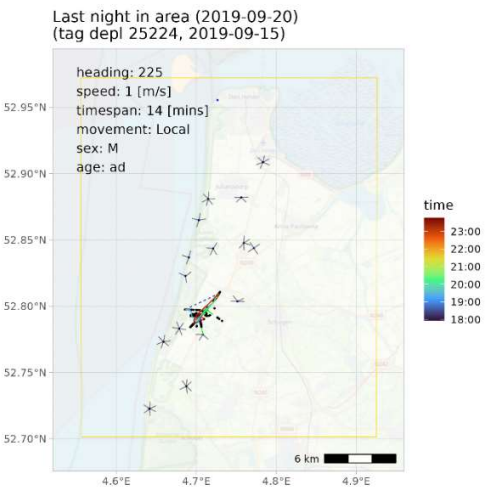


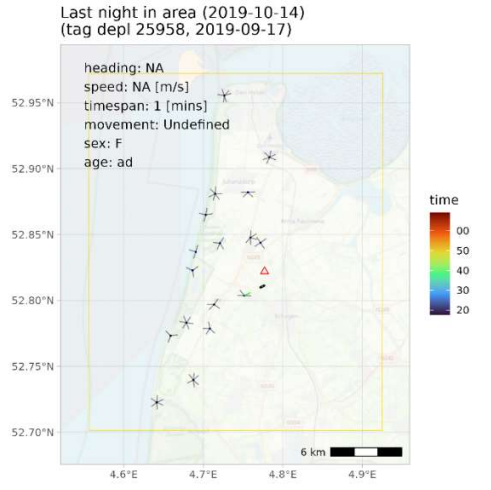
Last night in area (2019-11-11)
(tag depl 25220, 2019-09-15)

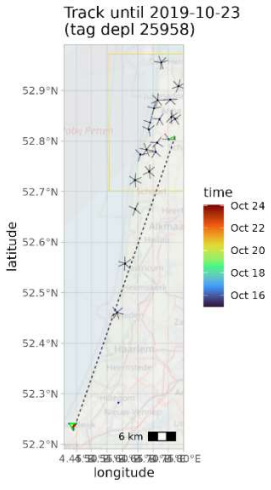



Last night in area (2019-10-20)
(tag depl 25221, 2019-09-24)
heading: 195
speed: 8 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:40
17:30
17:20
6 km

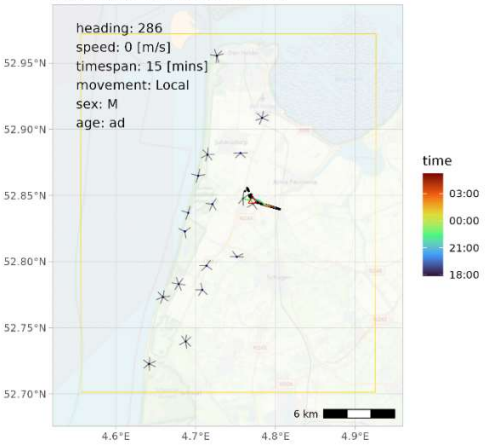

Track until 2019-10-20
(tag depl 25221)
latitude
longitude
time
20:00
19:00
18:00
10 km


Last night in area (2019-09-20)
(tag depl 25224, 2019-09-15)
heading: 225
speed: 1 [m/s]
timespan: 14 [mins]
movement: Local
sex: M
age: ad
time
23:00
22:00
21:00
20:00
19:00
18:00
6 km

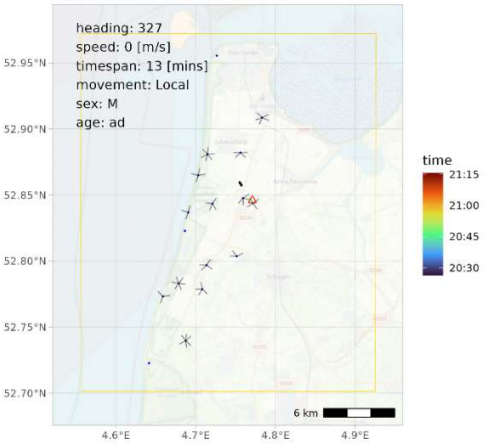

Last night in area (2019-10-14)
(tag depl 25958, 2019-09-17)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
00
50
40
30
20
6 km


Track until 2019-10-23
(tag depl 25958)
latitude
longitude
time
Oct 24
Oct 22
Oct 20
Oct 18
Oct 16
6 km

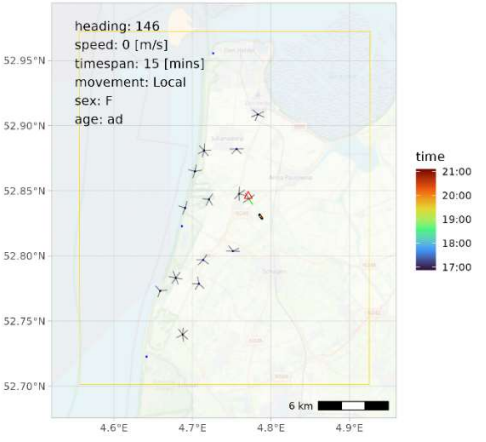
Last night in area (2019-09-18)
(tag depl 25961, 2019-09-15)

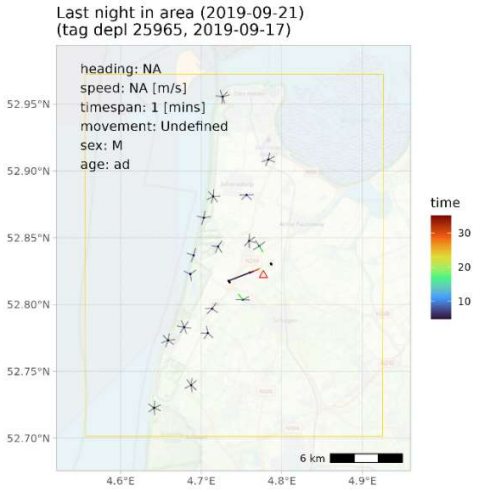


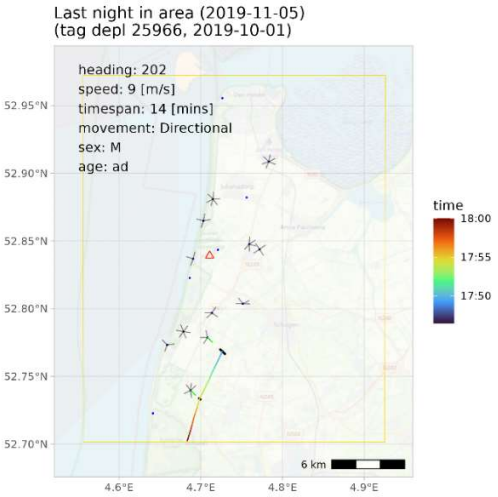
Last night in area (2019-10-26)
(tag depl 25962, 2019-09-15)

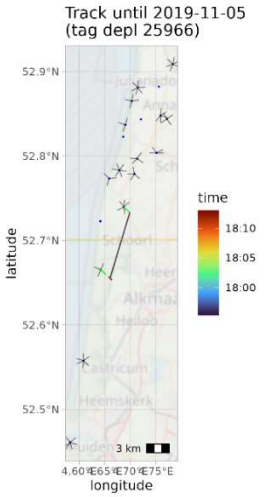


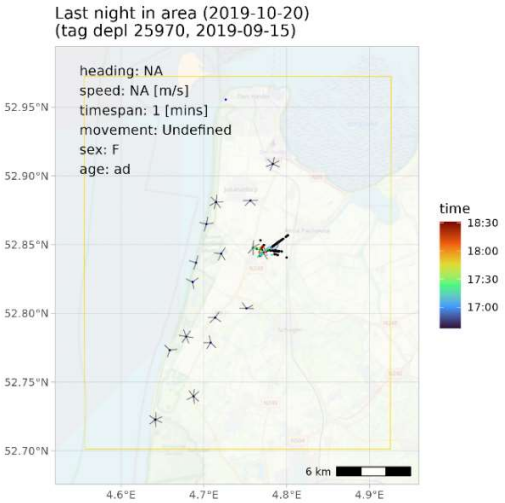
Last night in area (2019-10-26)
(tag depl 25964, 2019-09-15)

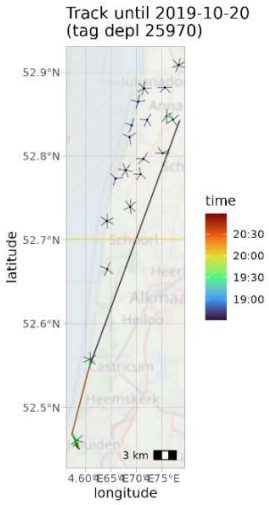


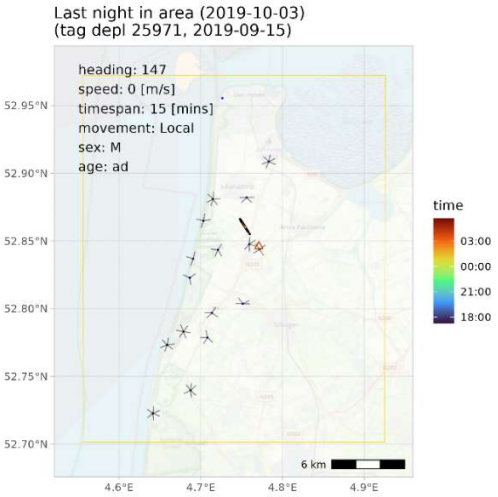

Last night in area (2019-09-21)
(tag depl 25965, 2019-09-17)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
30
20
10
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

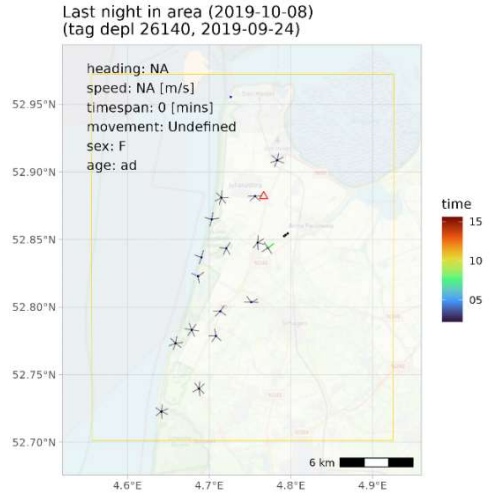

Last night in area (2019-11-05)
(tag depl 25966, 2019-10-01)
heading: 202
speed: 9 [m/s]
timespan: 14 [mins]
movement: Directional
sex: M
age: ad
time
18:00
17:55
17:50
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

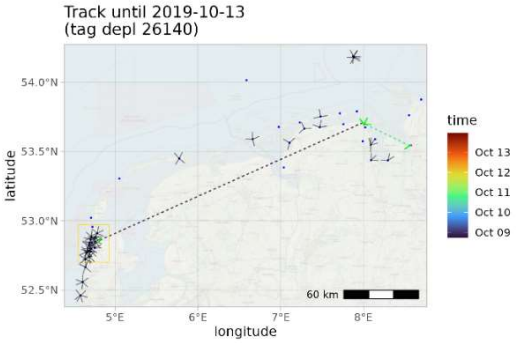

Track until 2019-11-05
(tag depl 25966)
time
18:10
18:05
18:00
3 km
latitude
longitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
4.60°E
4.65°E
4.70°E
4.75°E

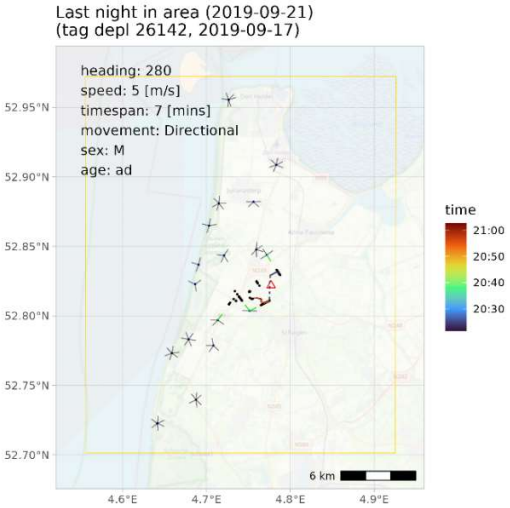

Last night in area (2019-10-20)
(tag depl 25970, 2019-09-15)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
18:30
18:00
17:30
17:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2019-10-20
(tag depl 25970)
time
20:30
20:00
19:30
19:00
3 km
latitude
longitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
4.60°E
4.65°E
4.70°E
4.75°E

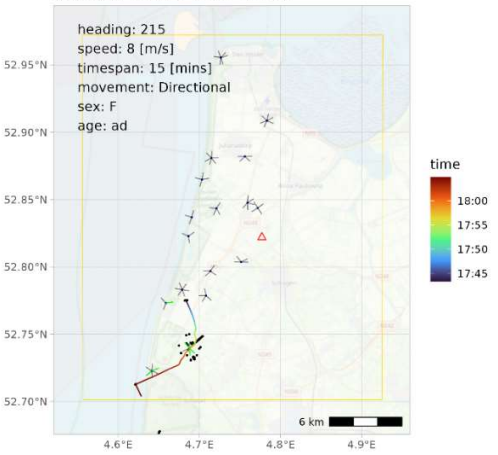

Last night in area (2019-10-03)
(tag depl 25971, 2019-09-15)
heading: 147
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2019-10-08)
(tag depl 26140, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
15
10
05
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

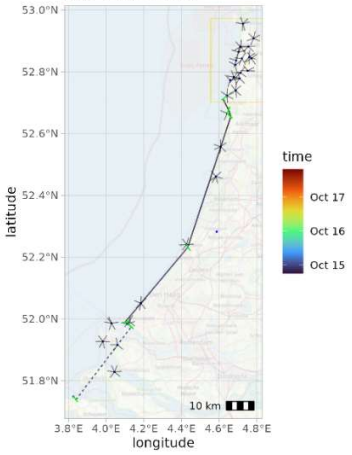

Track until 2019-10-13
(tag depl 26140)
time
Oct 13
Oct 12
Oct 11
Oct 10
Oct 09
latitude
54.0°N
53.5°N
53.0°N
52.5°N
60 km
5°E
6°E
7°E
8°E
longitude


Last night in area (2019-09-21)
(tag depl 26142, 2019-09-17)
heading: 280
speed: 5 [m/s]
timespan: 7 [mins]
movement: Directional
sex: M
age: ad
time
21:00
20:50
20:40
20:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

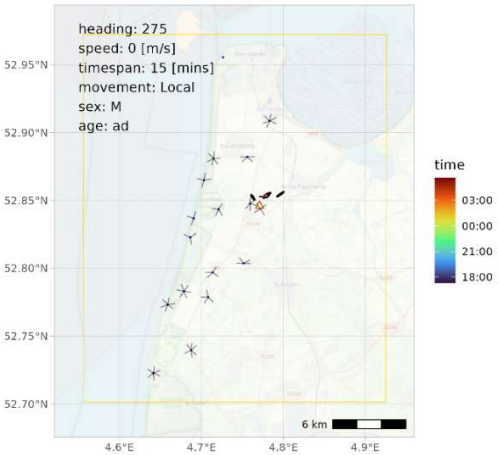
Last night in area (2019-10-14)
(tag depl 26143, 2019-09-17)



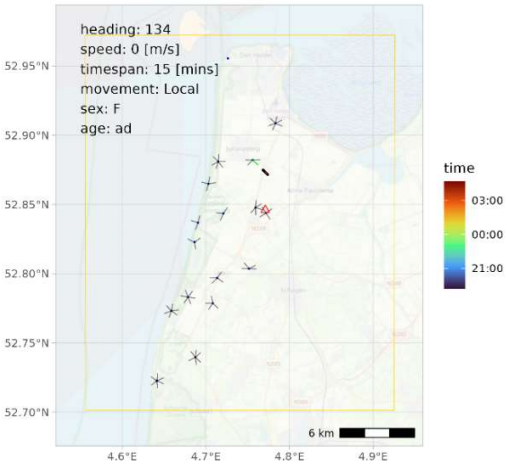
Track until 2019-10-17
(tag depl 26143)

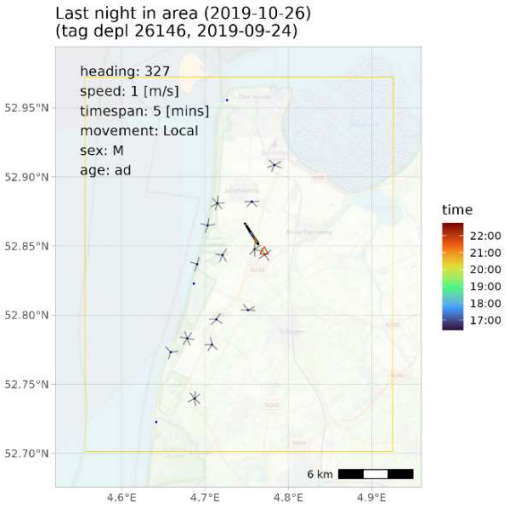


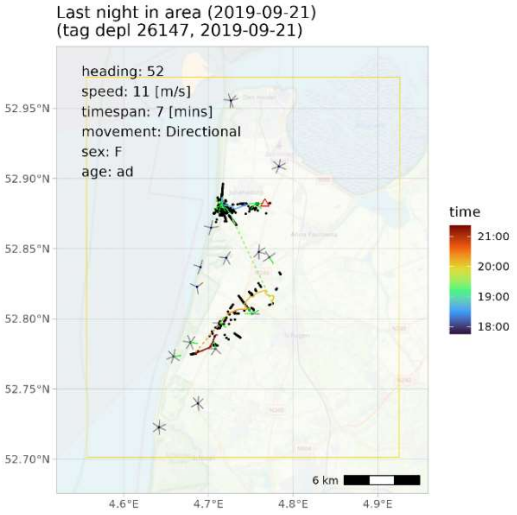
Last night in area (2019-10-02)
(tag depl 26144, 2019-09-24)

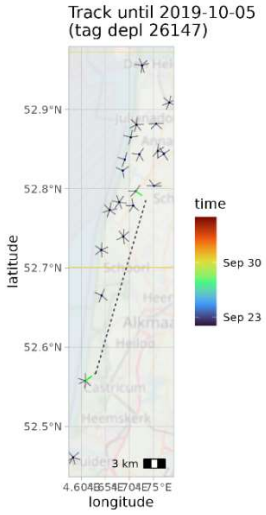


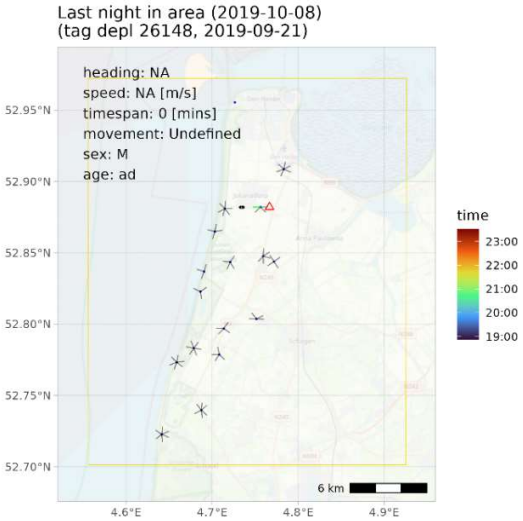
Last night in area (2019-09-25)
(tag depl 26145, 2019-09-21)

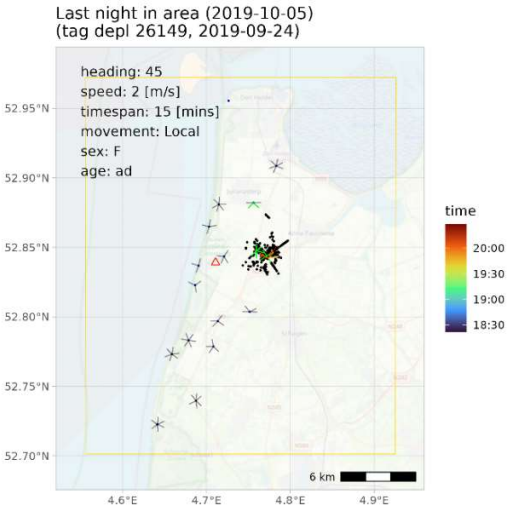


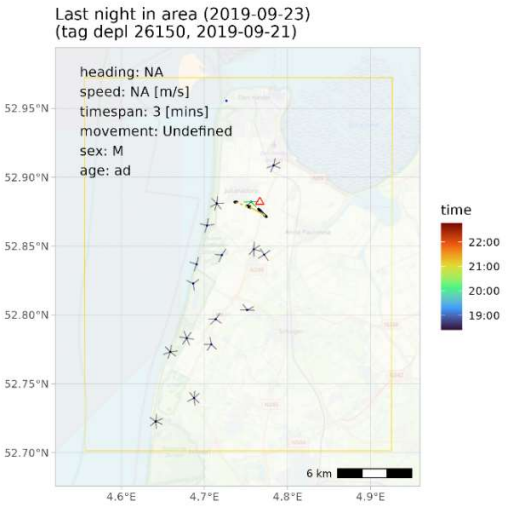

Last night in area (2019-10-26)
(tag depl 26146, 2019-09-24)
heading: 327
speed: 1 [m/s]
timespan: 5 [mins]
movement: Local
sex: M
age: ad
time
22:00
21:00
20:00
19:00
18:00
17:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

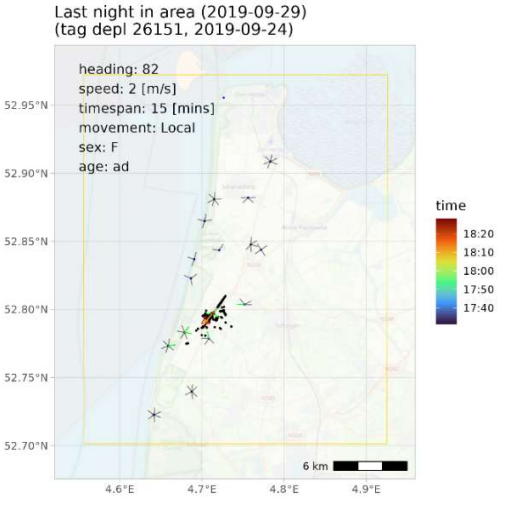

Last night in area (2019-09-21)
(tag depl 26147, 2019-09-21)
heading: 52
speed: 11 [m/s]
timespan: 7 [mins]
movement: Directional
sex: F
age: ad
time
21:00
20:00
19:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

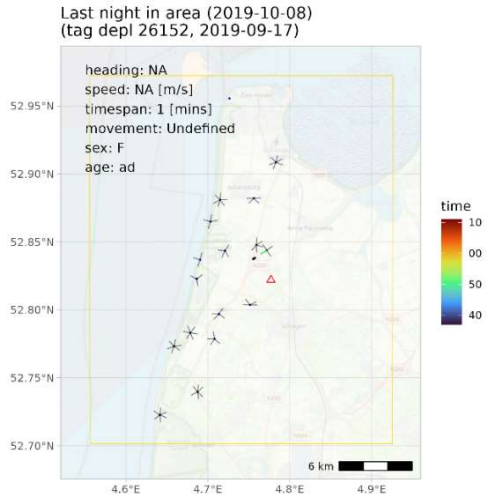

Track until 2019-10-05
(tag depl 26147)
time
Sep 30
Sep 23
latitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
3 km
longitude

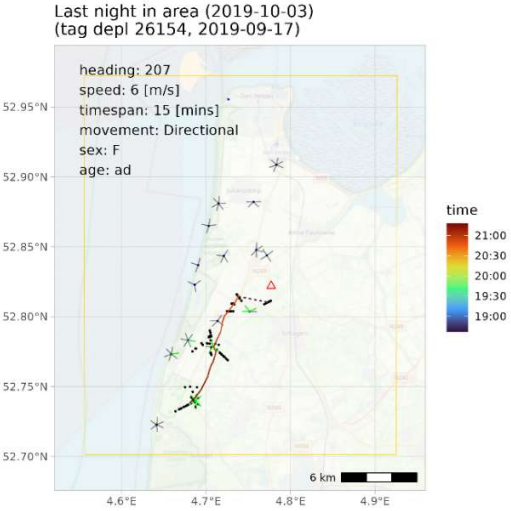

Last night in area (2019-10-08)
(tag depl 26148, 2019-09-21)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
23:00
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

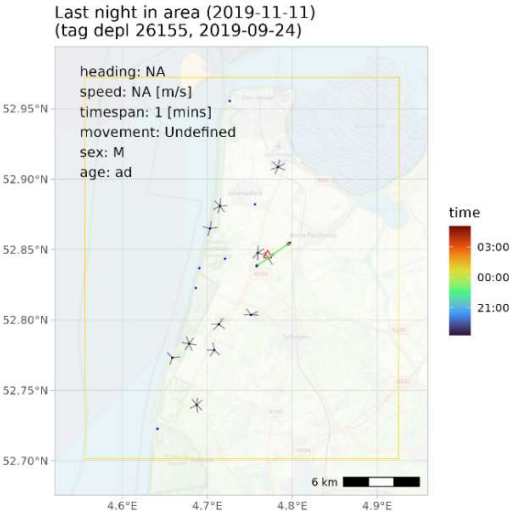

Last night in area (2019-10-05)
(tag depl 26149, 2019-09-24)
heading: 45
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
20:00
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

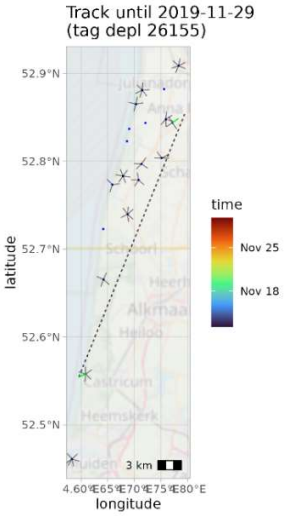

Last night in area (2019-09-23)
(tag depl 26150, 2019-09-21)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

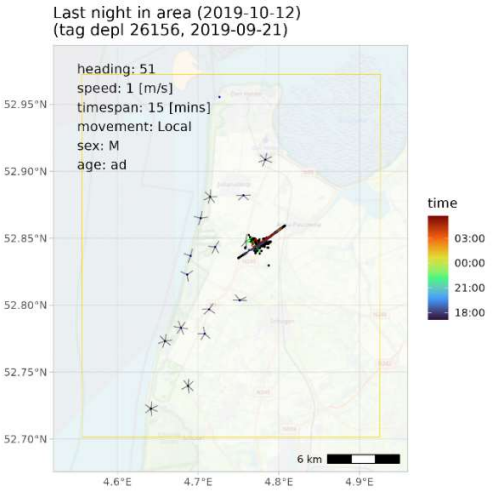

Last night in area (2019-09-29)
(tag depl 26151, 2019-09-24)
heading: 82
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
18:20
18:10
18:00
17:50
17:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

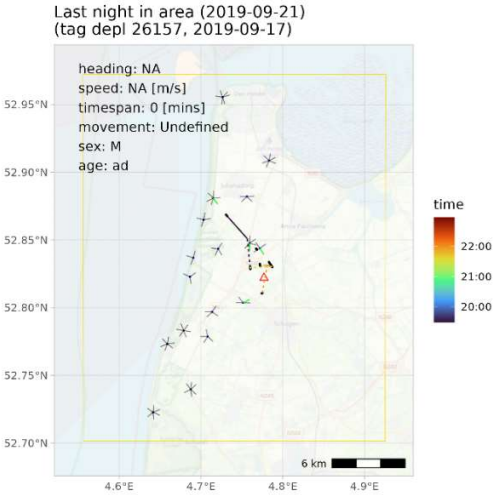

Last night in area (2019-10-08)
(tag depl 26152, 2019-09-17)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
10
00
50
40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

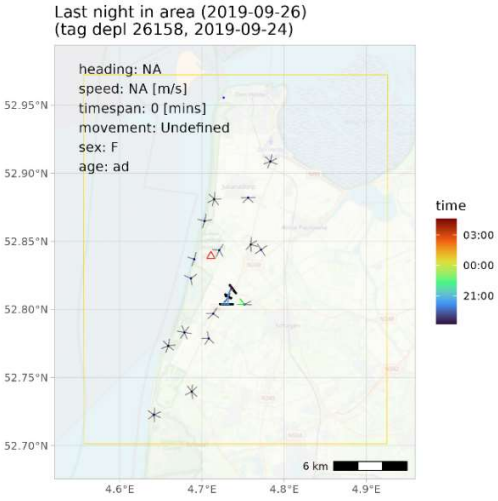

Last night in area (2019-10-03)
(tag depl 26154, 2019-09-17)
heading: 207
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
21:00
20:30
20:00
19:30
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

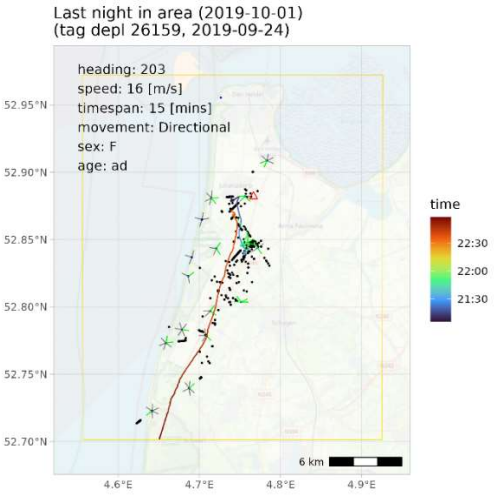

Last night in area (2019-11-11)
(tag depl 26155, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

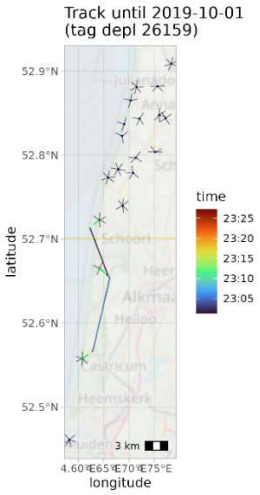

Track until 2019-11-29
(tag depl 26155)
time
Nov 25
Nov 18
latitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
3 km
4.60°E
4.65°E
4.70°E
4.75°E
4.80°E
longitude

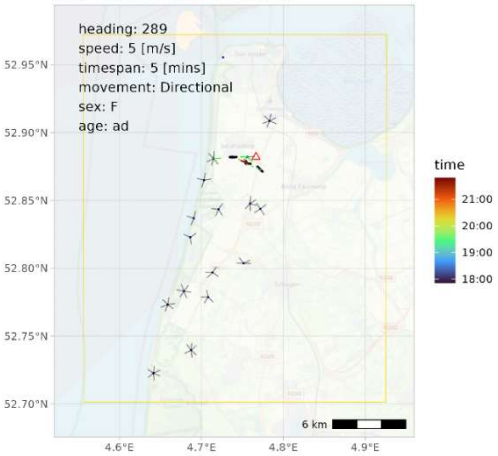

Last night in area (2019-10-12)
(tag depl 26156, 2019-09-21)
heading: 51
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

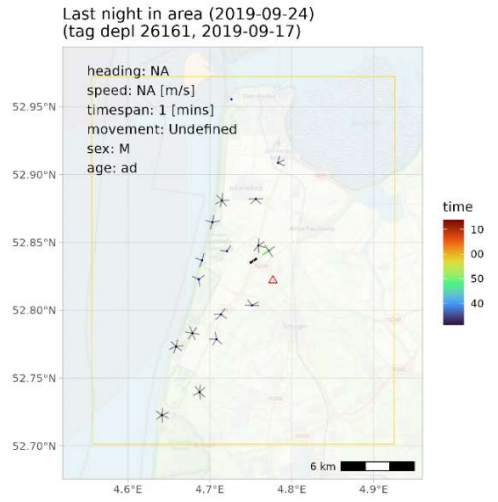

Last night in area (2019-09-21)
(tag depl 26157, 2019-09-17)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

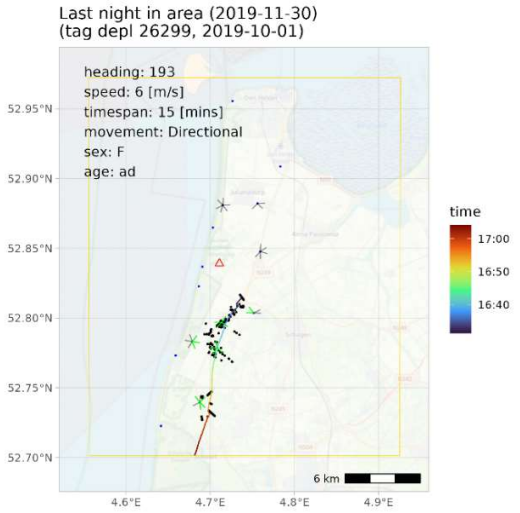

Last night in area (2019-09-26)
(tag depl 26158, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

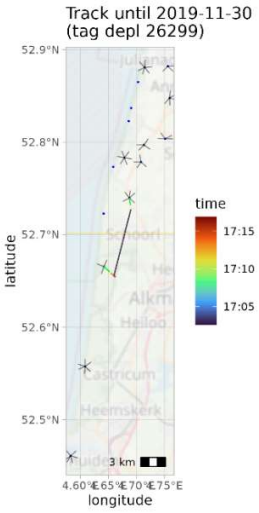

Last night in area (2019-10-01)
(tag depl 26159, 2019-09-24)
heading: 203
speed: 16 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
22:30
22:00
21:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

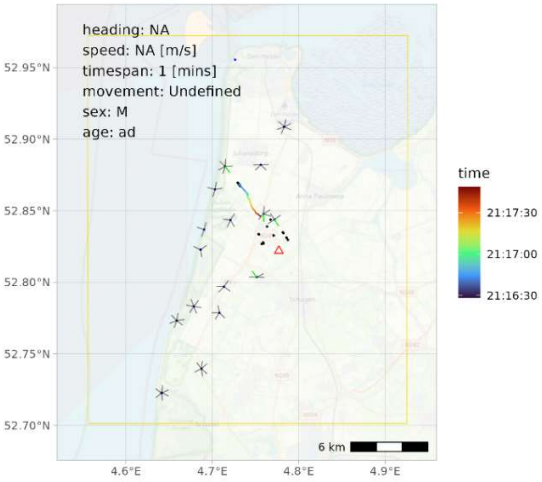

Track until 2019-10-01
(tag depl 26159)
time
23:25
23:20
23:15
23:10
23:05
3 km
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
4.60°E
4.65°E
4.70°E
4.75°E
longitude

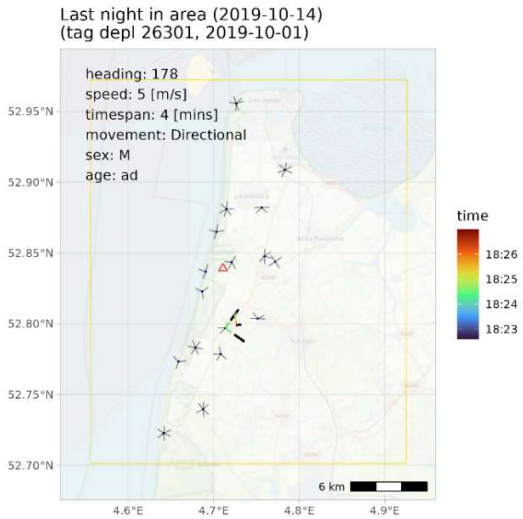

Last night in area (2019-09-30)
(tag depl 26160, 2019-09-21)
heading: 289
speed: 5 [m/s]
timespan: 5 [mins]
movement: Directional
sex: F
age: ad
time
21:00
20:00
19:00
18:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

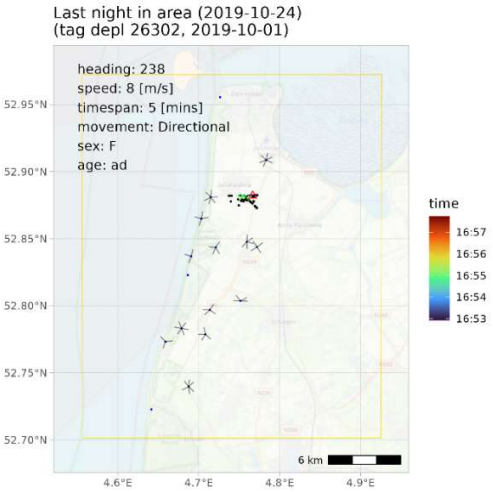

Last night in area (2019-09-24)
(tag depl 26161, 2019-09-17)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
10
00
50
40
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

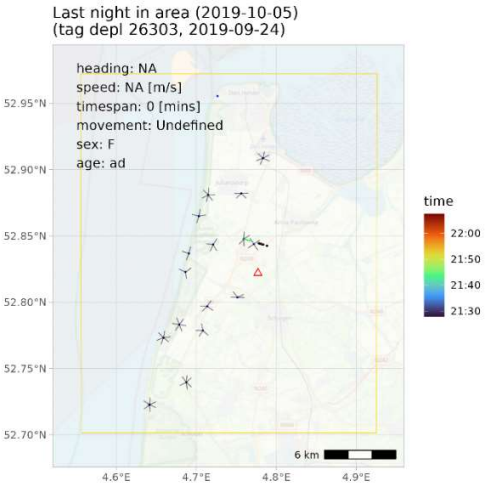

Last night in area (2019-11-30)
(tag depl 26299, 2019-10-01)
heading: 193
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:00
16:50
16:40
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

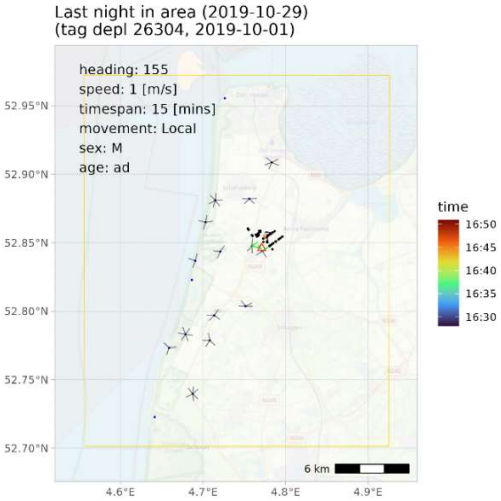

Track until 2019-11-30
(tag depl 26299)
time
17:15
17:10
17:05
3 km
latitude
longitude
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
4.60°E
4.65°E
4.70°E
4.75°E

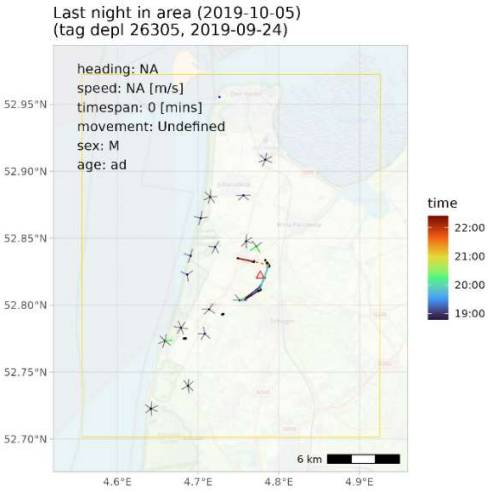

Last night in area (2019-10-01)
(tag depl 26300, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
21:17:30
21:17:00
21:16:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

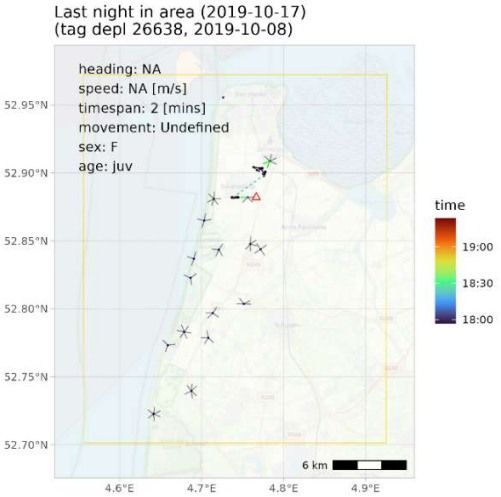

Last night in area (2019-10-14)
(tag depl 26301, 2019-10-01)
heading: 178
speed: 5 [m/s]
timespan: 4 [mins]
movement: Directional
sex: M
age: ad
time
18:26
18:25
18:24
18:23
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

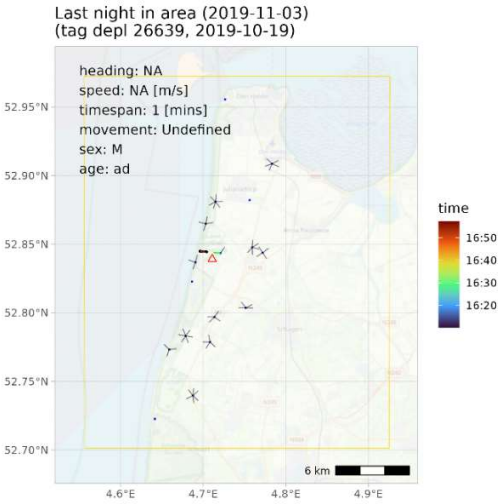

Last night in area (2019-10-24)
(tag depl 26302, 2019-10-01)
heading: 238
speed: 8 [m/s]
timespan: 5 [mins]
movement: Directional
sex: F
age: ad
time
16:57
16:56
16:55
16:54
16:53
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

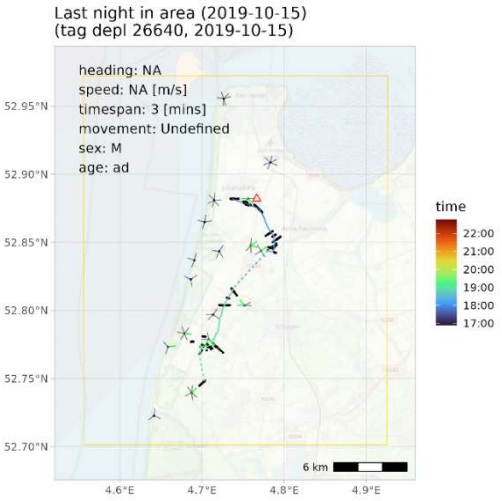

Last night in area (2019-10-05)
(tag depl 26303, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
22:00
21:50
21:40
21:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

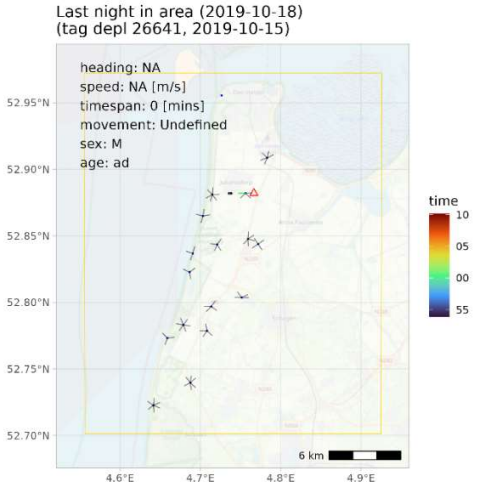

Last night in area (2019-10-29)
(tag depl 26304, 2019-10-01)
heading: 155
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
16:50
16:45
16:40
16:35
16:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

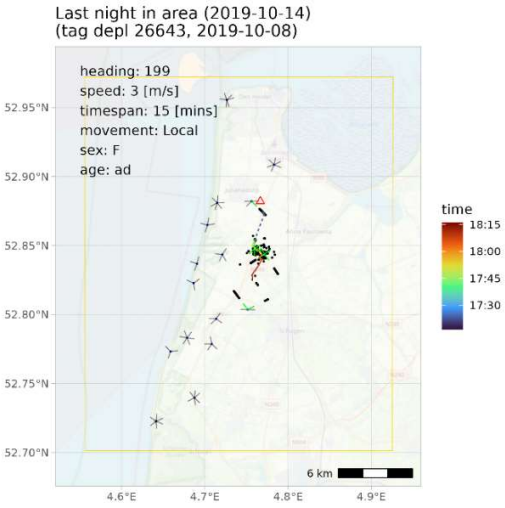

Last night in area (2019-10-05)
(tag depl 26305, 2019-09-24)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

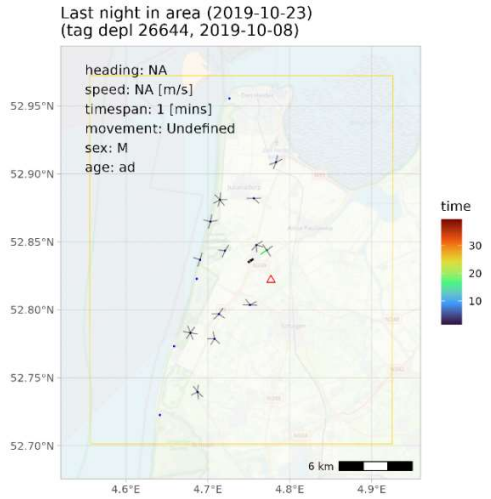

Last night in area (2019-10-17)
(tag depl 26638, 2019-10-08)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: juv
time
19:00
18:30
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

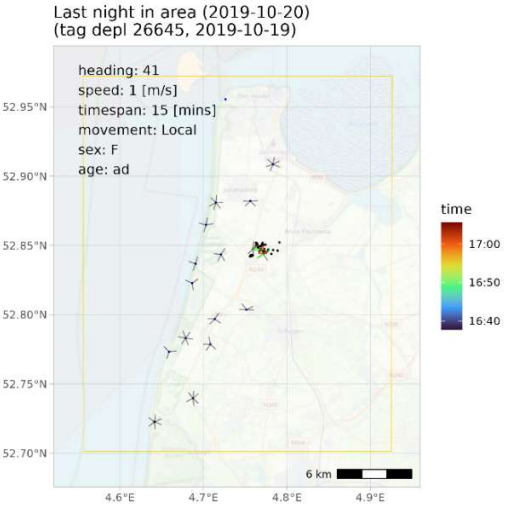

Last night in area (2019-11-03)
(tag depl 26639, 2019-10-19)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
16:50
16:40
16:30
16:20
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

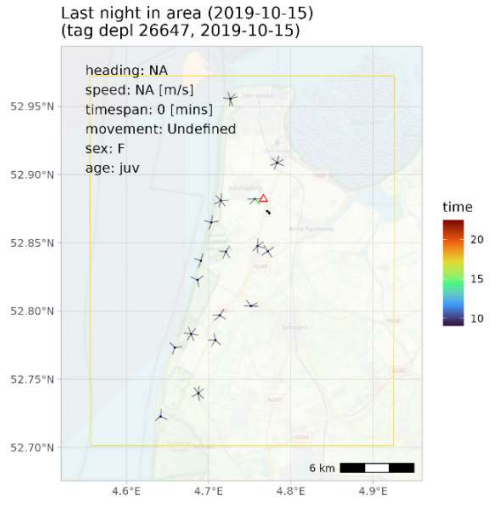

Last night in area (2019-10-15)
(tag depl 26640, 2019-10-15)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
19:00
18:00
17:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

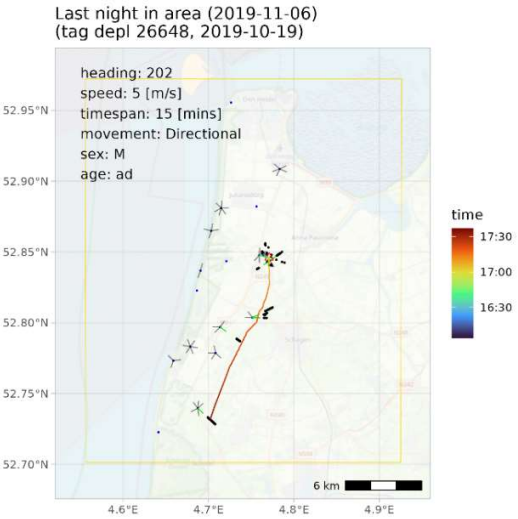

Last night in area (2019-10-18)
(tag depl 26641, 2019-10-15)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
10
05
00
55
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

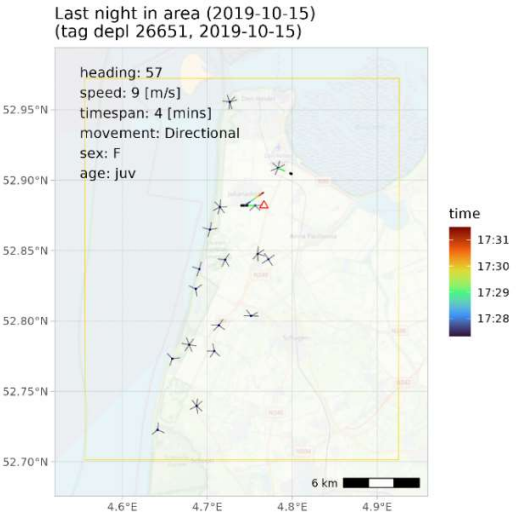

Last night in area (2019-10-14)
(tag depl 26643, 2019-10-08)
heading: 199
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
18:15
18:00
17:45
17:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

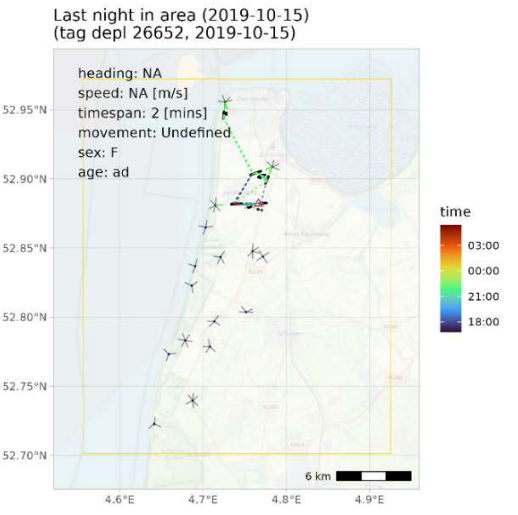

Last night in area (2019-10-23)
(tag depl 26644, 2019-10-08)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
30
20
10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

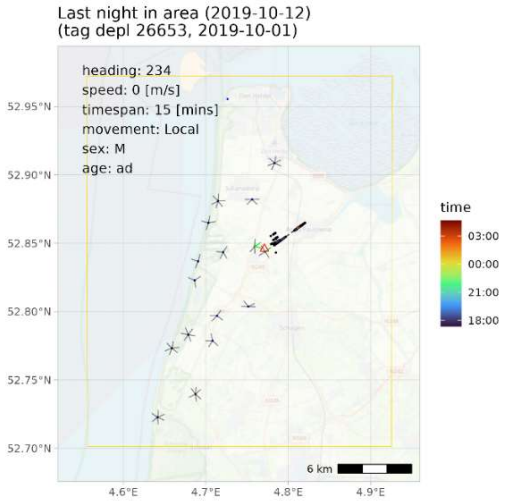

Last night in area (2019-10-20)
(tag depl 26645, 2019-10-19)
heading: 41
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
17:00
16:50
16:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

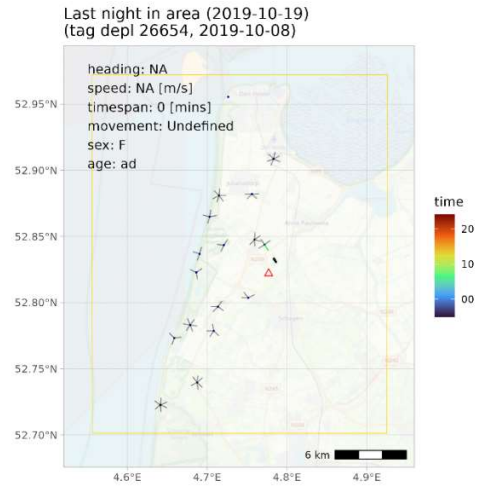

Last night in area (2019-10-15)
(tag depl 26647, 2019-10-15)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: juv
time
20
15
10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

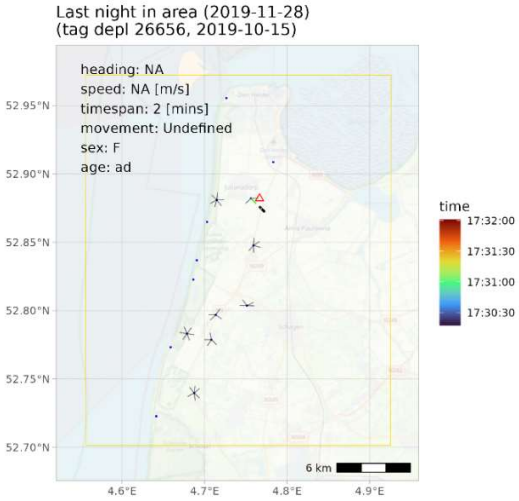

Last night in area (2019-11-06)
(tag depl 26648, 2019-10-19)
heading: 202
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
17:30
17:00
16:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

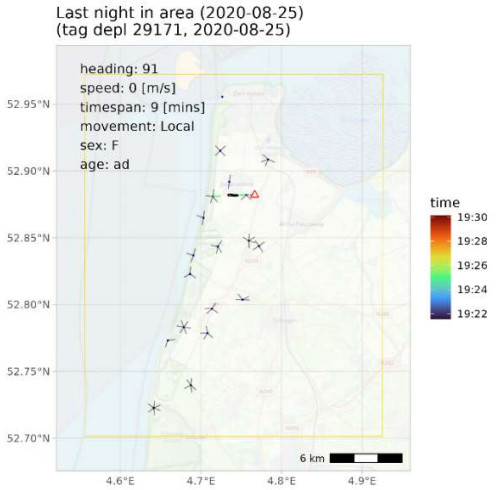

Last night in area (2019-10-15)
(tag depl 26651, 2019-10-15)
heading: 57
speed: 9 [m/s]
timespan: 4 [mins]
movement: Directional
sex: F
age: juv
time
17:31
17:30
17:29
17:28
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

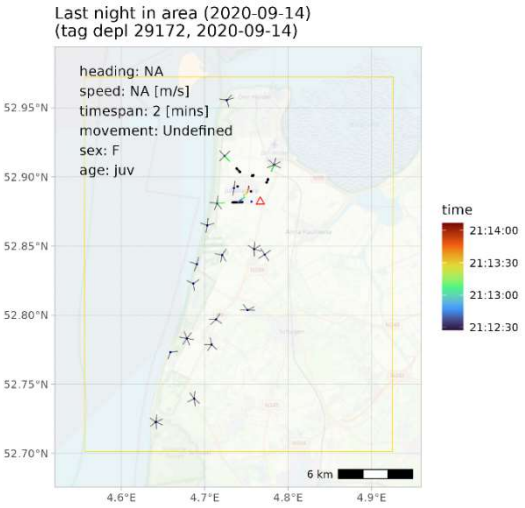

Last night in area (2019-10-15)
(tag depl 26652, 2019-10-15)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

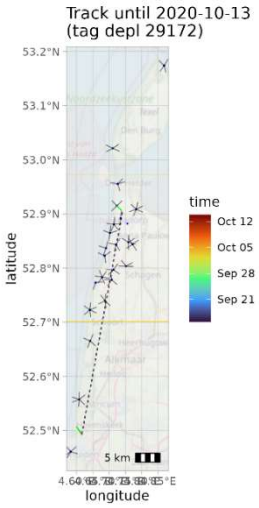

Last night in area (2019-10-12)
(tag depl 26653, 2019-10-01)
heading: 234
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

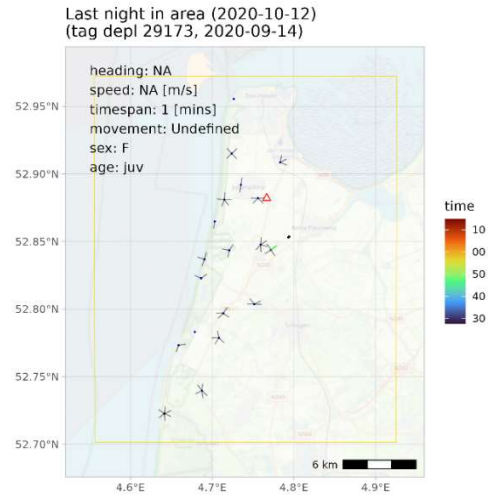

Last night in area (2019-10-19)
(tag depl 26654, 2019-10-08)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: ad
time
20
10
00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

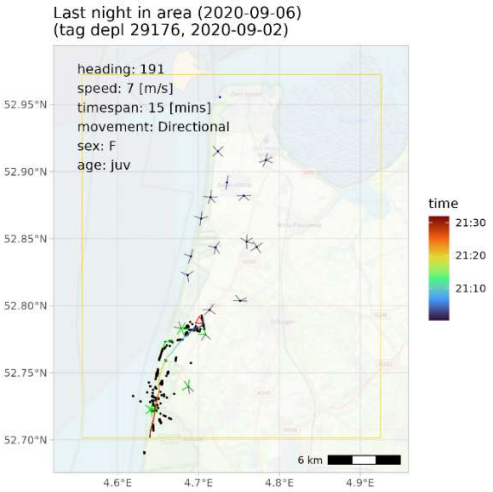

Last night in area (2019-11-28)
(tag depl 26656, 2019-10-15)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: ad
time
17:32:00
17:31:30
17:31:00
17:30:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

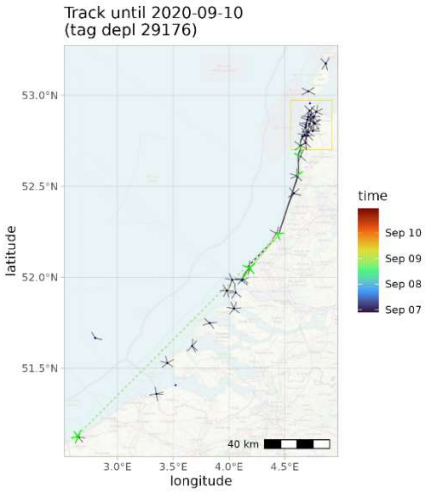

Last night in area (2020-08-25)
(tag depl 29171, 2020-08-25)
heading: 91
speed: 0 [m/s]
timespan: 9 [mins]
movement: Local
sex: F
age: ad
time
19:30
19:28
19:26
19:24
19:22
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

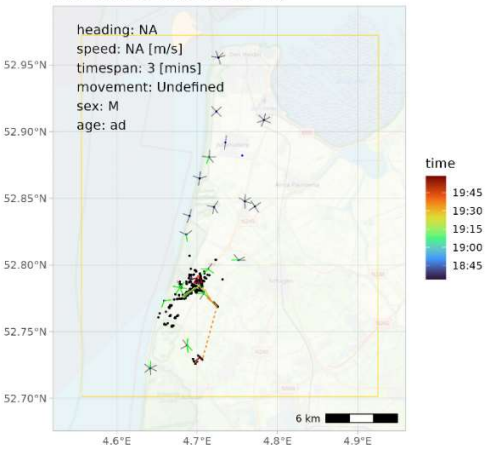

Last night in area (2020-09-14)
(tag depl 29172, 2020-09-14)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: juv
time
21:14:00
21:13:30
21:13:00
21:12:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

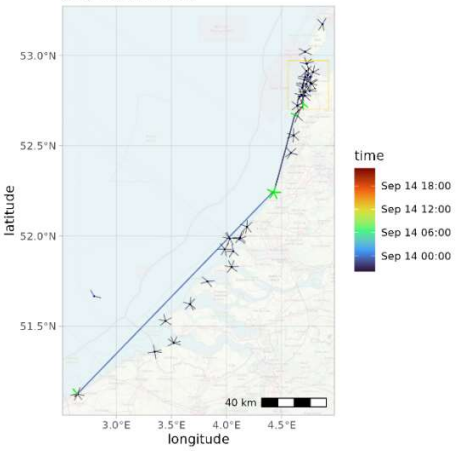

Track until 2020-10-13
(tag depl 29172)
time
Oct 12
Oct 05
Sep 28
Sep 21
latitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
5 km
longitude

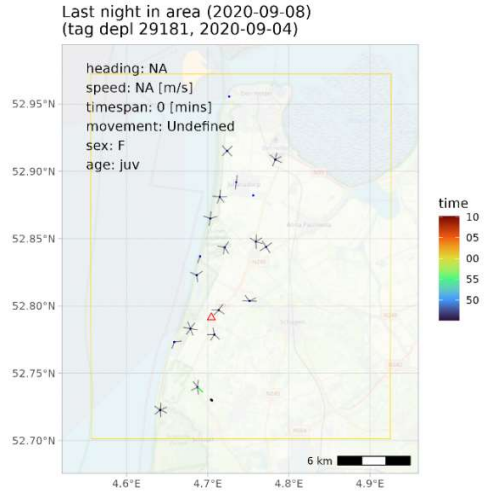

Last night in area (2020-10-12)
(tag depl 29173, 2020-09-14)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: juv
time
10
00
50
40
30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

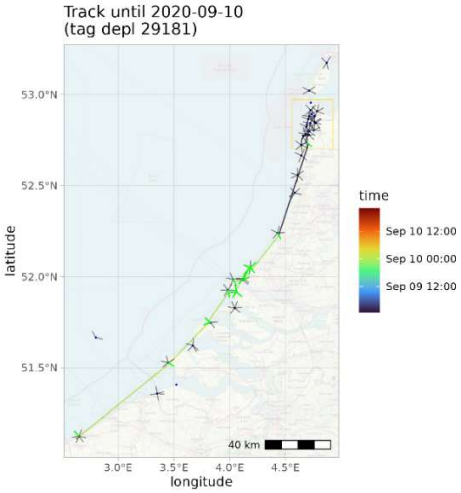

Last night in area (2020-09-06)
(tag depl 29176, 2020-09-02)
heading: 191
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
21:30
21:20
21:10
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

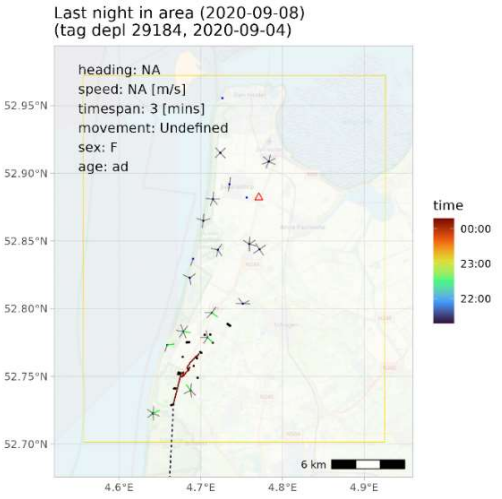

Track until 2020-09-10
(tag depl 29176)
time
Sep 10
Sep 09
Sep 08
Sep 07
40 km
53.0°N
52.5°N
52.0°N
51.5°N
latitude
3.0°E
3.5°E
4.0°E
4.5°E
longitude

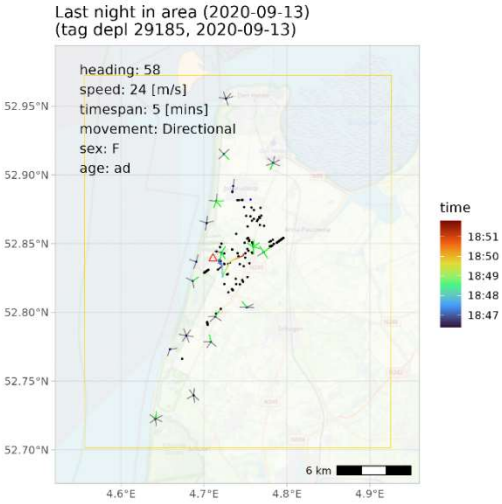

Last night in area (2020-09-13)
(tag depl 29179, 2020-09-13)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
19:45
19:30
19:15
19:00
18:45
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

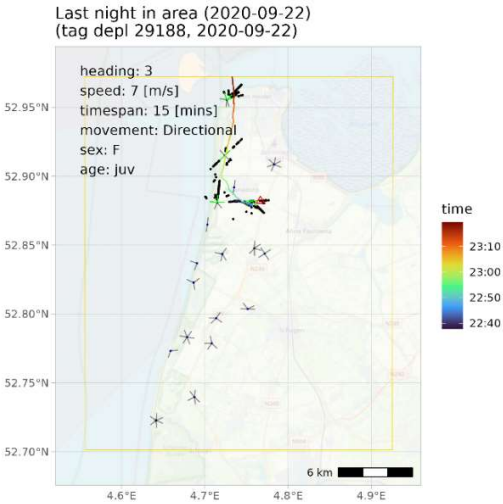

Track until 2020-09-14
(tag depl 29179)
time
Sep 14 18:00
Sep 14 12:00
Sep 14 06:00
Sep 14 00:00
40 km
53.0°N
52.5°N
52.0°N
51.5°N
latitude
3.0°E
3.5°E
4.0°E
4.5°E
longitude

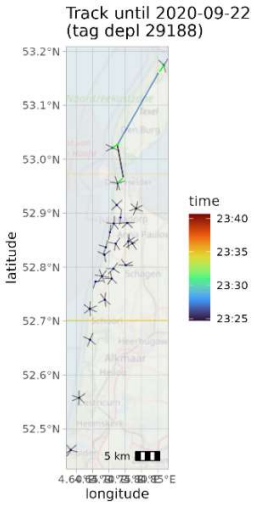

Last night in area (2020-09-08)
(tag depl 29181, 2020-09-04)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: juv
time
10
05
00
55
50
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2020-09-10
(tag depl 29181)
time
Sep 10 12:00
Sep 10 00:00
Sep 09 12:00
40 km
53.0°N
52.5°N
52.0°N
51.5°N
latitude
3.0°E
3.5°E
4.0°E
4.5°E
longitude

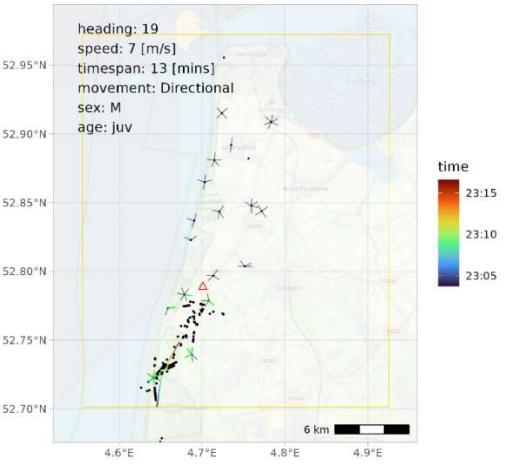

Last night in area (2020-09-08)
(tag depl 29184, 2020-09-04)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: F
age: ad
time
00:00
23:00
22:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2020-09-13)
(tag depl 29185, 2020-09-13)
heading: 58
speed: 24 [m/s]
timespan: 5 [mins]
movement: Directional
sex: F
age: ad
time
18:51
18:50
18:49
18:48
18:47
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

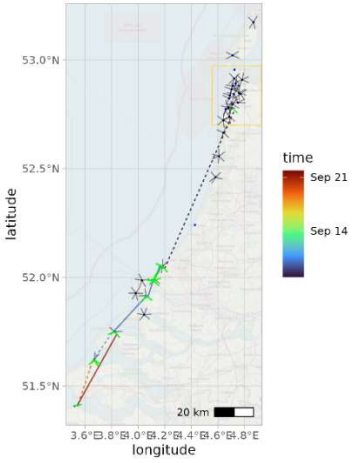

Last night in area (2020-09-22)
(tag depl 29188, 2020-09-22)
heading: 3
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
23:10
23:00
22:50
22:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2020-09-22
(tag depl 29188)
time
23:40
23:35
23:30
23:25
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
5 km
longitude

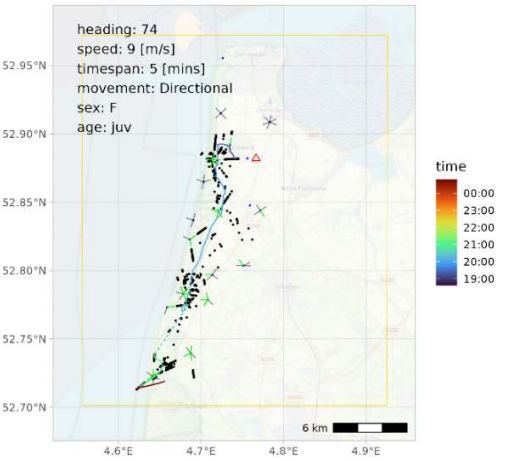
Last night in area (2020-09-07)
(tag depl 29191, 2020-09-02)



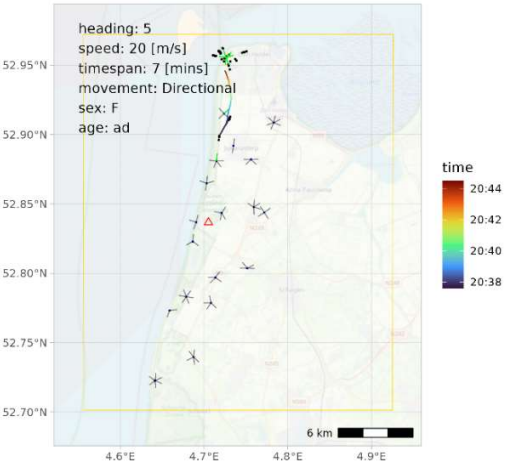
Track until 2020-09-21
(tag depl 29191)

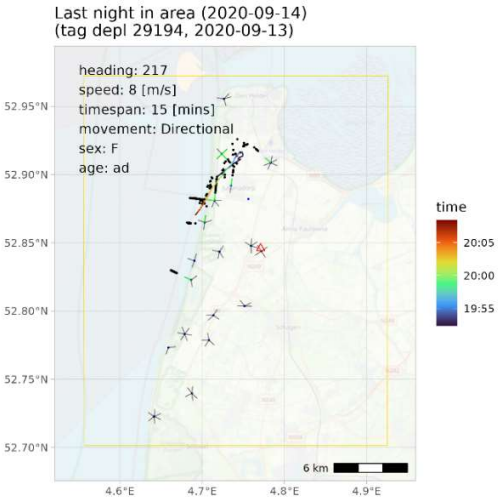


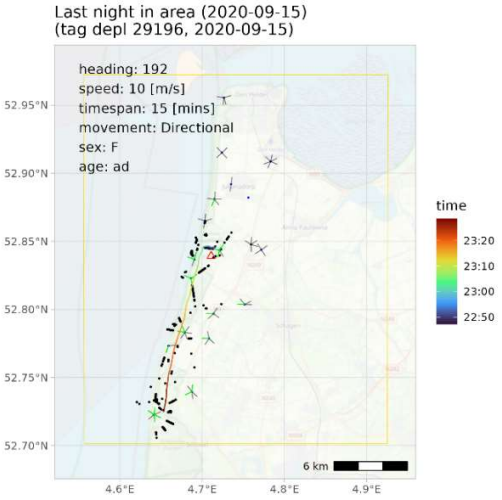
Last night in area (2020-09-16)
(tag depl 29192, 2020-09-11)

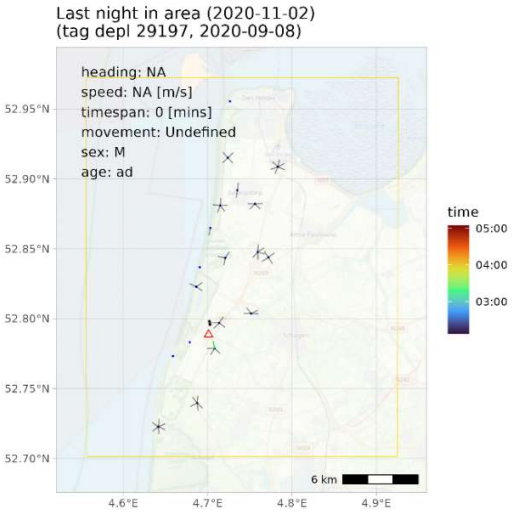


Last night in area (2020-09-02)
(tag depl 29193, 2020-09-01)

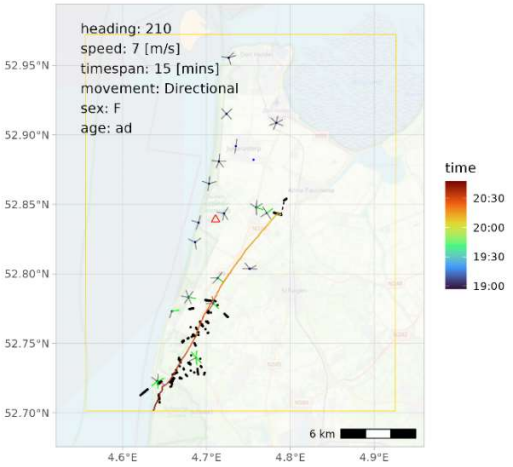



Last night in area (2020-09-14)
(tag depl 29194, 2020-09-13)
heading: 217
speed: 8 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
20:05
20:00
19:55
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

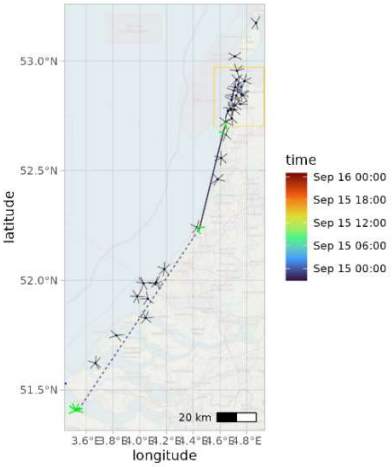

Last night in area (2020-09-15)
(tag depl 29196, 2020-09-15)
heading: 192
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
23:20
23:10
23:00
22:50
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2020-11-02)
(tag depl 29197, 2020-09-08)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
05:00
04:00
03:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

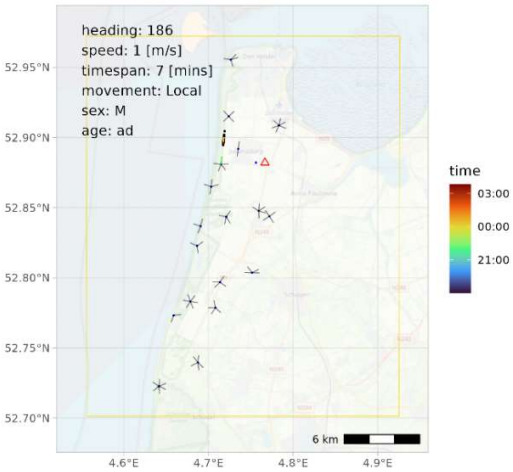
Last night in area (2020-09-14)
(tag depl 29201, 2020-09-13)



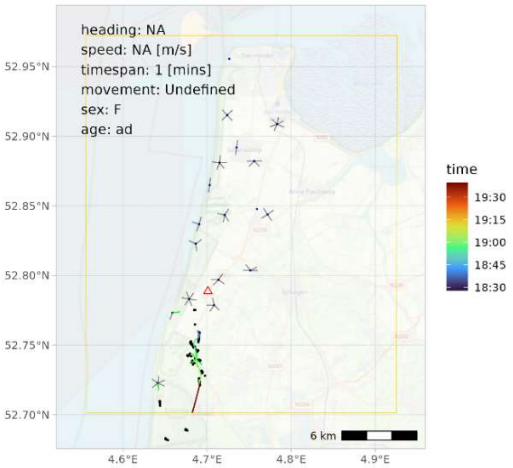
Track until 2020-09-15
(tag depl 29201)



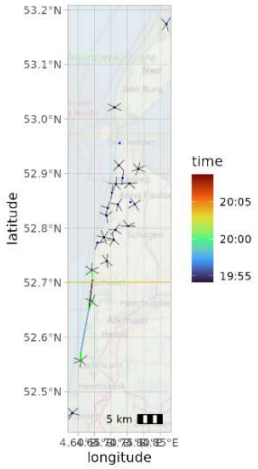
Last night in area (2020-09-14)
(tag depl 29202, 2020-09-11)

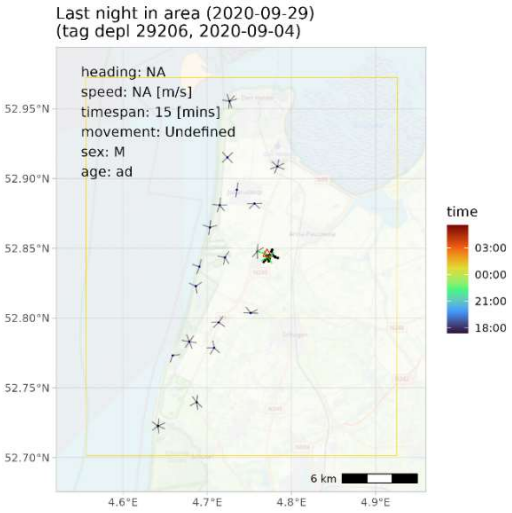


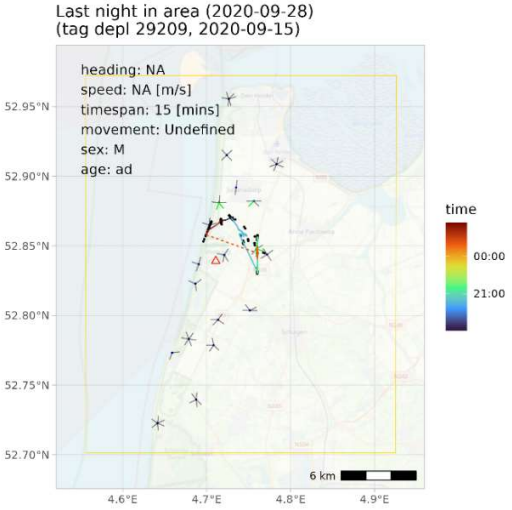
Last night in area (2020-09-20)
(tag depl 29205, 2020-09-16)

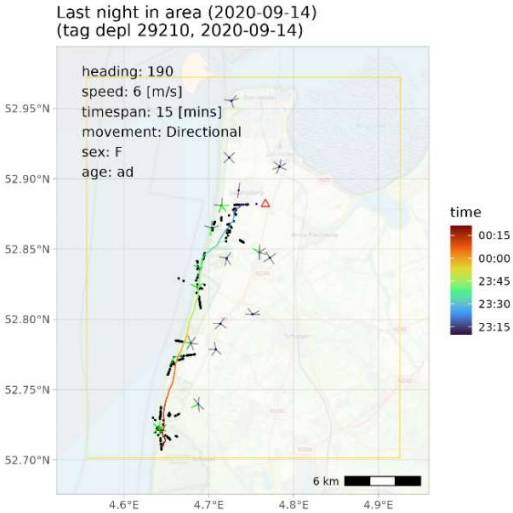


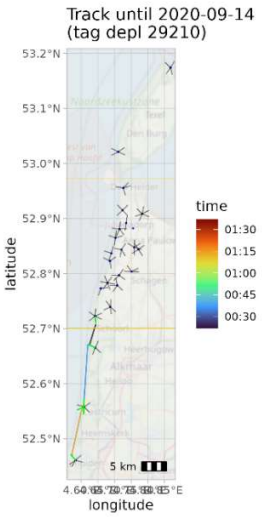
Track until 2020-09-20
(tag depl 29205)

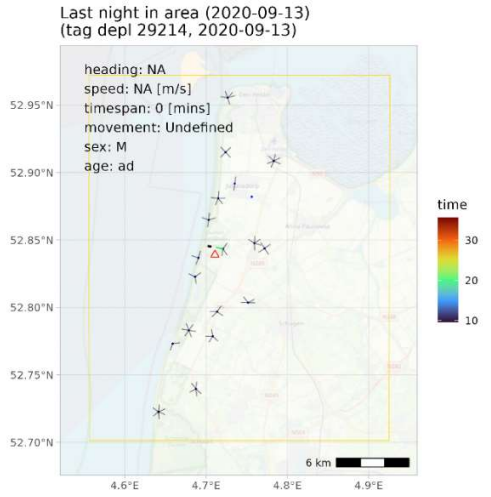


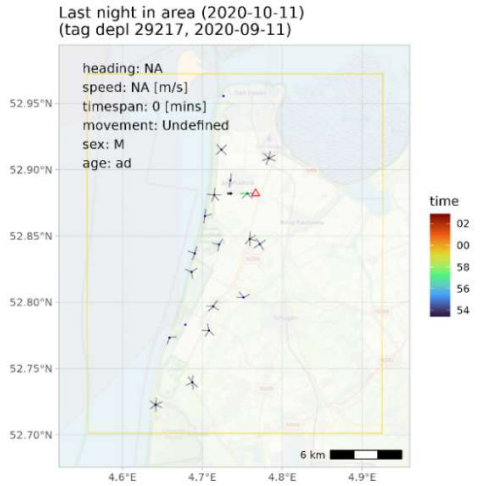

Last night in area (2020-09-29)
(tag depl 29206, 2020-09-04)
heading: NA
speed: NA [m/s]
timespan: 15 [mins]
movement: Undefined
sex: M
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

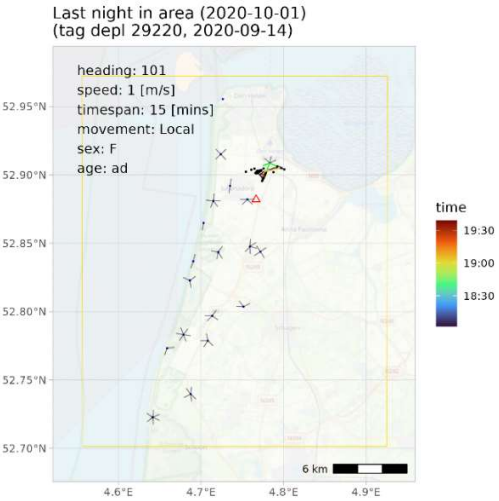

Last night in area (2020-09-28)
(tag depl 29209, 2020-09-15)
heading: NA
speed: NA [m/s]
timespan: 15 [mins]
movement: Undefined
sex: M
age: ad
time
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Last night in area (2020-09-14)
(tag depl 29210, 2020-09-14)
heading: 190
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
00:15
00:00
23:45
23:30
23:15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

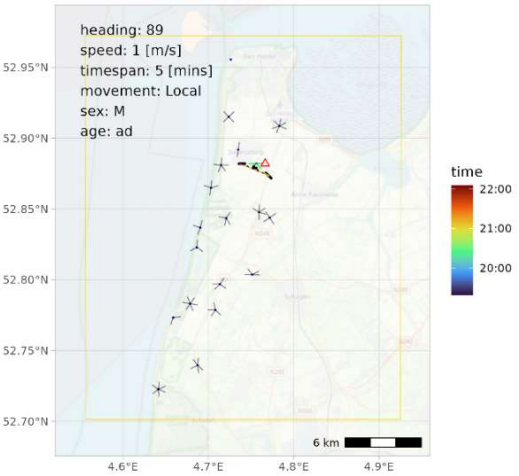

Track until 2020-09-14
(tag depl 29210)
time
01:30
01:15
01:00
00:45
00:30
latitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
5 km
longitude


Last night in area (2020-09-13)
(tag depl 29214, 2020-09-13)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
30
20
10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

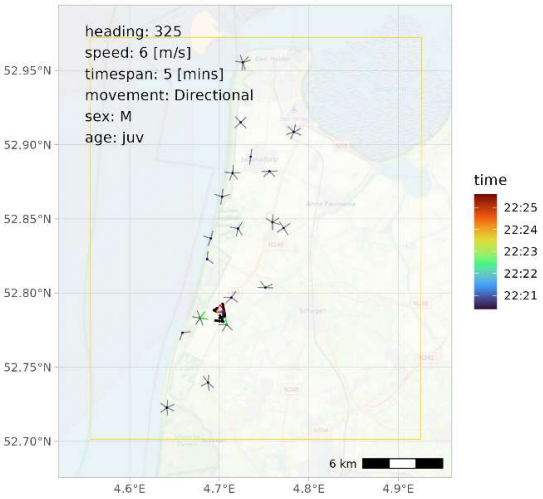

Last night in area (2020-10-11)
(tag depl 29217, 2020-09-11)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
02
00
58
56
54
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2020-10-01)
(tag depl 29220, 2020-09-14)
heading: 101
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

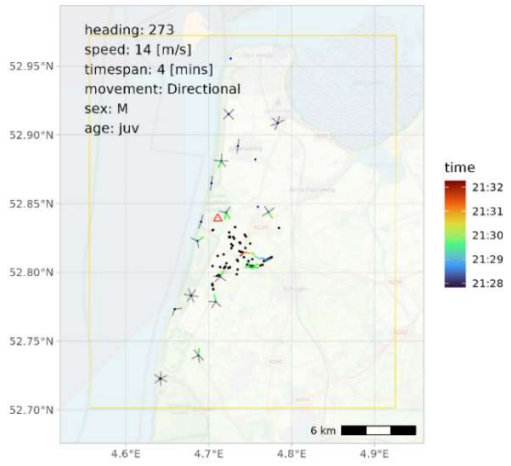
Last night in area (2020-08-30)
(tag depl 29226, 2020-08-25)

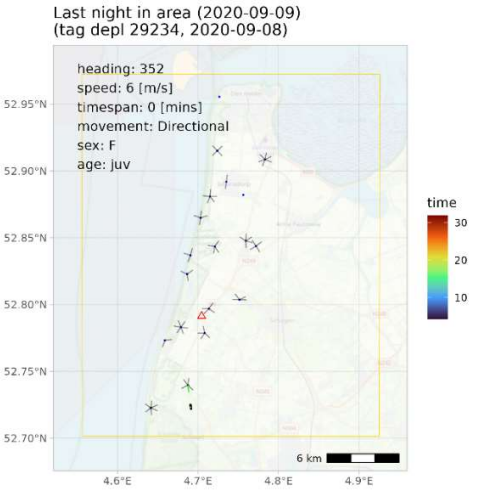


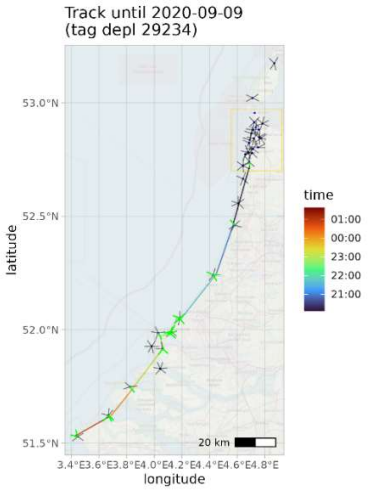
Last night in area (2020-09-02)
(tag depl 29228, 2020-09-02)



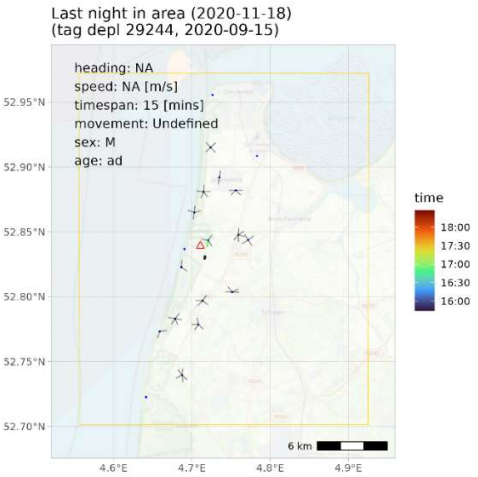
Last night in area (2020-09-19)
(tag depl 29231, 2020-09-15)

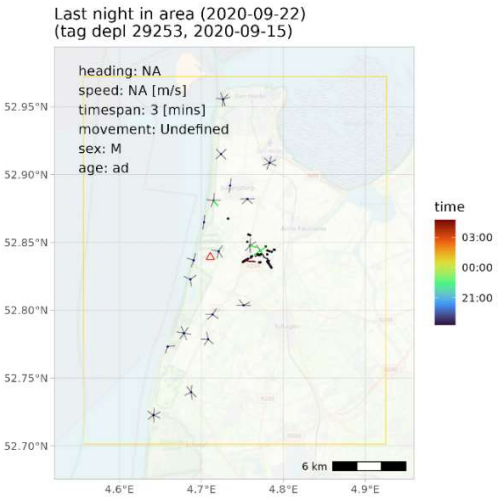


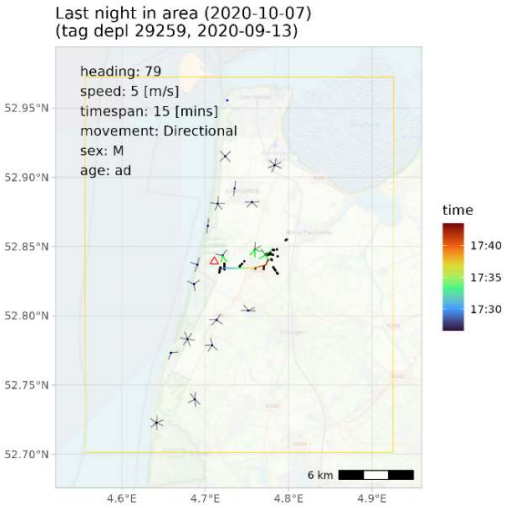


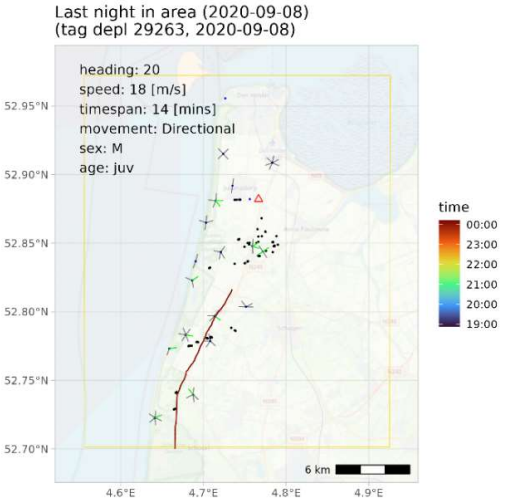


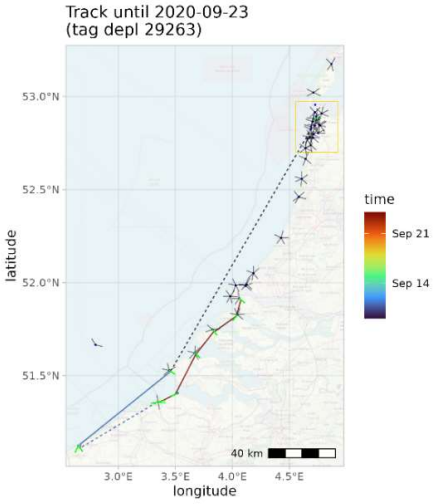
Despite the small timespan a departure from the study area. Note departure over sea at Westkapelle.

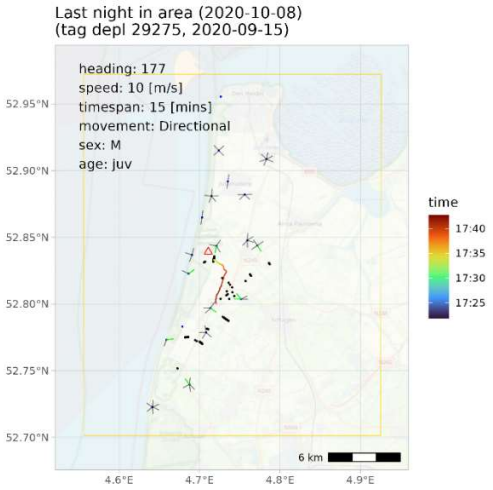


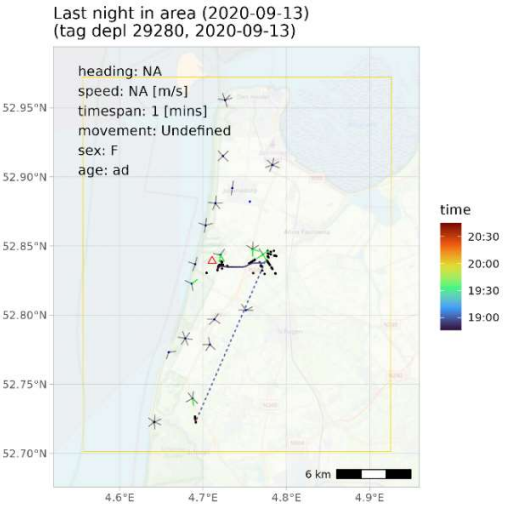


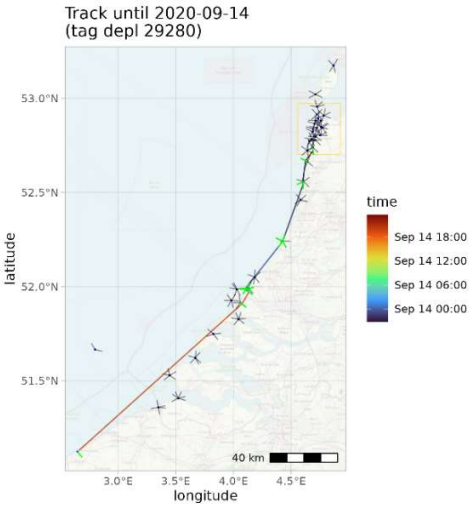

Last night in area (2020-10-07)
(tag depl 29259, 2020-09-13)
heading: 79
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
17:40
17:35
17:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

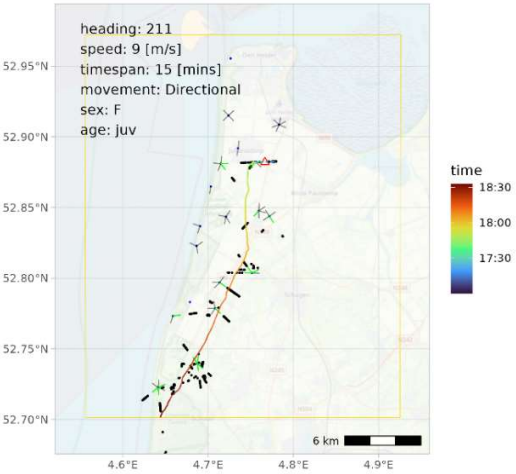

Last night in area (2020-09-08)
(tag depl 29263, 2020-09-08)
heading: 20
speed: 18 [m/s]
timespan: 14 [mins]
movement: Directional
sex: M
age: juv
time
00:00
23:00
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

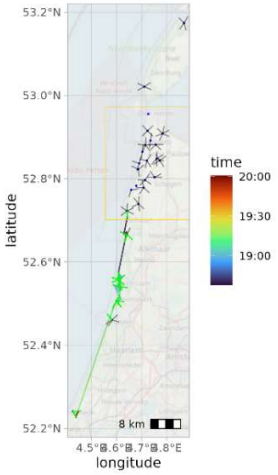

Track until 2020-09-23
(tag depl 29263)
time
Sep 21
Sep 14
53.0°N
52.5°N
52.0°N
51.5°N
latitude
3.0°E
3.5°E
4.0°E
4.5°E
longitude
40 km

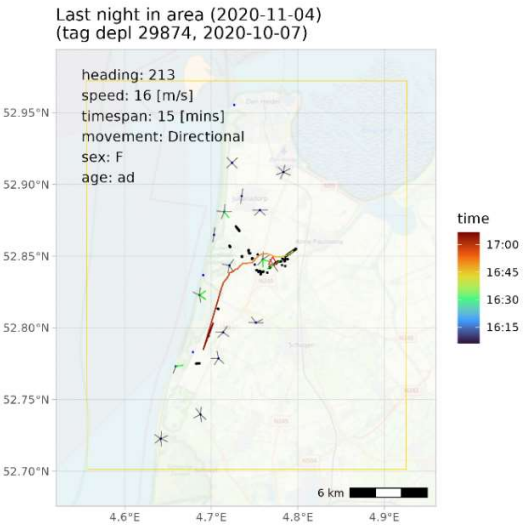

Last night in area (2020-10-08)
(tag depl 29275, 2020-09-15)
heading: 177
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
17:40
17:35
17:30
17:25
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

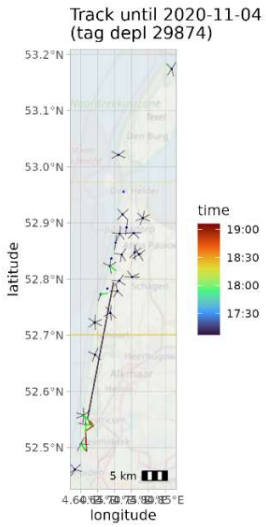

Last night in area (2020-09-13)
(tag depl 29280, 2020-09-13)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
20:30
20:00
19:30
19:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2020-09-14
(tag depl 29280)
time
Sep 14 18:00
Sep 14 12:00
Sep 14 06:00
Sep 14 00:00
40 km
latitude
longitude
53.0°N
52.5°N
52.0°N
51.5°N
3.0°E
3.5°E
4.0°E
4.5°E

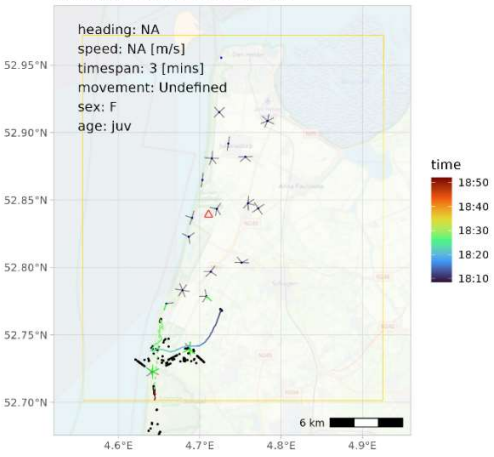

Last night in area (2020-10-10)
(tag depl 29294, 2020-09-11)
heading: 211
speed: 9 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
18:30
18:00
17:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2020-10-10
(tag depl 29294)
time
20:00
19:30
19:00
8 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N

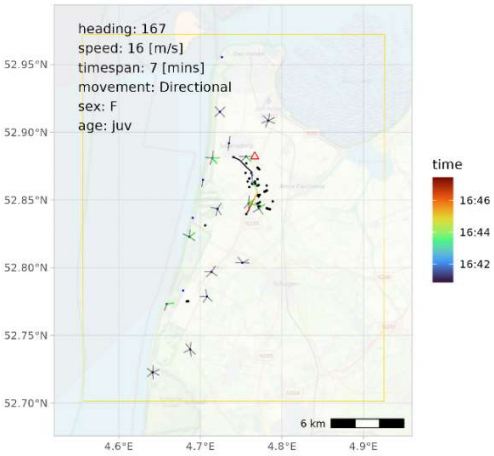

Last night in area (2020-11-04)
(tag depl 29874, 2020-10-07)
heading: 213
speed: 16 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:00
16:45
16:30
16:15
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2020-11-04
(tag depl 29874)
time
19:00
18:30
18:00
17:30
5 km
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N

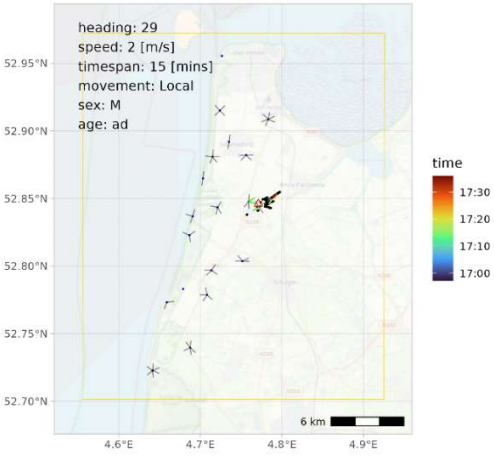
Last night in area (2020-10-02)
(tag depl 30072, 2020-09-29)



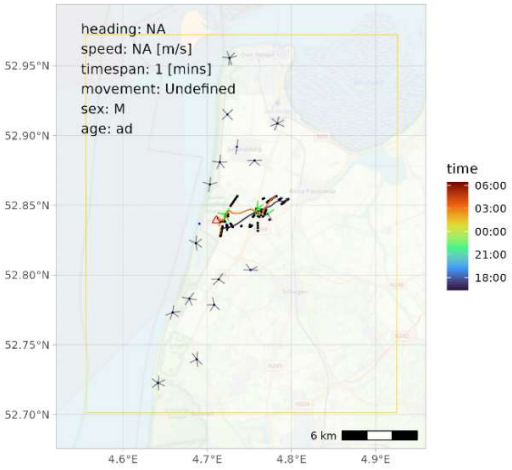
Last night in area (2020-11-04)
(tag depl 30076, 2020-09-29)



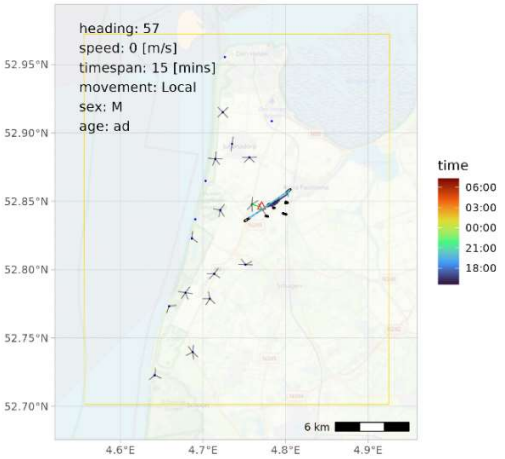
Last night in area (2020-10-17)
(tag depl 30078, 2020-10-07)



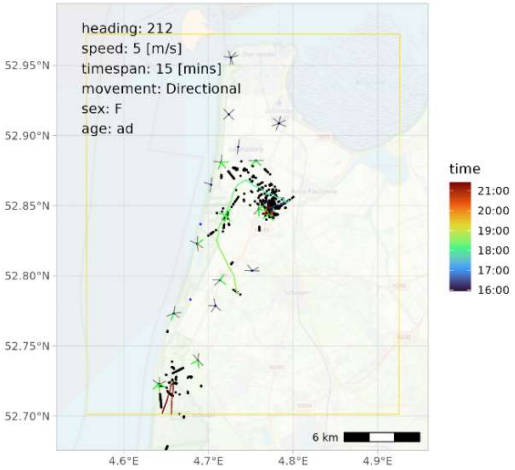
Last night in area (2020-11-11)
(tag depl 30084, 2020-10-06)



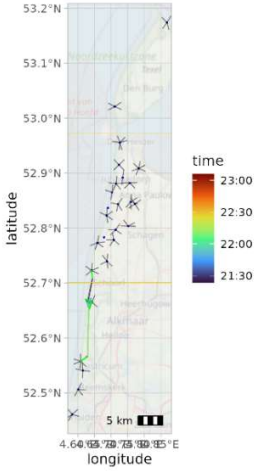
Last night in area (2020-11-26)
(tag depl 30085, 2020-10-07)



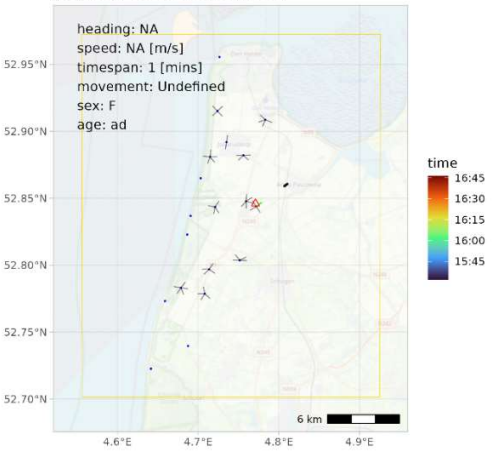
Last night in area (2020-11-09)
(tag depl 30086, 2020-10-07)



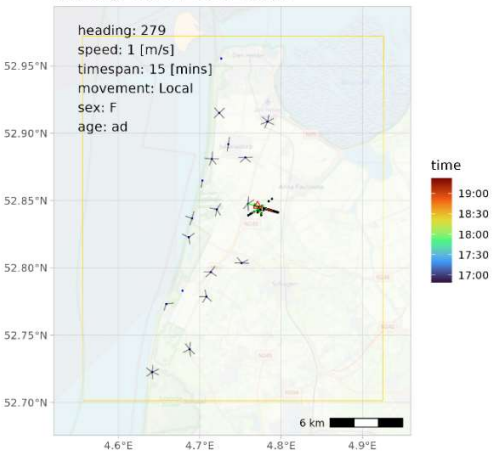
Track until 2020-11-09
(tag depl 30086)



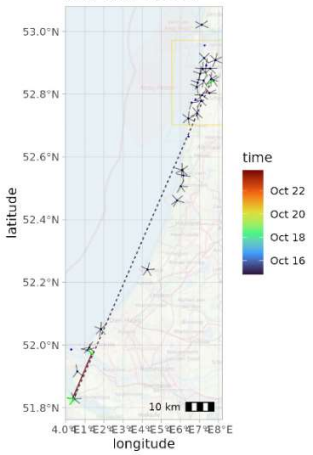
Last night in area (2020-12-03)
(tag depl 30087, 2020-10-13)



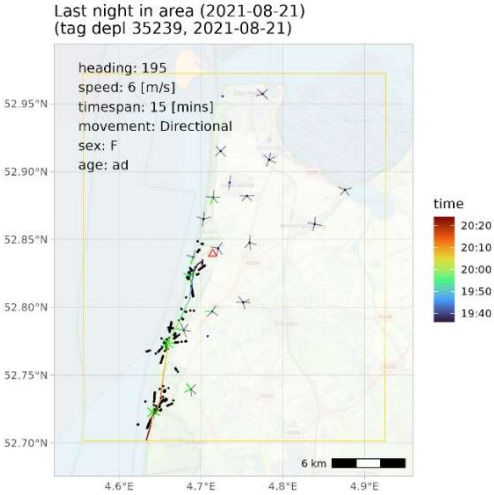
Last night in area (2020-10-14)
(tag depl 30088, 2020-10-07)



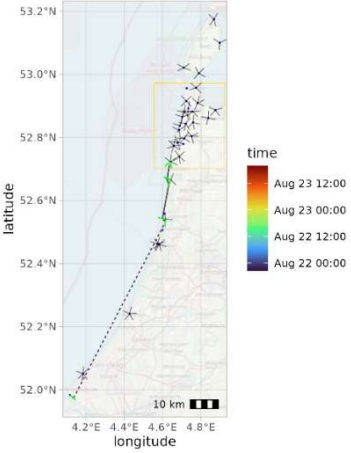
Track until 2020-10-23
(tag depl 30088)



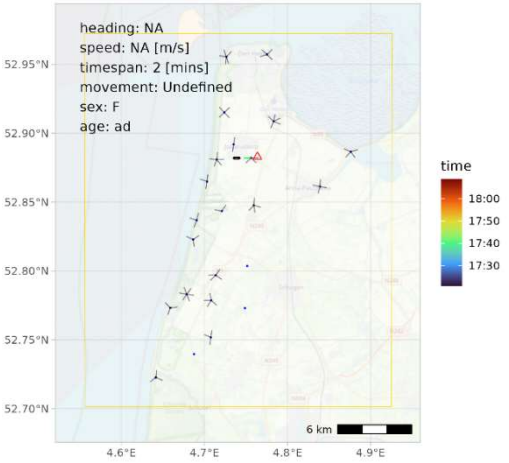
Last night in area (2021-08-21)
(tag depl 35239, 2021-08-21)



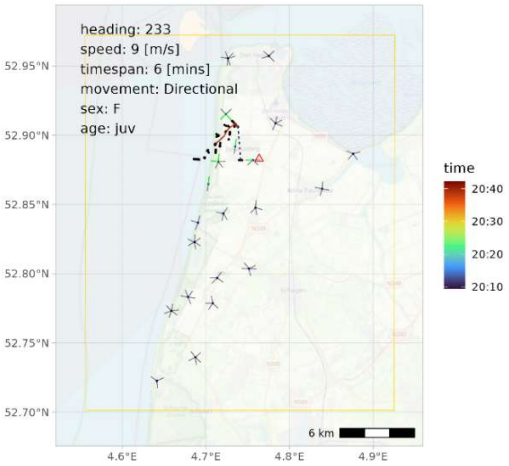
Track until 2021-08-23
(tag depl 35239)



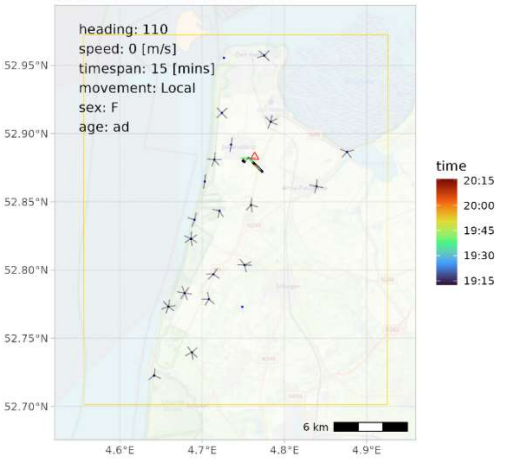
Last night in area (2021-10-26)
(tag depl 35240, 2021-09-08)

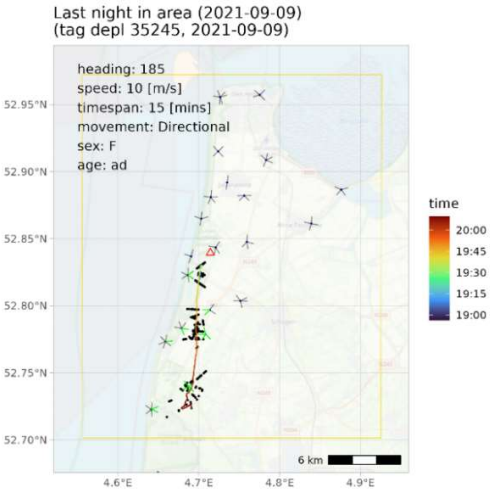


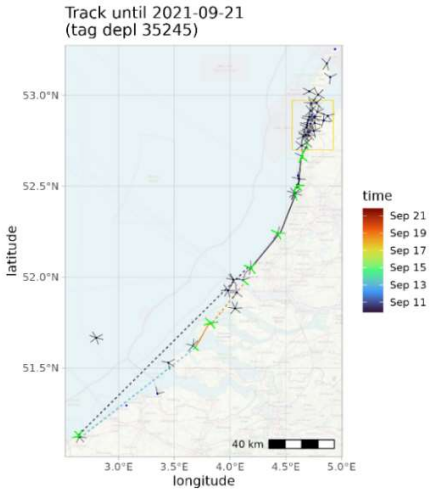
Last night in area (2021-09-08)
(tag depl 35243, 2021-09-08)

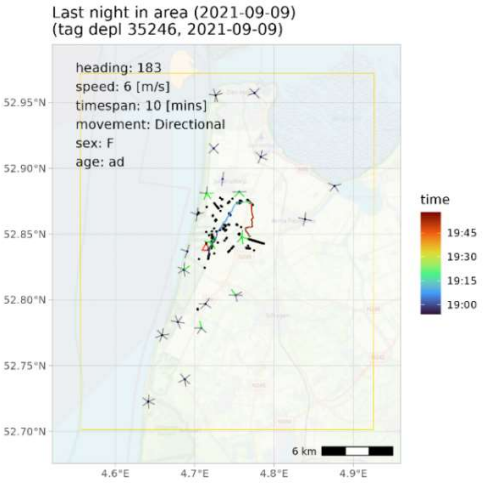


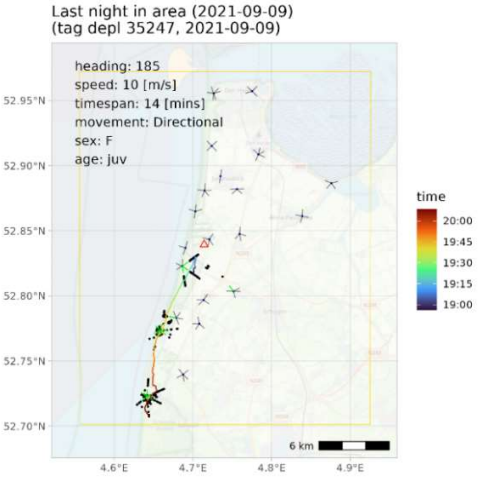
Last night in area (2021-09-22)
(tag depl 35244, 2021-09-08)

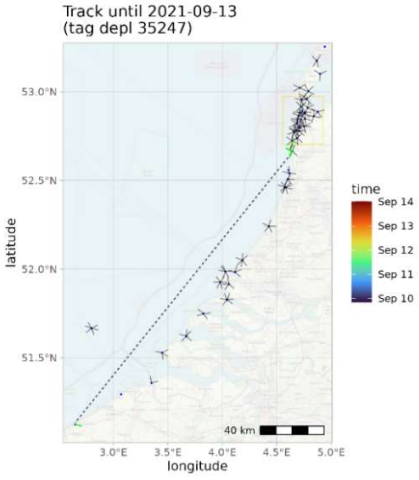


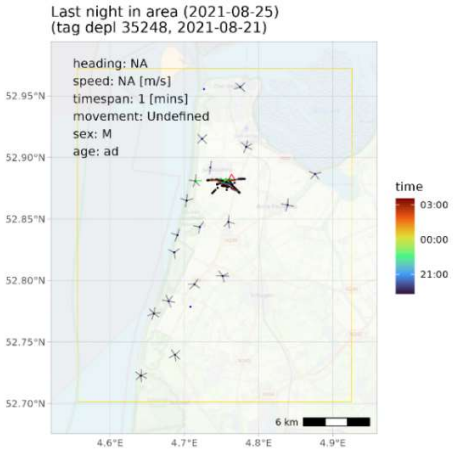

Last night in area (2021-09-09)
(tag depl 35245, 2021-09-09)
heading: 185
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
20:00
19:45
19:30
19:15
19:00
6 km

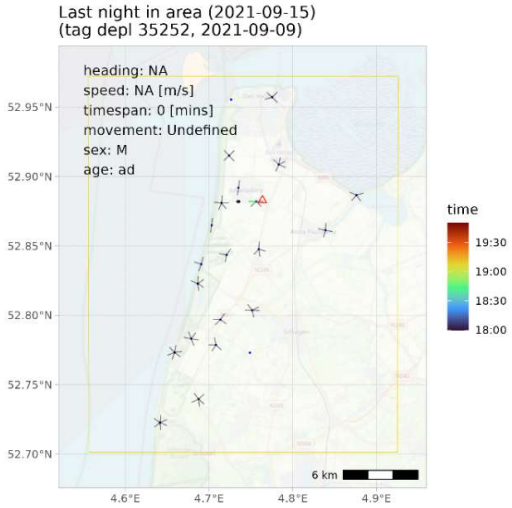

Track until 2021-09-21
(tag depl 35245)
time
Sep 21
Sep 19
Sep 17
Sep 15
Sep 13
Sep 11
40 km
latitude
longitude

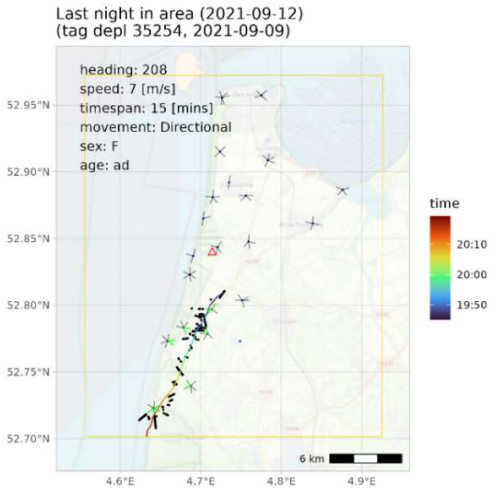

Last night in area (2021-09-09)
(tag depl 35246, 2021-09-09)
heading: 183
speed: 6 [m/s]
timespan: 10 [mins]
movement: Directional
sex: F
age: ad
time
19:45
19:30
19:15
19:00
6 km

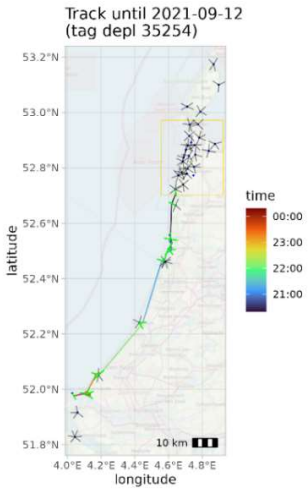

Last night in area (2021-09-09)
(tag depl 35247, 2021-09-09)
heading: 185
speed: 10 [m/s]
timespan: 14 [mins]
movement: Directional
sex: F
age: juv
time
20:00
19:45
19:30
19:15
19:00
6 km


Track until 2021-09-13
(tag depl 35247)
time
Sep 14
Sep 13
Sep 12
Sep 11
Sep 10
40 km
latitude
longitude

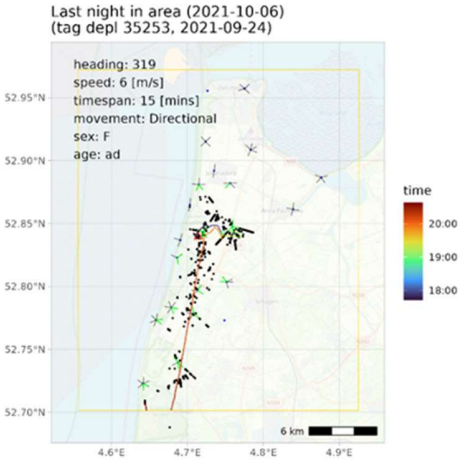


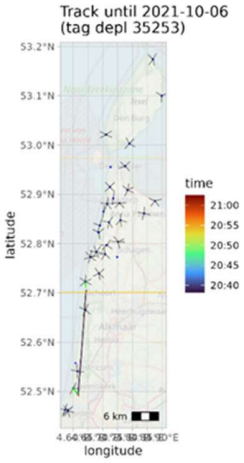


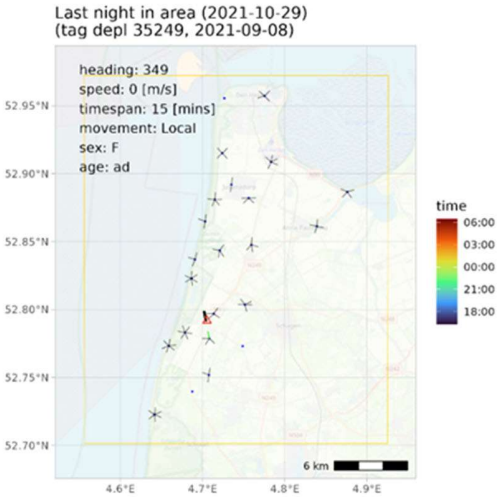


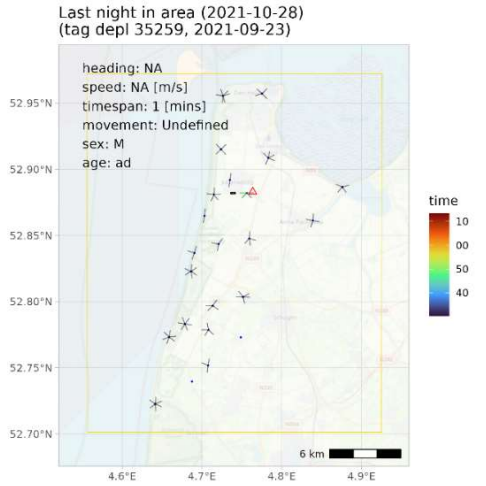


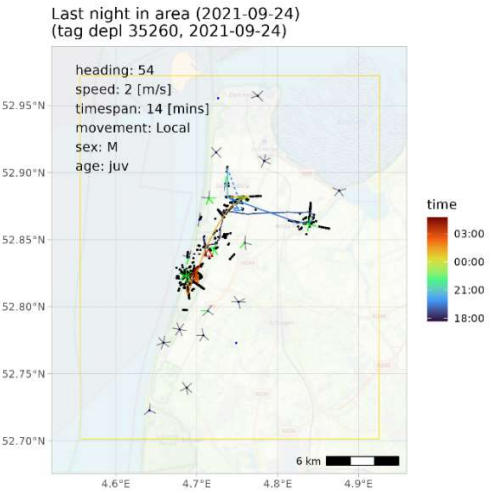
Note possible departure onto sea at the Maasvlakte.

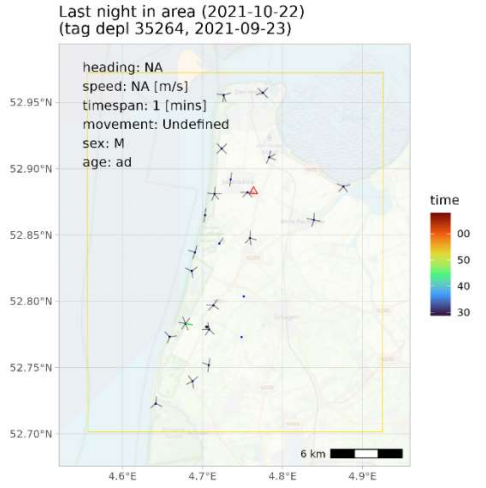

Last night in area (2021-10-06)
(tag depl 35253, 2021-09-24)
heading: 319
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
20:00
19:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

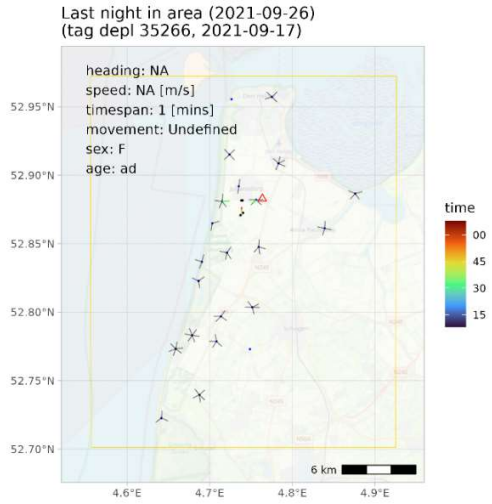

Track until 2021-10-06
(tag depl 35253)
time
21:00
20:55
20:50
20:45
20:40
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
6 km
longitude

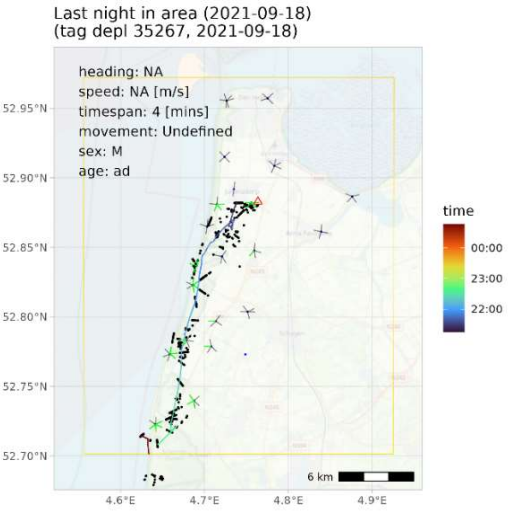

Last night in area (2021-10-29)
(tag depl 35249, 2021-09-08)
heading: 349
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
06:00
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

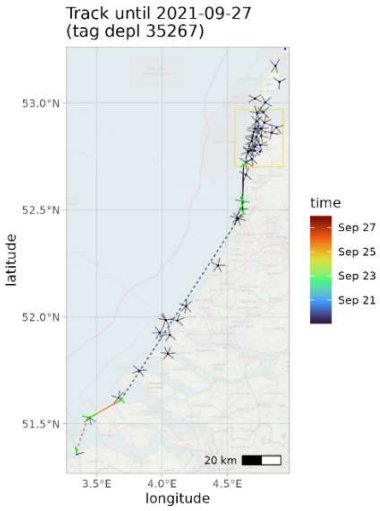

Last night in area (2021-10-28)
(tag depl 35259, 2021-09-23)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
10
00
50
40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

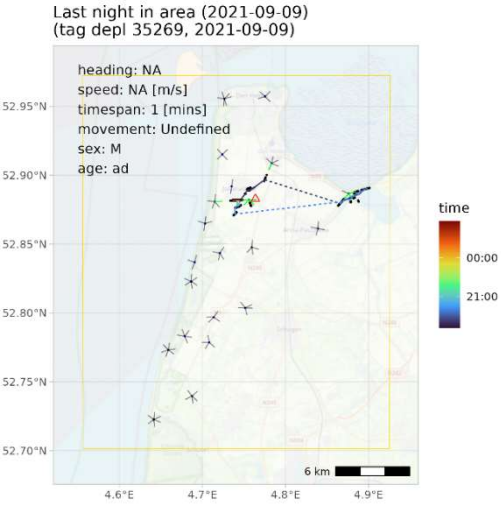

Last night in area (2021-09-24)
(tag depl 35260, 2021-09-24)
heading: 54
speed: 2 [m/s]
timespan: 14 [mins]
movement: Local
sex: M
age: juv
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

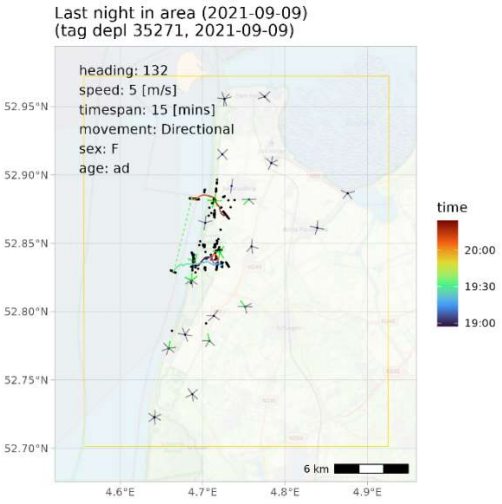

Last night in area (2021-10-22)
(tag depl 35264, 2021-09-23)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
00
50
40
30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

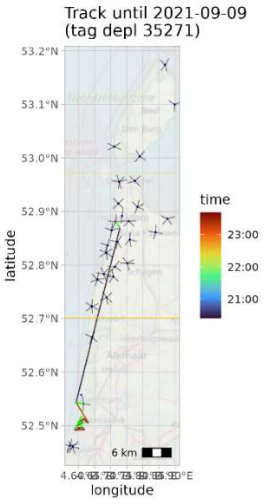

Last night in area (2021-09-26)
(tag depl 35266, 2021-09-17)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
00
45
30
15
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2021-09-18)
(tag depl 35267, 2021-09-18)
heading: NA
speed: NA [m/s]
timespan: 4 [mins]
movement: Undefined
sex: M
age: ad
time
00:00
23:00
22:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

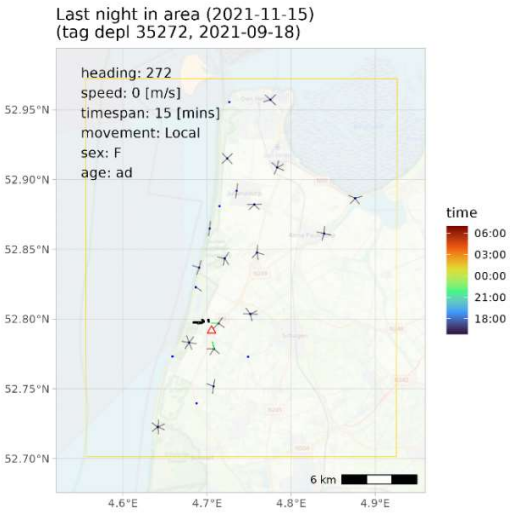

Track until 2021-09-27
(tag depl 35267)
time
Sep 27
Sep 25
Sep 23
Sep 21
20 km
latitude
longitude
53.0°N
52.5°N
52.0°N
51.5°N
3.5°E
4.0°E
4.5°E

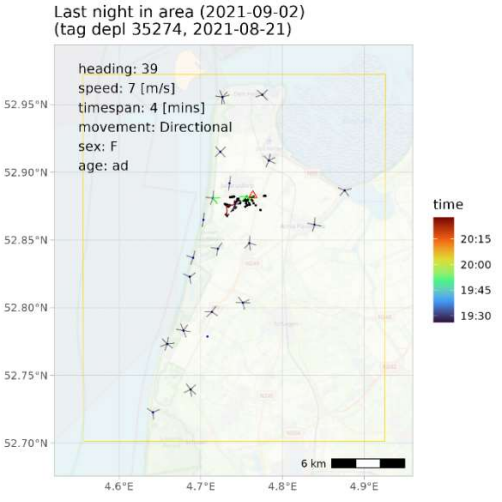

Last night in area (2021-09-09)
(tag depl 35269, 2021-09-09)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: ad
time
00:00
21:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

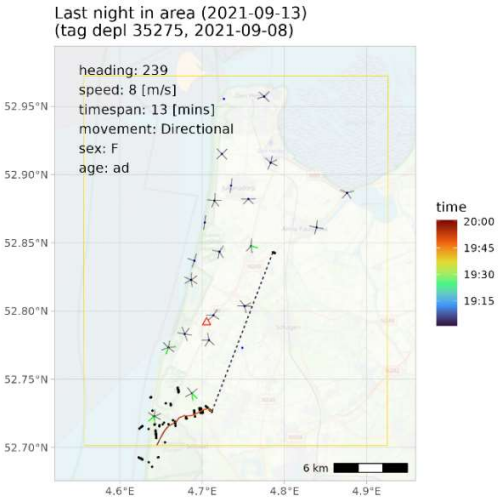


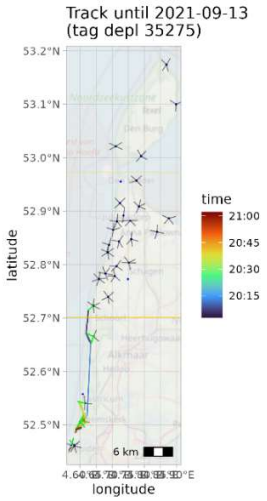


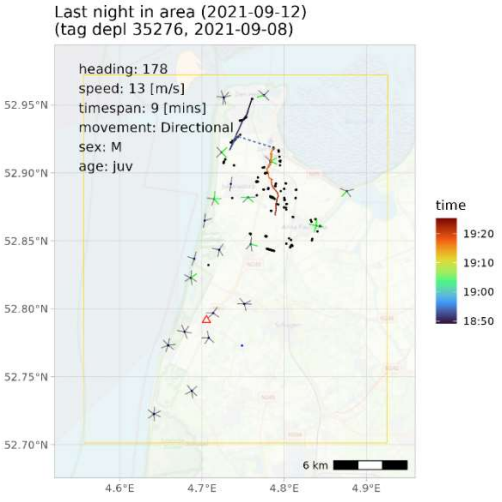
departure over sea, and a subsequent return 30 min later!

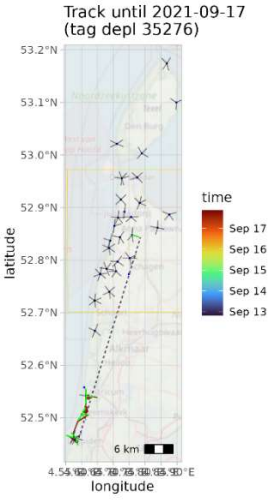


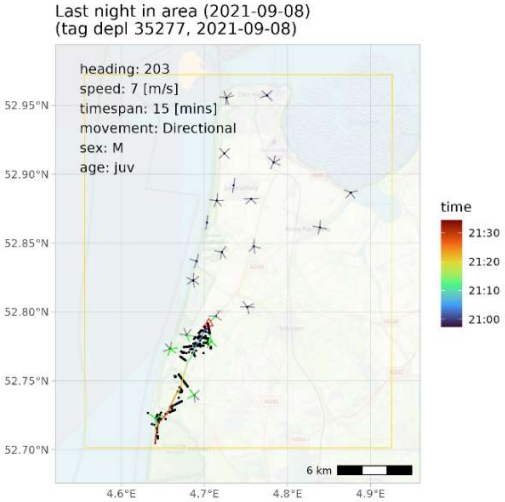


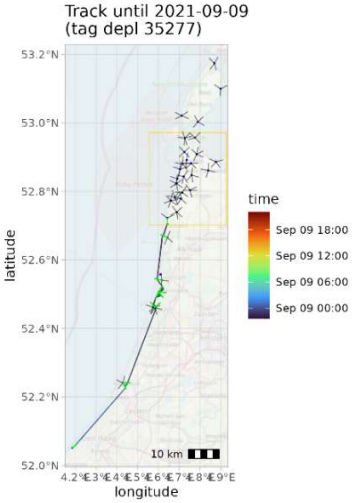

Last night in area (2021-09-13)
(tag depl 35275, 2021-09-08)
heading: 239
speed: 8 [m/s]
timespan: 13 [mins]
movement: Directional
sex: F
age: ad
time
20:00
19:45
19:30
19:15
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2021-09-13
(tag depl 35275)
time
21:00
20:45
20:30
20:15
6 km
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N

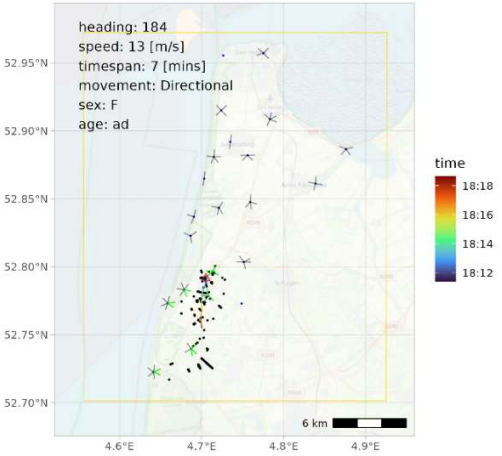

Last night in area (2021-09-12)
(tag depl 35276, 2021-09-08)
heading: 178
speed: 13 [m/s]
timespan: 9 [mins]
movement: Directional
sex: M
age: juv
time
19:20
19:10
19:00
18:50
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2021-09-17
(tag depl 35276)
time
Sep 17
Sep 16
Sep 15
Sep 14
Sep 13
6 km
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N

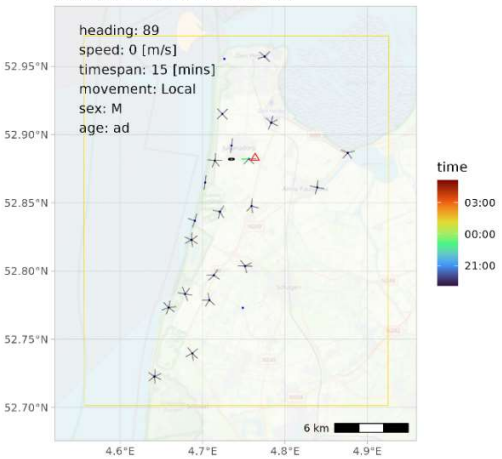

Last night in area (2021-09-08)
(tag depl 35277, 2021-09-08)
heading: 203
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
21:30
21:20
21:10
21:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2021-09-09
(tag depl 35277)
time
Sep 09 18:00
Sep 09 12:00
Sep 09 06:00
Sep 09 00:00
10 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N

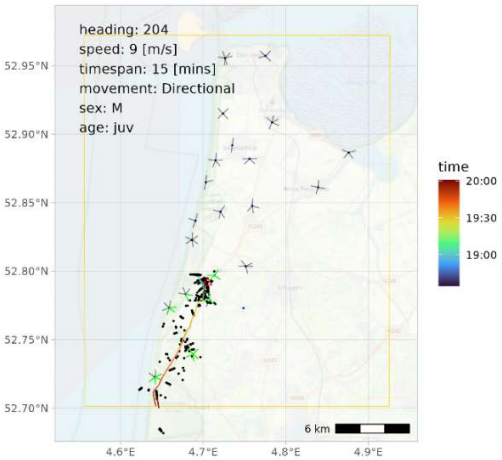
Last night in area (2021-10-06)
(tag depl 35278, 2021-09-18)



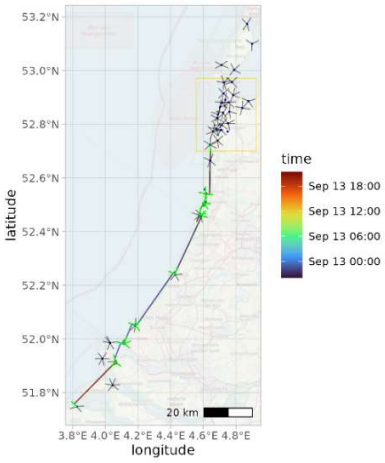
Last night in area (2021-09-14)
(tag depl 35279, 2021-09-08)



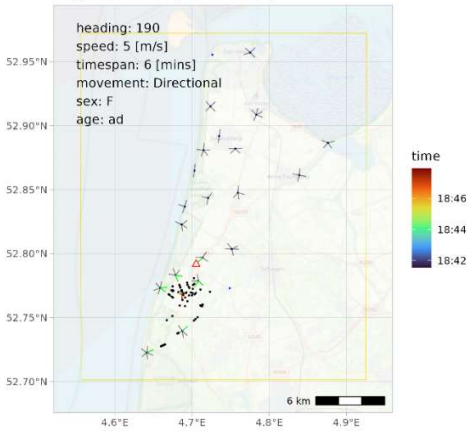
Last night in area (2021-09-12)
(tag depl 35280, 2021-09-08)



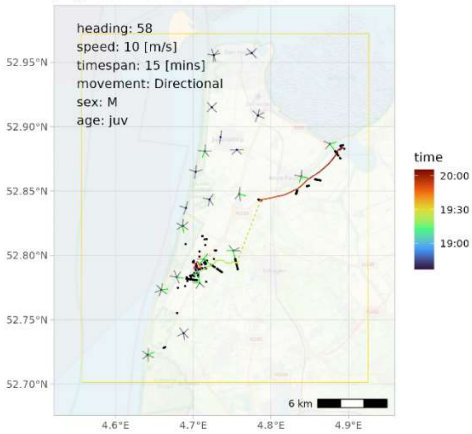
Track until 2021-09-13
(tag depl 35280)



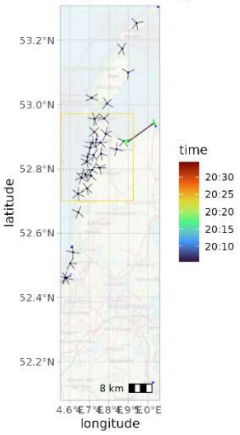
Last night in area (2021-09-15)
(tag depl 35281, 2021-09-08)



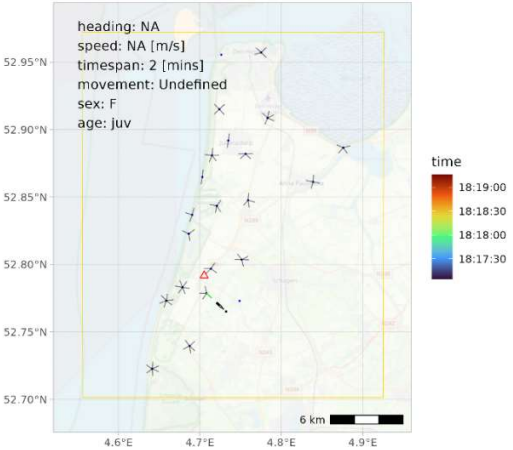
Last night in area (2021-09-09)
(tag depl 35359, 2021-09-08)

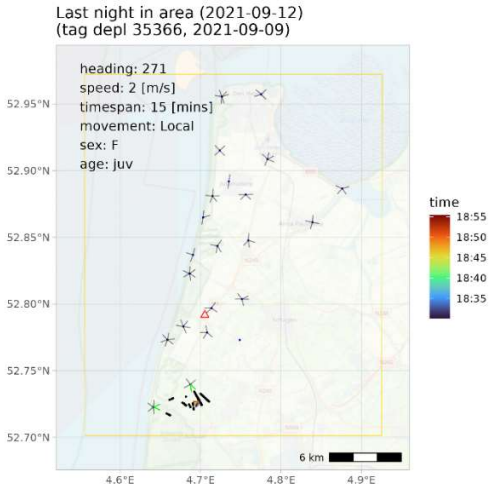


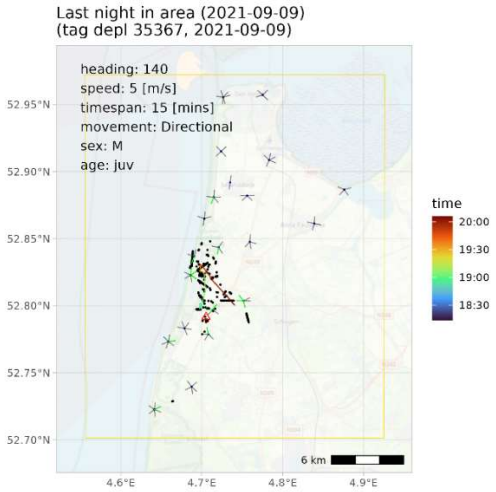
Track until 2021-09-09
(tag depl 35359)

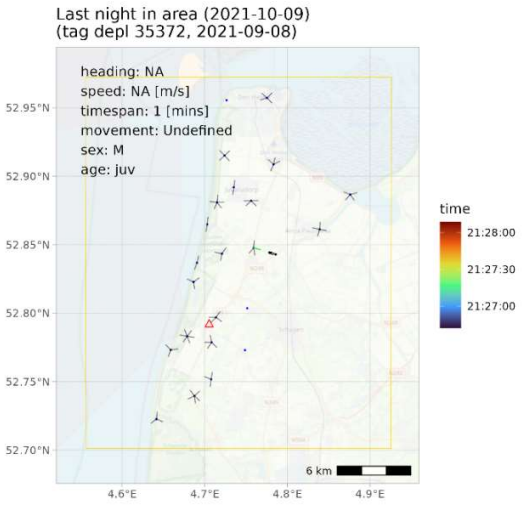


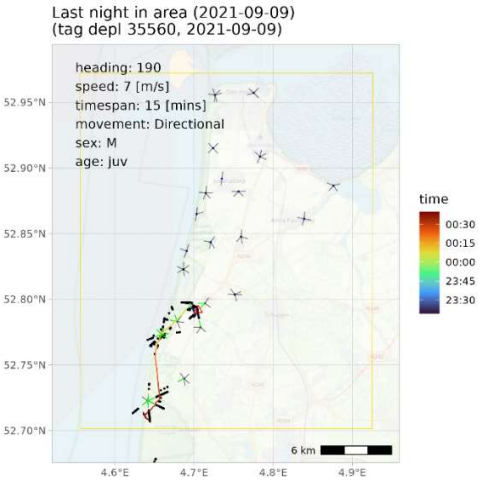
Last night in area (2021-09-28)
(tag depl 35362, 2021-09-08)

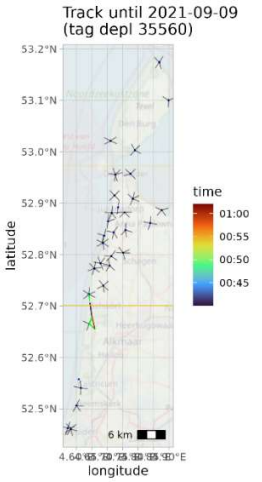


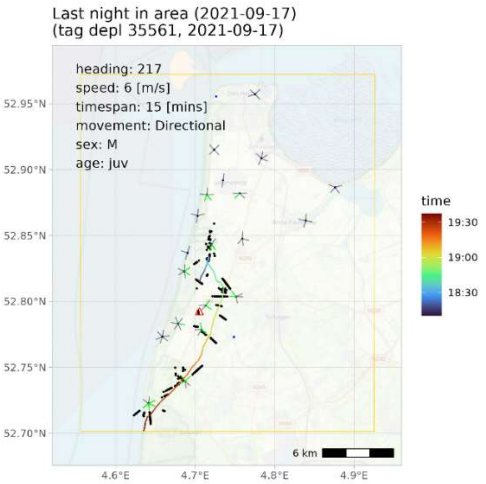

Last night in area (2021-09-12)
(tag depl 35366, 2021-09-09)
heading: 271
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
18:55
18:50
18:45
18:40
18:35
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

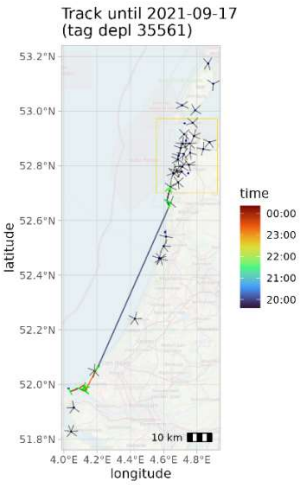

Last night in area (2021-09-09)
(tag depl 35367, 2021-09-09)
heading: 140
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
20:00
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2021-10-09)
(tag depl 35372, 2021-09-08)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: juv
time
21:28:00
21:27:30
21:27:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

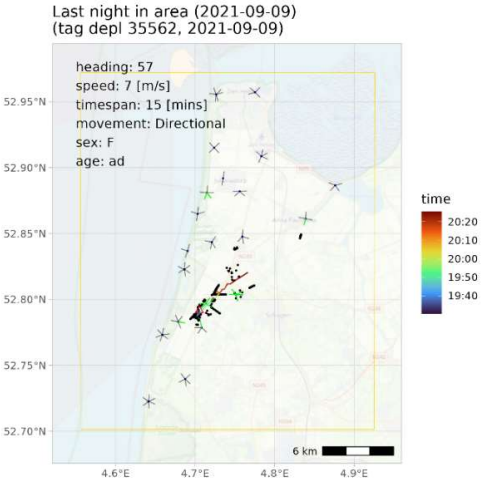


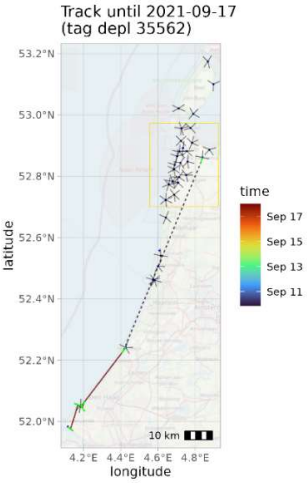


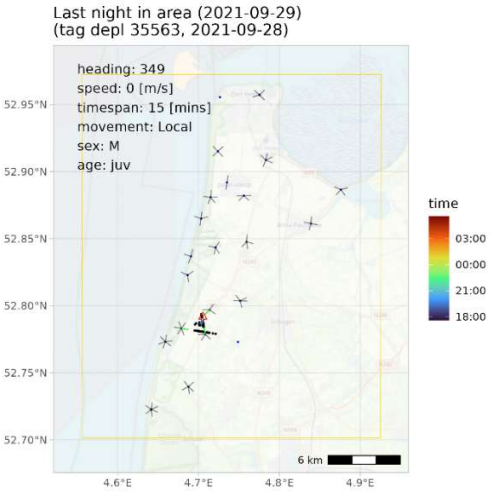


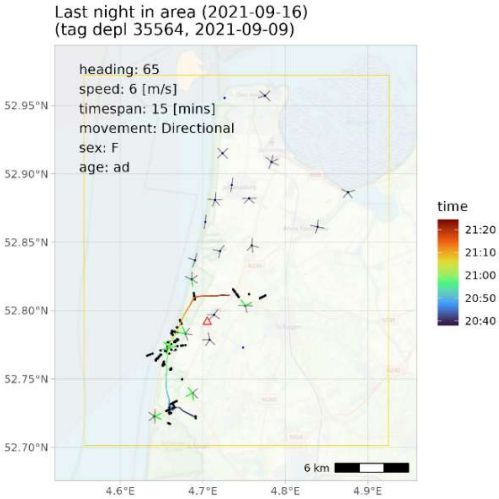


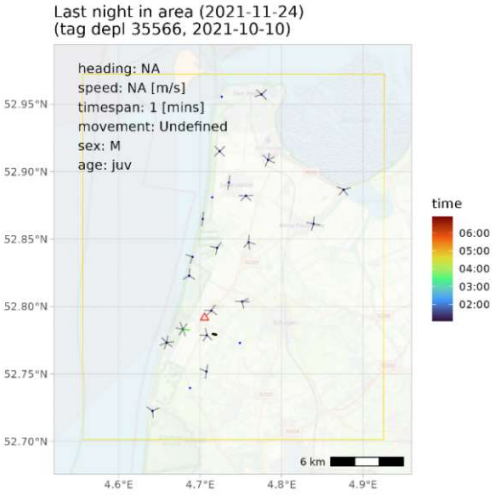
a likely 75 km flight over sea parallel to the coast

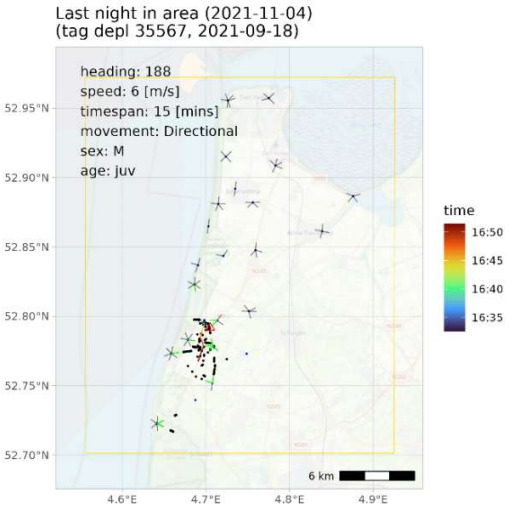


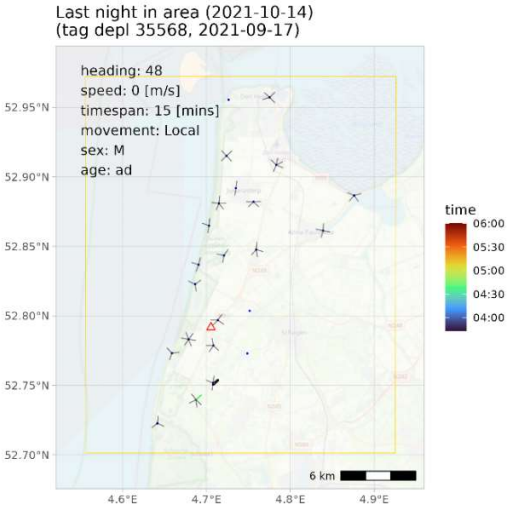


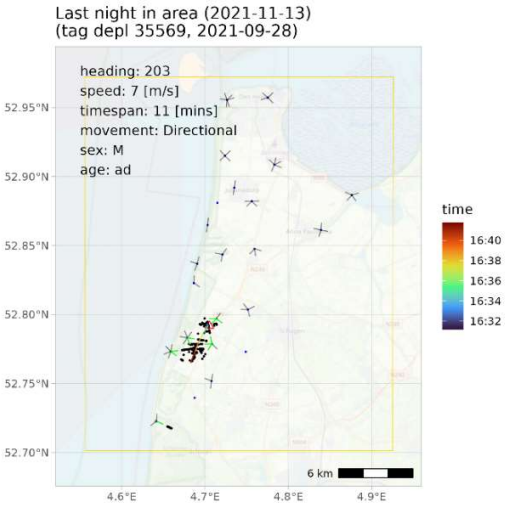

Last night in area (2021-09-29)
(tag depl 35563, 2021-09-28)
heading: 349
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

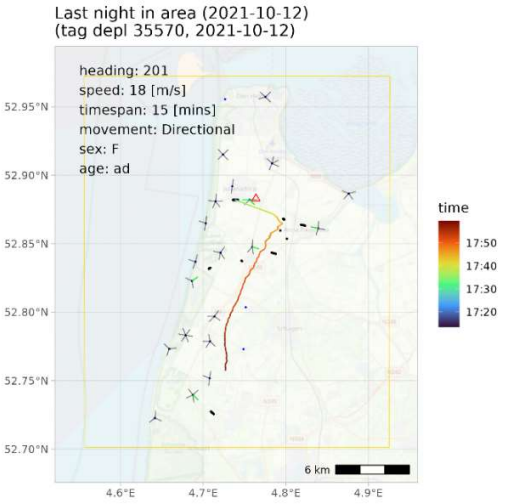

Last night in area (2021-09-16)
(tag depl 35564, 2021-09-09)
heading: 65
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
21:20
21:10
21:00
20:50
20:40
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

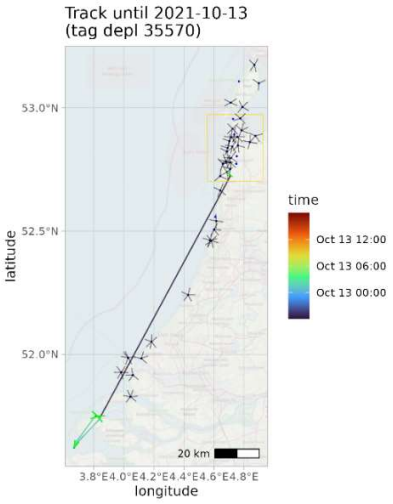

Last night in area (2021-11-24)
(tag depl 35566, 2021-10-10)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: juv
time
06:00
05:00
04:00
03:00
02:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

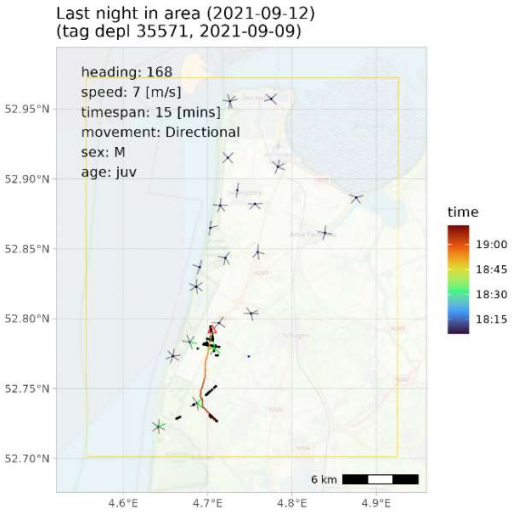

Last night in area (2021-11-04)
(tag depl 35567, 2021-09-18)
heading: 188
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
16:50
16:45
16:40
16:35
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

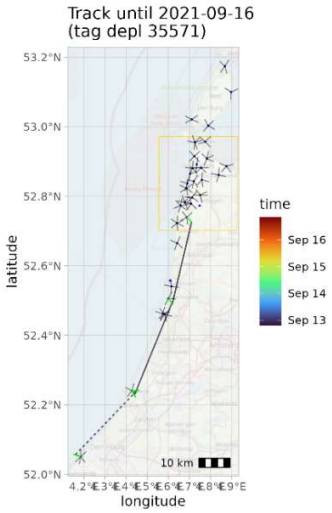

Last night in area (2021-10-14)
(tag depl 35568, 2021-09-17)
heading: 48
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
06:00
05:30
05:00
04:30
04:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

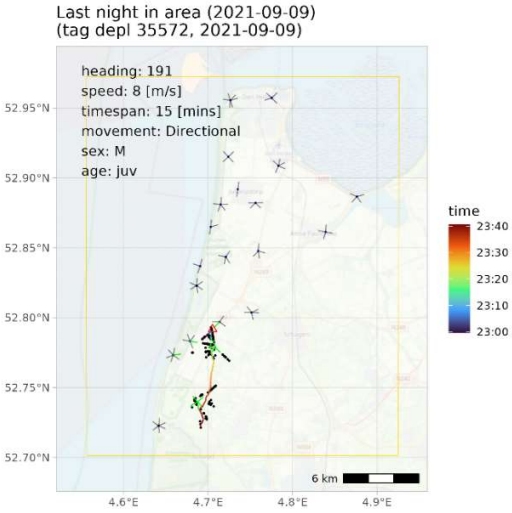

Last night in area (2021-11-13)
(tag depl 35569, 2021-09-28)
heading: 203
speed: 7 [m/s]
timespan: 11 [mins]
movement: Directional
sex: M
age: ad
time
16:40
16:38
16:36
16:34
16:32
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

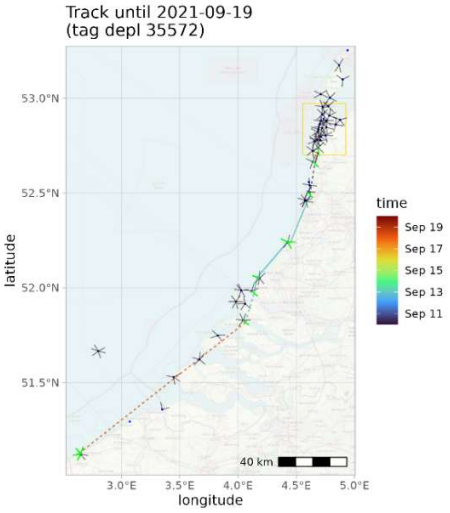

Last night in area (2021-10-12)
(tag depl 35570, 2021-10-12)
heading: 201
speed: 18 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:50
17:40
17:30
17:20
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

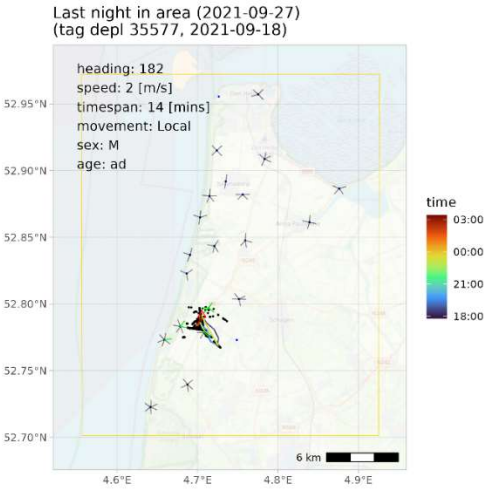

Track until 2021-10-13
(tag depl 35570)
time
Oct 13 12:00
Oct 13 06:00
Oct 13 00:00
20 km
53.0°N
52.5°N
52.0°N
latitude
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E
longitude

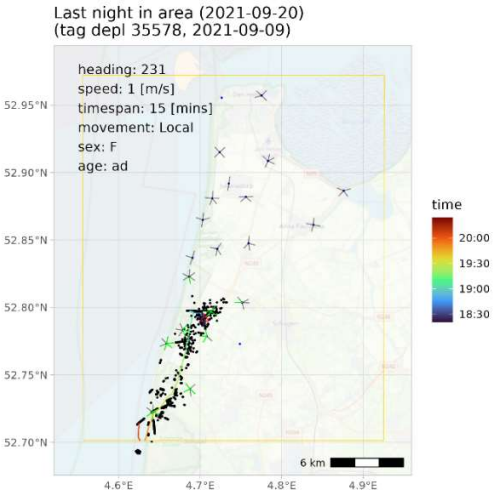

Last night in area (2021-09-12)
(tag depl 35571, 2021-09-09)
heading: 168
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
19:00
18:45
18:30
18:15
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

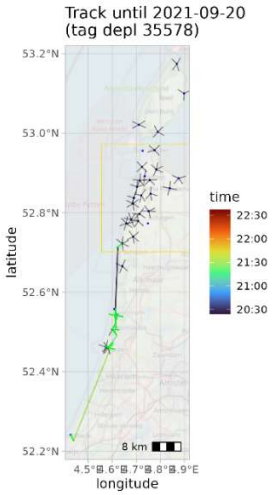

Track until 2021-09-16
(tag depl 35571)
time
Sep 16
Sep 15
Sep 14
Sep 13
10 km
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
latitude
4.2°E
4.3°E
4.4°E
4.5°E
4.6°E
4.7°E
4.8°E
4.9°E
longitude

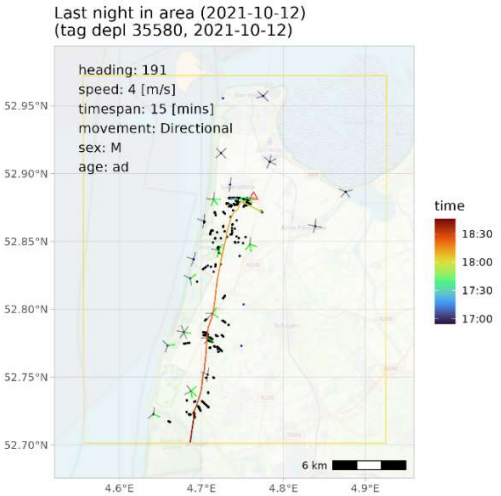

Last night in area (2021-09-09)
(tag depl 35572, 2021-09-09)
heading: 191
speed: 8 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
23:40
23:30
23:20
23:10
23:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

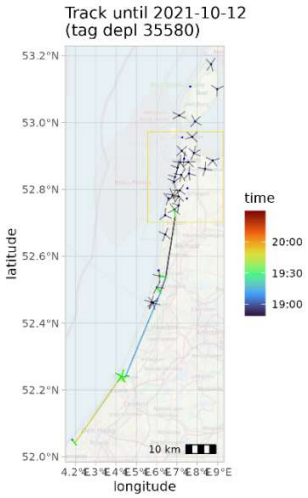

Track until 2021-09-19
(tag depl 35572)
time
Sep 19
Sep 17
Sep 15
Sep 13
Sep 11
40 km
53.0°N
52.5°N
52.0°N
51.5°N
latitude
3.0°E
3.5°E
4.0°E
4.5°E
5.0°E
longitude



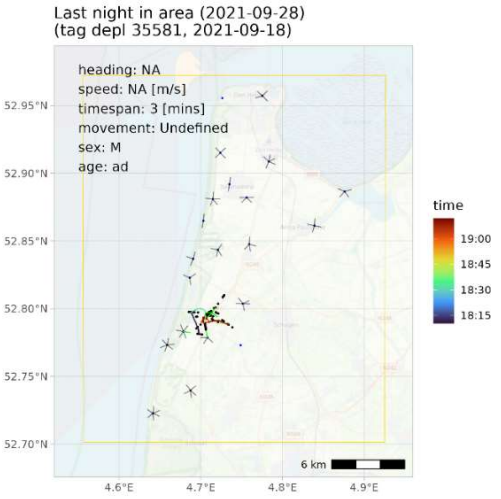


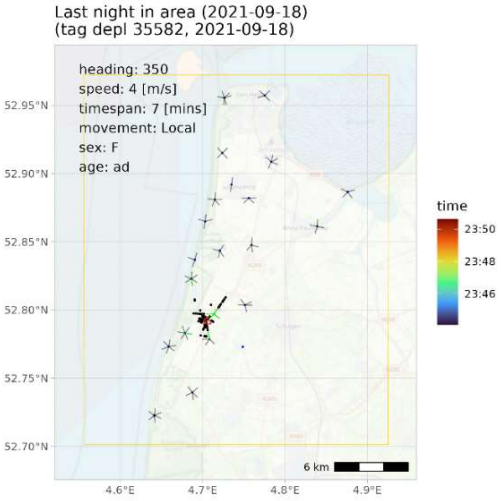


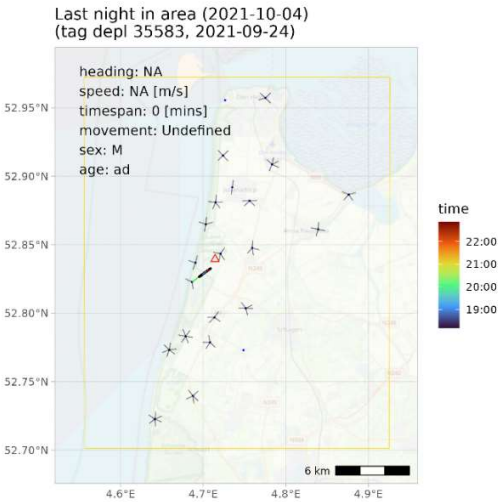




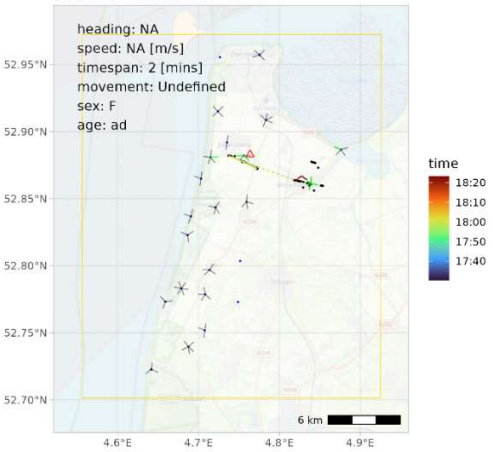
despite relatively low estimated speed (3.9 m/s) a departure from the study area


Last night in area (2021-09-28)
(tag depl 35581, 2021-09-18)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: ad
time
19:00
18:45
18:30
18:15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

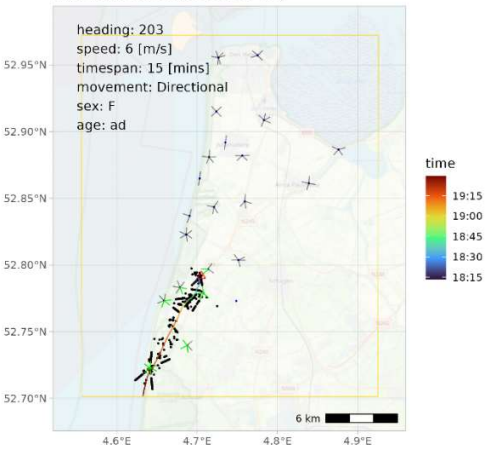

Last night in area (2021-09-18)
(tag depl 35582, 2021-09-18)
heading: 350
speed: 4 [m/s]
timespan: 7 [mins]
movement: Local
sex: F
age: ad
time
23:50
23:48
23:46
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2021-10-04)
(tag depl 35583, 2021-09-24)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: M
age: ad
time
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

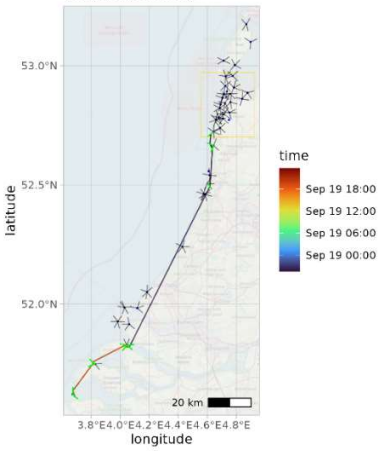
Last night in area (2021-10-12)
(tag depl 35584, 2021-10-12)



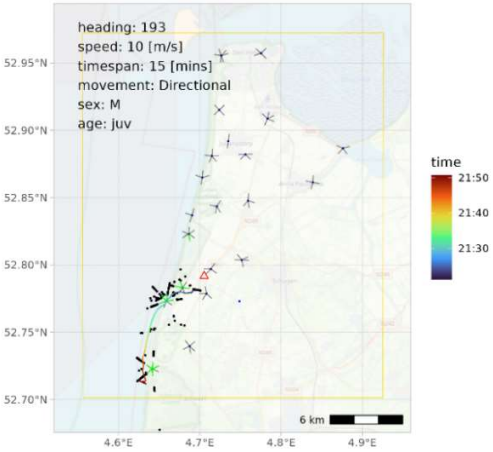
Last night in area (2021-09-18)
(tag depl 35585, 2021-09-18)



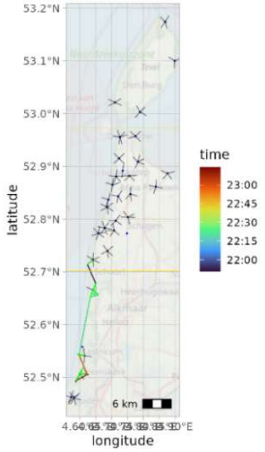
Track until 2021-09-19
(tag depl 35585)



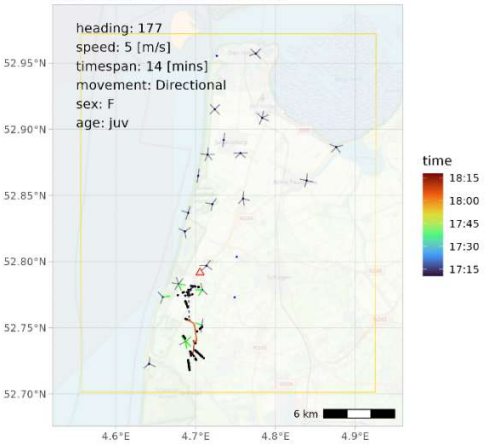
Last night in area (2021-09-18)
(tag depl 35586, 2021-09-18)



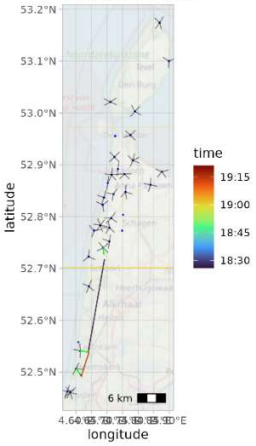
Track until 2021-09-18
(tag depl 35586)



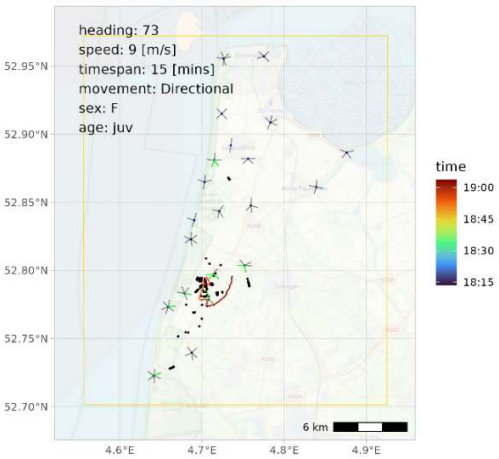
Last night in area (2021-10-10)
(tag depl 35587, 2021-09-18)



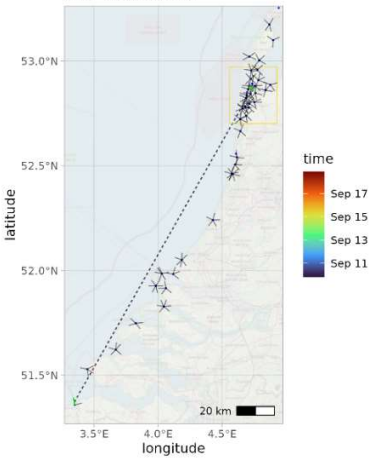
Track until 2021-10-10
(tag depl 35587)



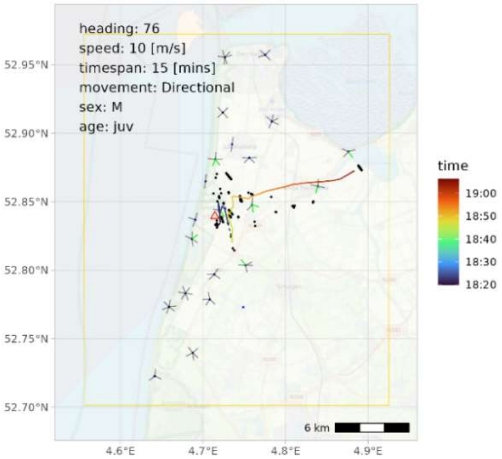
Last night in area (2021-09-09)
(tag depl 35588, 2021-09-09)



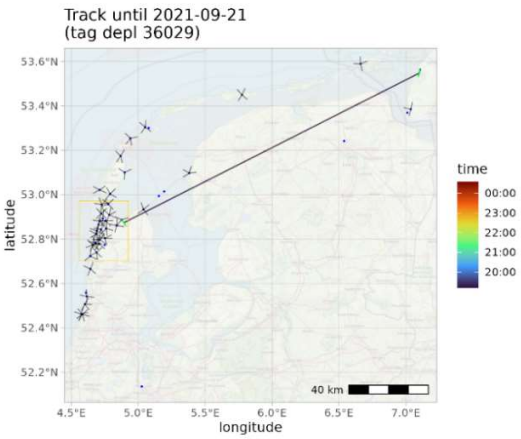
Track until 2021-09-18
(tag depl 35588)



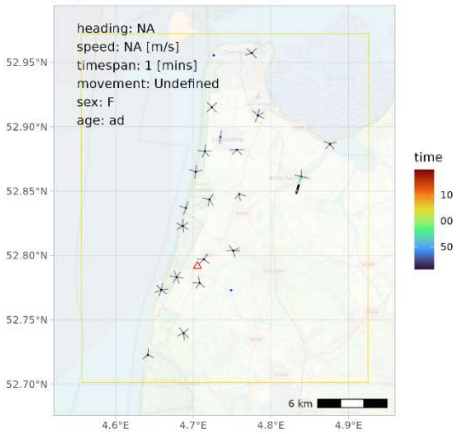
Last night in area (2021-09-21)
(tag depl 36029, 2021-09-18)



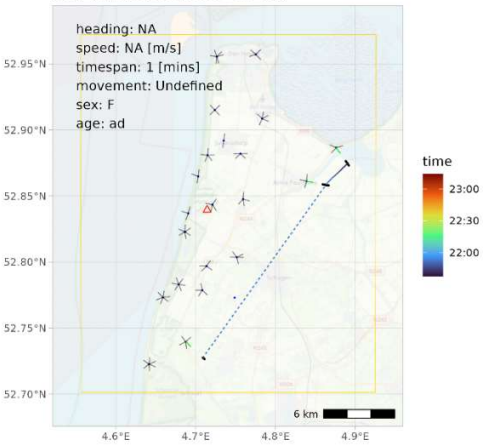
Track until 2021-09-21
(tag depl 36029)



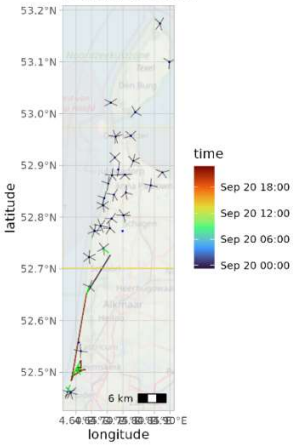
Last night in area (2021-09-25)
(tag depl 36038, 2021-09-24)



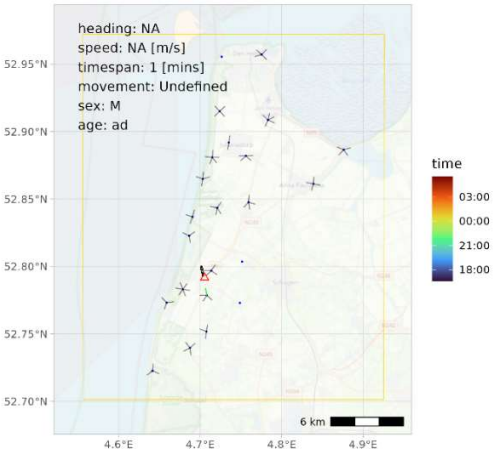
Last night in area (2021-09-19)
(tag depl 36039, 2021-09-18)



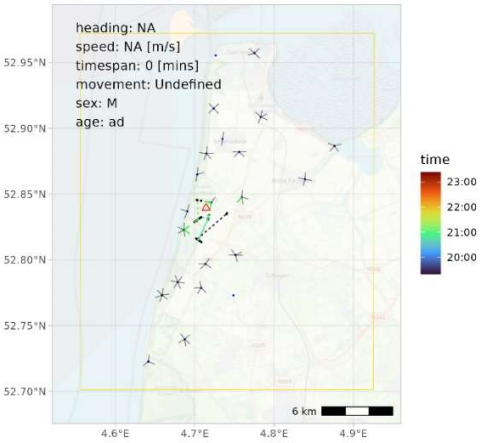
Track until 2021-09-20
(tag depl 36039)



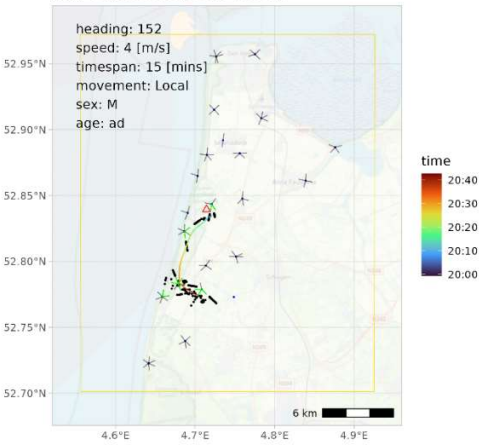
Last night in area (2021-10-21)
(tag depl 36044, 2021-09-24)



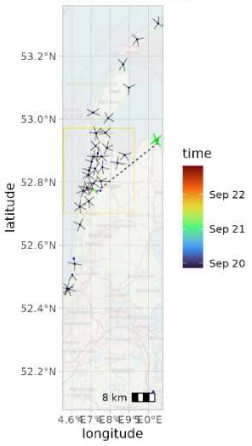
Last night in area (2021-09-23)
(tag depl 36047, 2021-09-19)



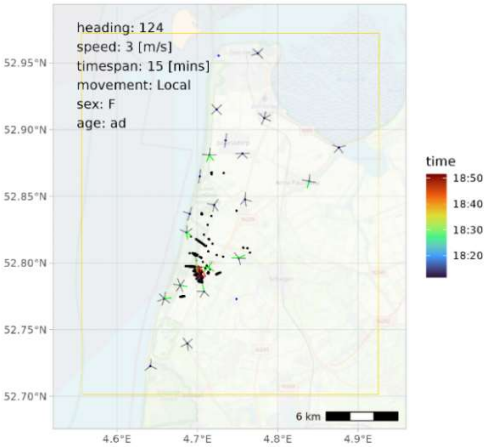
Last night in area (2021-09-19)
(tag depl 36052, 2021-09-19)

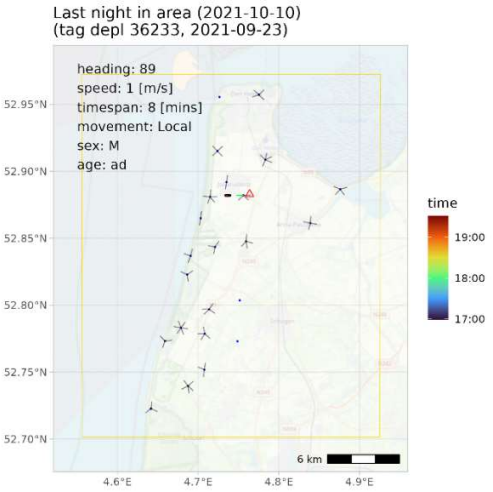


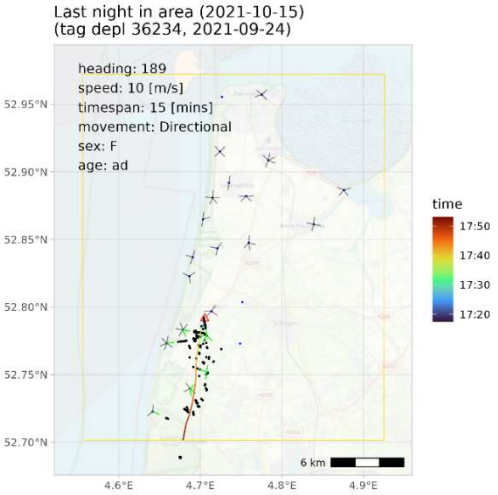
Track until 2021-09-22
(tag depl 36052)

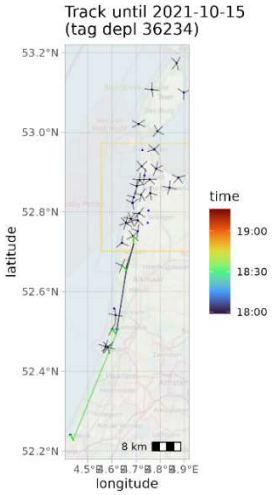


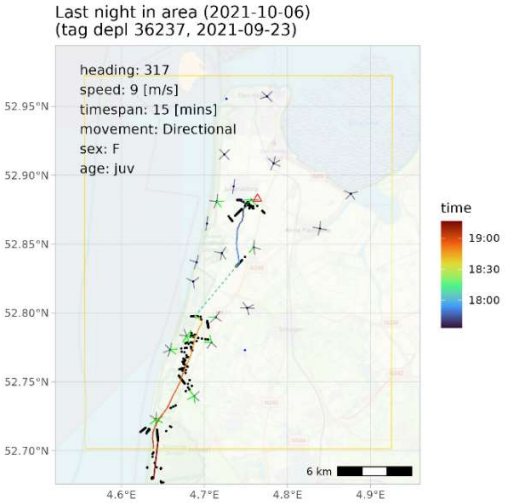
Last night in area (2021-09-24)
(tag depl 36230, 2021-09-24)

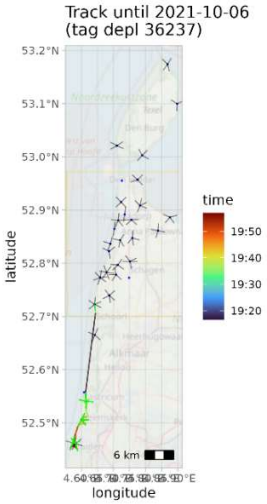


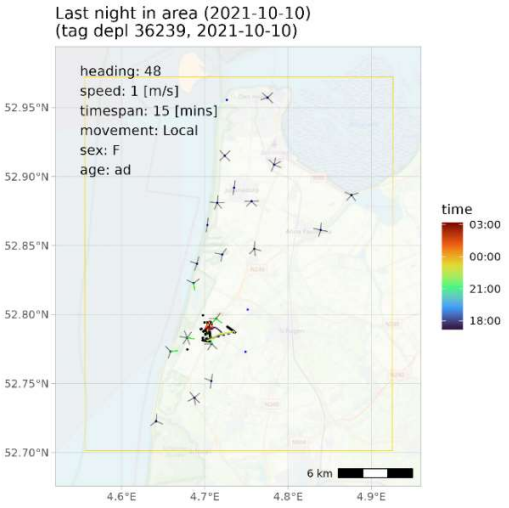

Last night in area (2021-10-10)
(tag depl 36233, 2021-09-23)
heading: 89
speed: 1 [m/s]
timespan: 8 [mins]
movement: Local
sex: M
age: ad
time
19:00
18:00
17:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

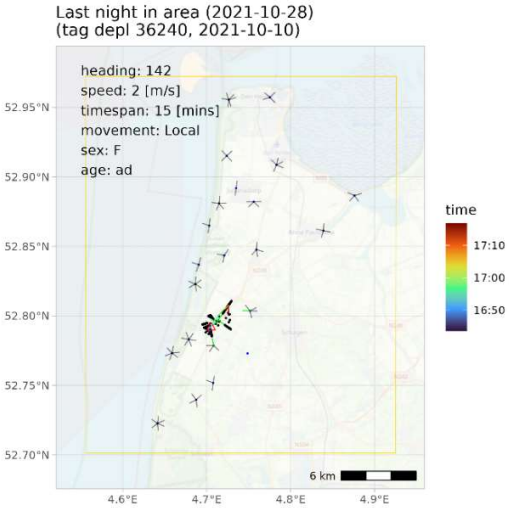

Last night in area (2021-10-15)
(tag depl 36234, 2021-09-24)
heading: 189
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:50
17:40
17:30
17:20
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

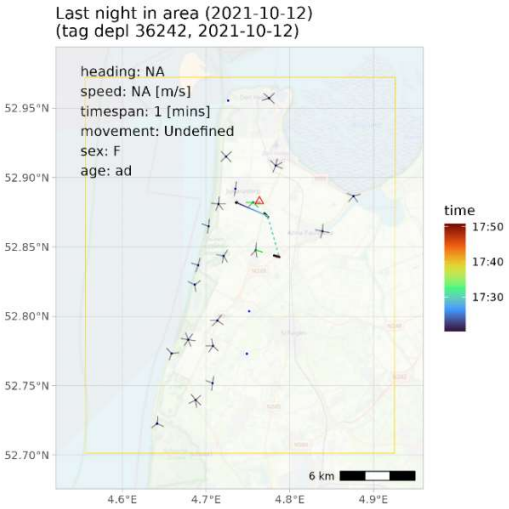

Track until 2021-10-15
(tag depl 36234)
time
19:00
18:30
18:00
8 km
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
latitude
longitude

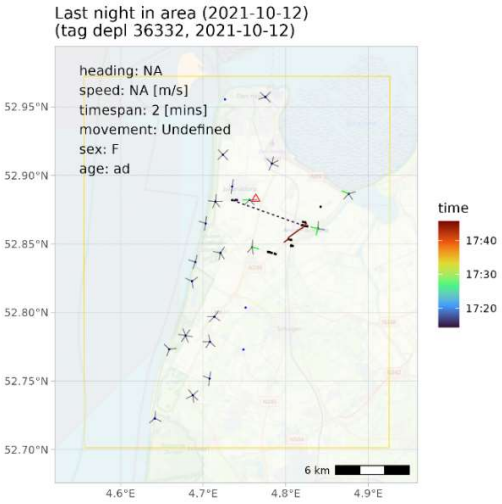

Last night in area (2021-10-06)
(tag depl 36237, 2021-09-23)
heading: 317
speed: 9 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
19:00
18:30
18:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

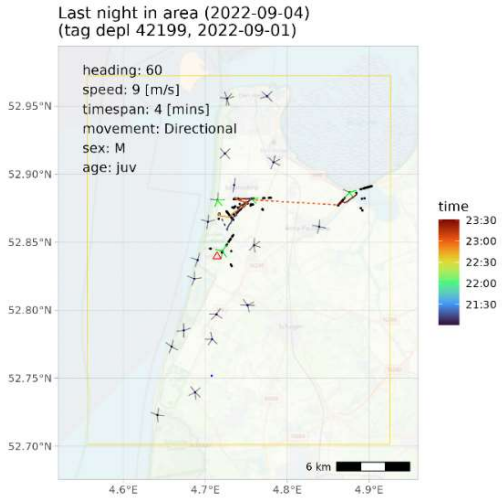

Track until 2021-10-06
(tag depl 36237)
time
19:50
19:40
19:30
19:20
6 km
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
longitude

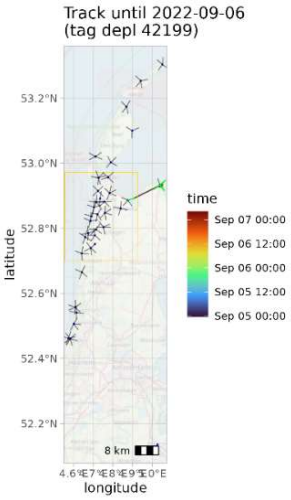

Last night in area (2021-10-10)
(tag depl 36239, 2021-10-10)
heading: 48
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
03:00
00:00
21:00
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

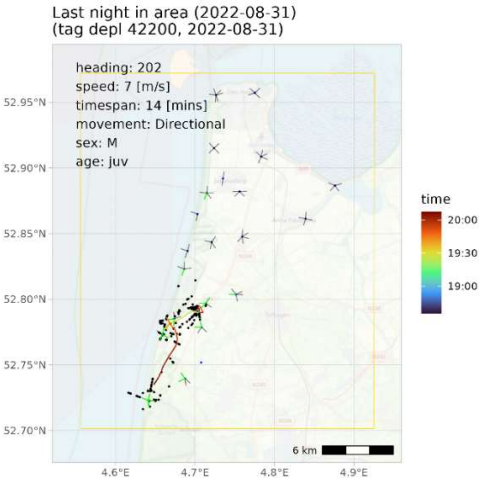

Last night in area (2021-10-28)
(tag depl 36240, 2021-10-10)
heading: 142
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
17:10
17:00
16:50
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2021-10-12)
(tag depl 36242, 2021-10-12)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
17:50
17:40
17:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

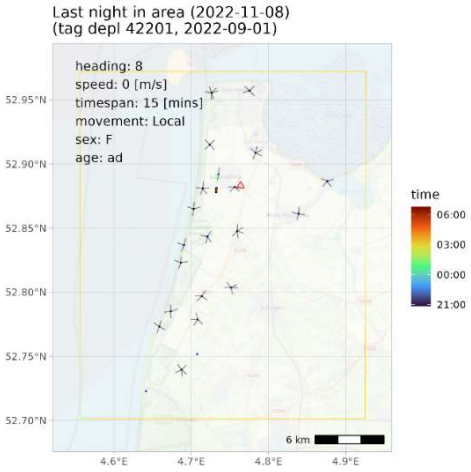


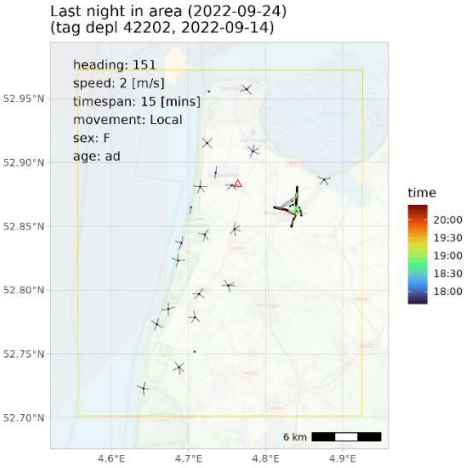


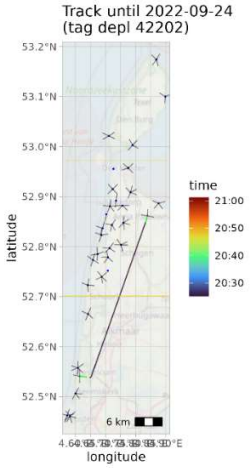


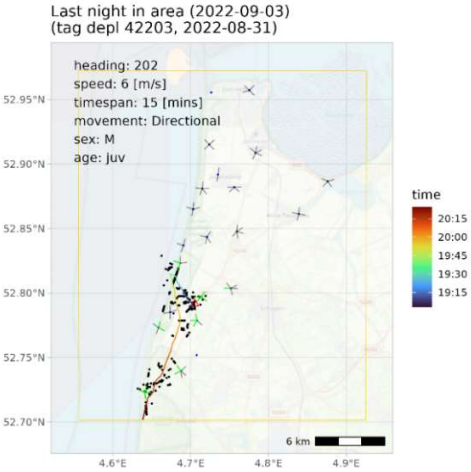


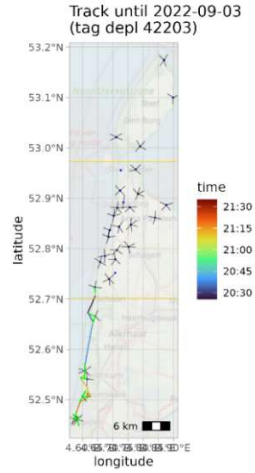
A departure over sea (actual heading at departure is more westerly orientated).

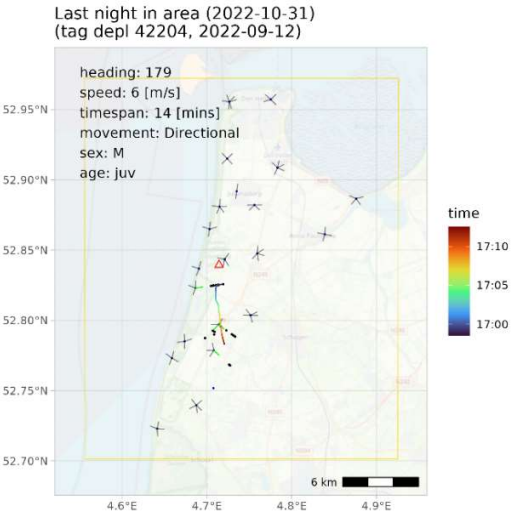

Last night in area (2022-11-08)
(tag depl 42201, 2022-09-01)
heading: 8
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
06:00
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

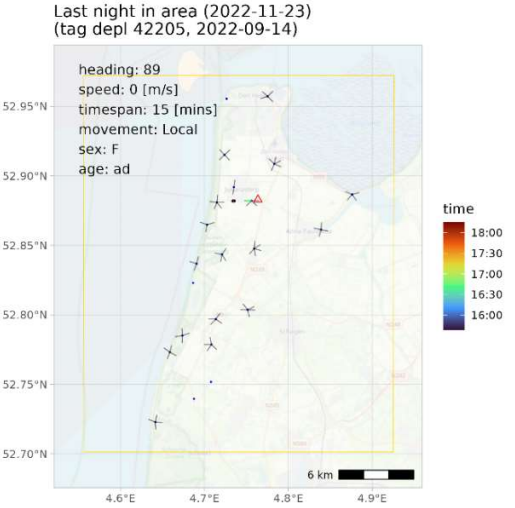

Last night in area (2022-09-24)
(tag depl 42202, 2022-09-14)
heading: 151
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
20:00
19:30
19:00
18:30
18:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

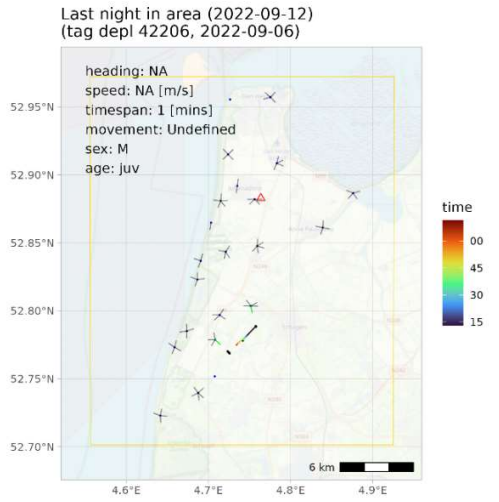

Track until 2022-09-24
(tag depl 42202)
time
21:00
20:50
20:40
20:30
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
6 km

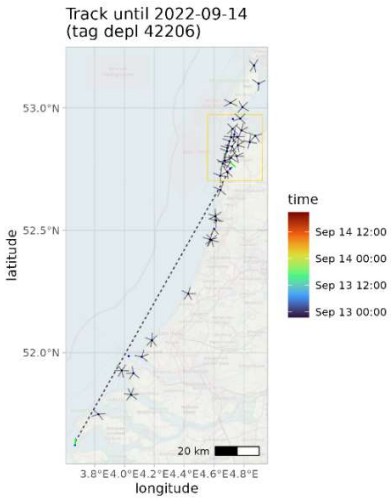

Last night in area (2022-09-03)
(tag depl 42203, 2022-08-31)
heading: 202
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: Juv
time
20:15
20:00
19:45
19:30
19:15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Track until 2022-09-03
(tag depl 42203)
time
21:30
21:15
21:00
20:45
20:30
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
6 km

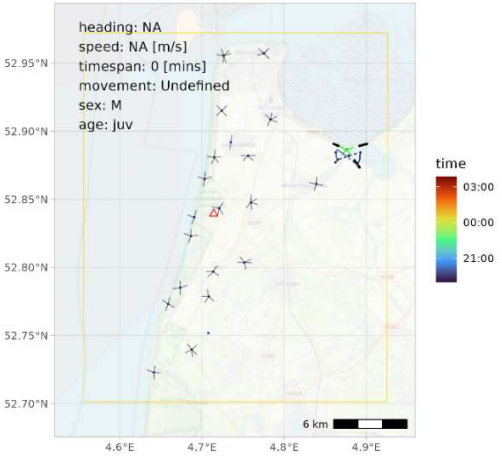

Last night in area (2022-10-31)
(tag depl 42204, 2022-09-12)
heading: 179
speed: 6 [m/s]
timespan: 14 [mins]
movement: Directional
sex: M
age: juv
time
17:10
17:05
17:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-11-23)
(tag depl 42205, 2022-09-14)
heading: 89
speed: 0 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
18:00
17:30
17:00
16:30
16:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

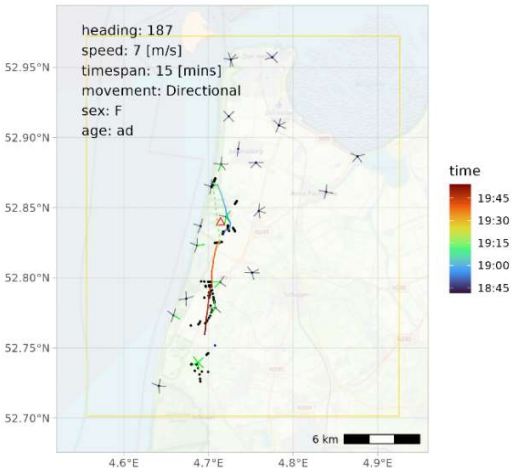

Last night in area (2022-09-12)
(tag depl 42206, 2022-09-06)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: M
age: juv
time
00
45
30
15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2022-09-14
(tag depl 42206)
time
Sep 14 12:00
Sep 14 00:00
Sep 13 12:00
Sep 13 00:00
53.0°N
52.5°N
52.0°N
latitude
20 km
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E
longitude

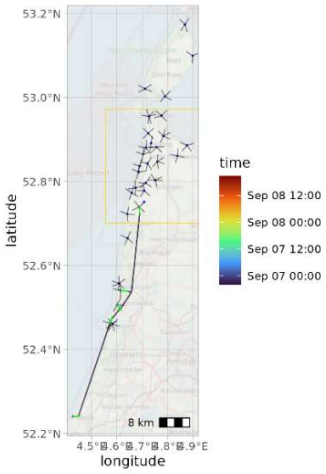
Last night in area (2022-09-07)
(tag depl 42207, 2022-09-06)



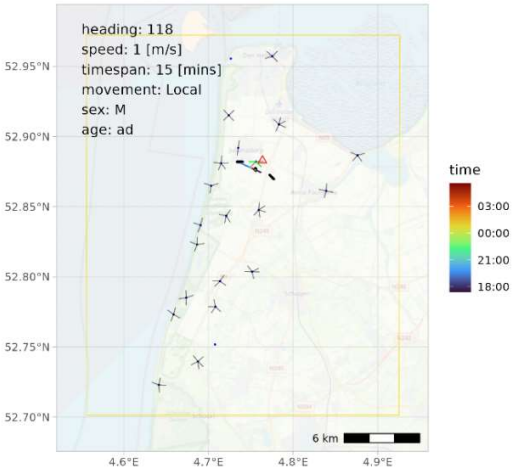
Last night in area (2022-09-06)
(tag depl 42209, 2022-09-06)

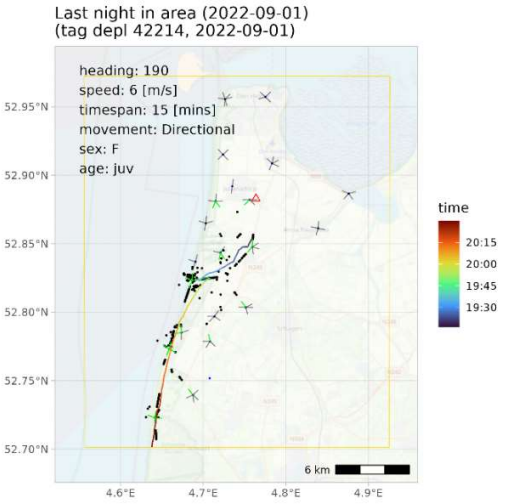


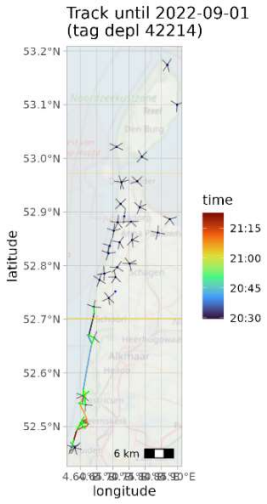
Track until 2022-09-08
(tag depl 42209)

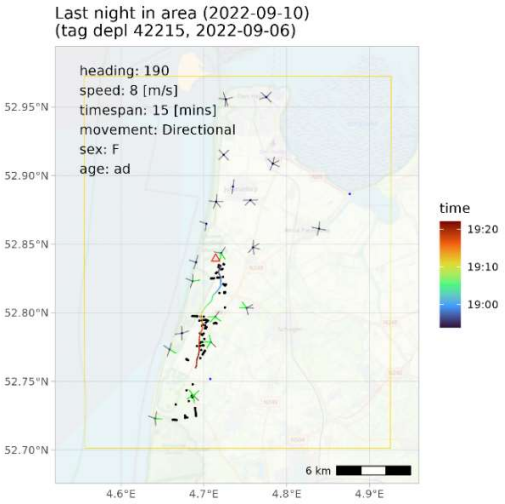


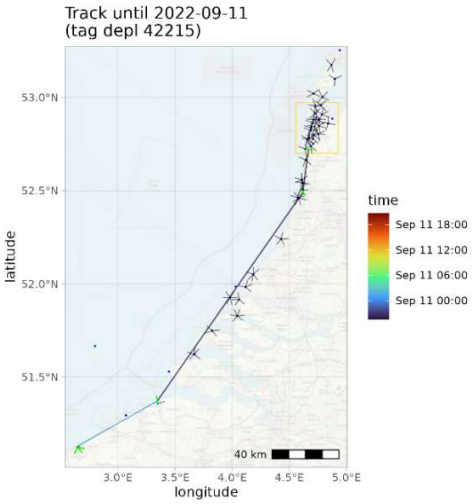
Last night in area (2022-09-29)
(tag depl 42212, 2022-09-06)

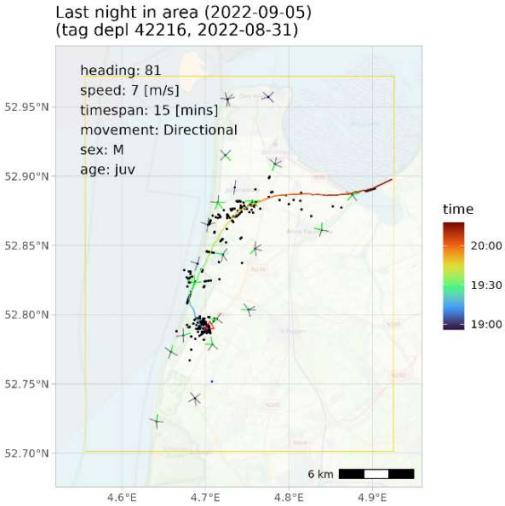


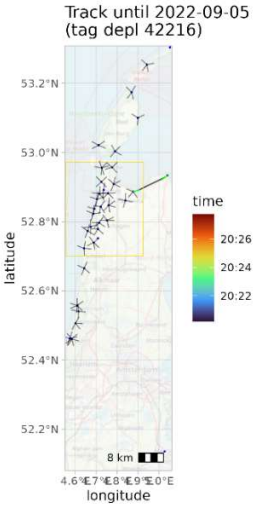

Last night in area (2022-09-01)
(tag depl 42214, 2022-09-01)
heading: 190
speed: 6 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
20:15
20:00
19:45
19:30
6 km

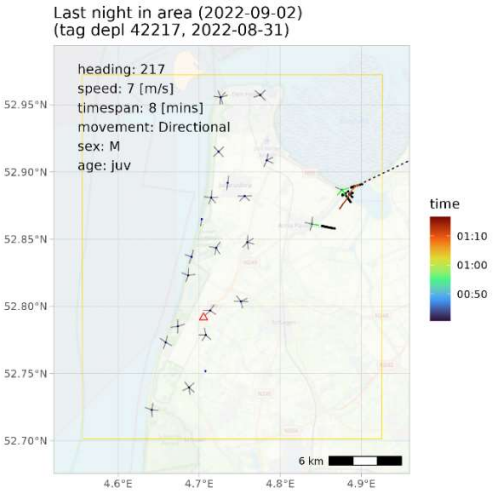

Track until 2022-09-01
(tag depl 42214)
latitude
longitude
time
21:15
21:00
20:45
20:30
6 km

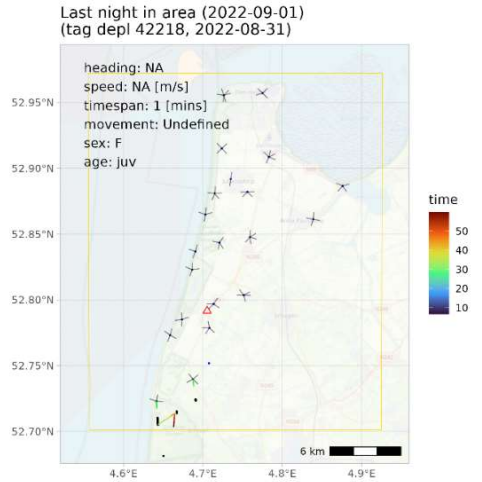

Last night in area (2022-09-10)
(tag depl 42215, 2022-09-06)
heading: 190
speed: 8 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
19:20
19:10
19:00
6 km

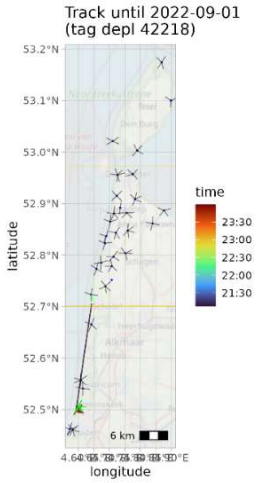

Track until 2022-09-11
(tag depl 42215)
latitude
longitude
time
Sep 11 18:00
Sep 11 12:00
Sep 11 06:00
Sep 11 00:00
40 km

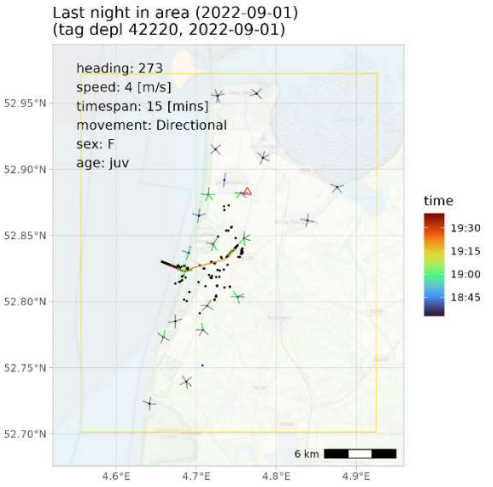

Last night in area (2022-09-05)
(tag depl 42216, 2022-08-31)
heading: 81
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
20:00
19:30
19:00
6 km

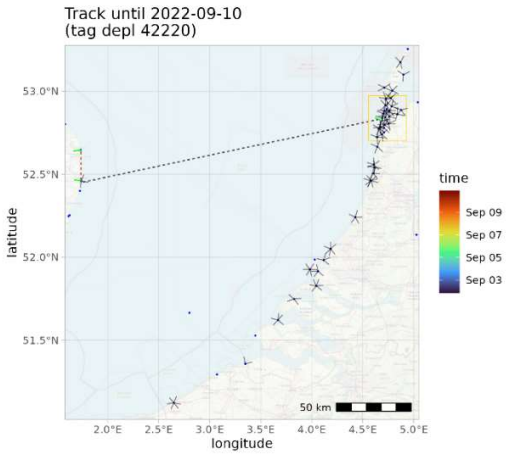

Track until 2022-09-05
(tag depl 42216)
latitude
longitude
time
20:26
20:24
20:22
8 km



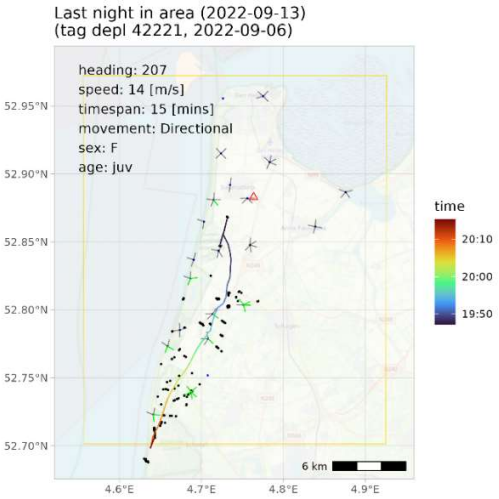


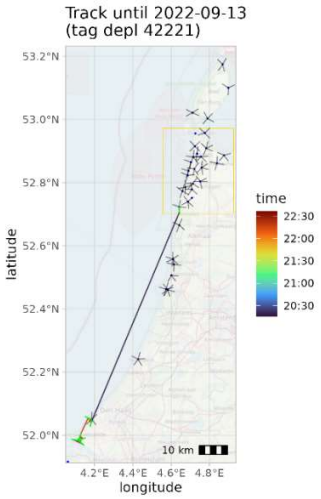




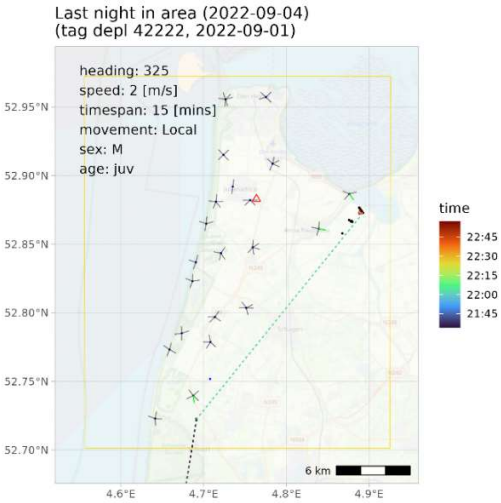


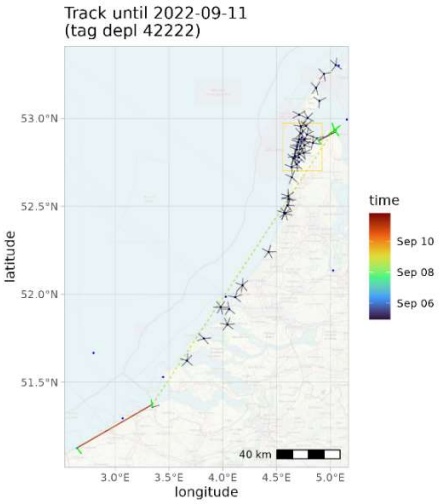
despite relatively low estimated speed (3.8 m/s) a definite departure over sea

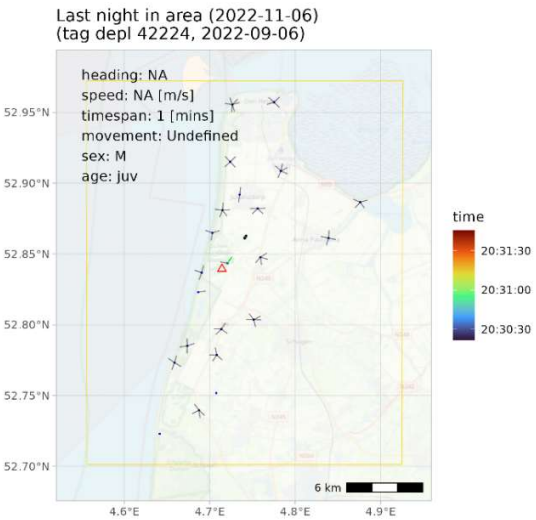


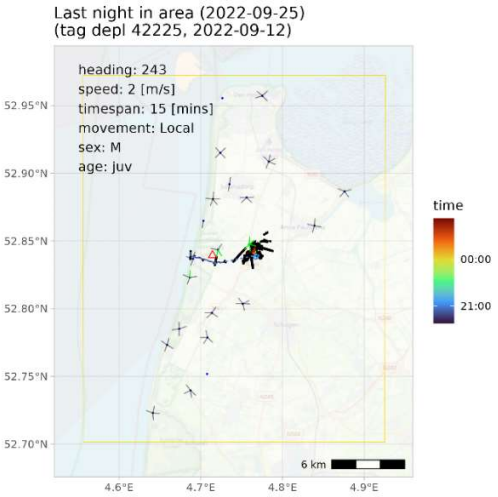


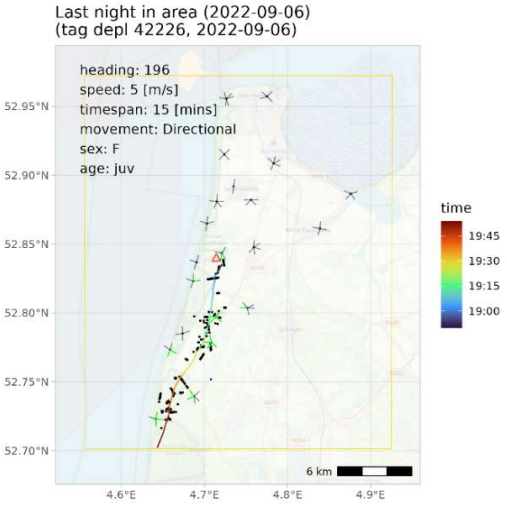
a 80 km flight over sea parallel to the coast

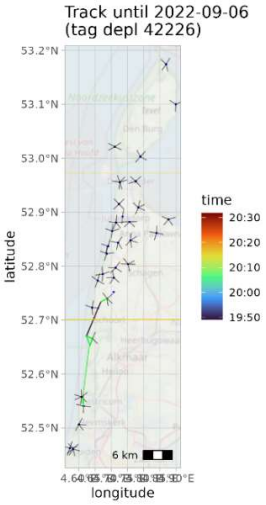


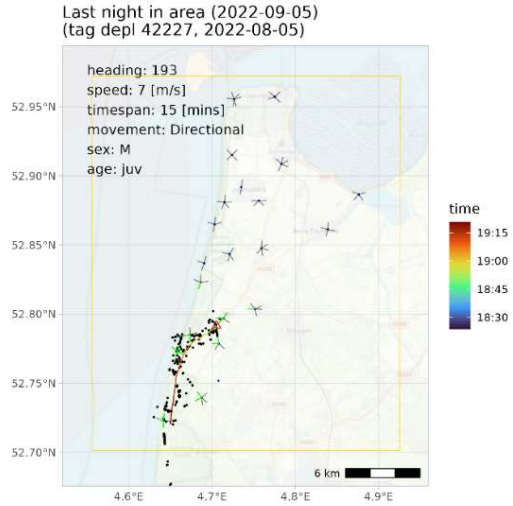


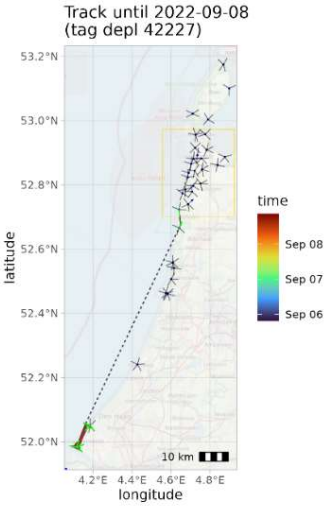



Last night in area (2022-09-25)
(tag depl 42225, 2022-09-12)
heading: 243
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

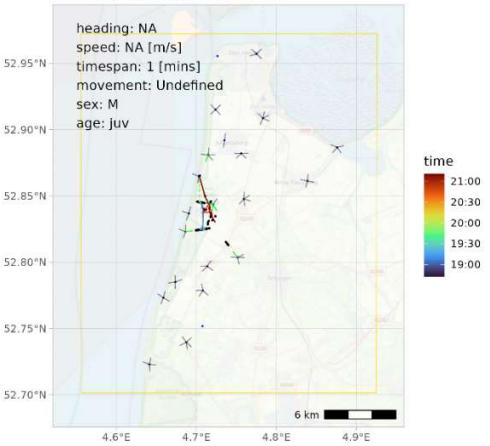

Last night in area (2022-09-06)
(tag depl 42226, 2022-09-06)
heading: 196
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
19:45
19:30
19:15
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Track until 2022-09-06
(tag depl 42226)
time
20:30
20:20
20:10
20:00
19:50
latitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
longitude
6 km

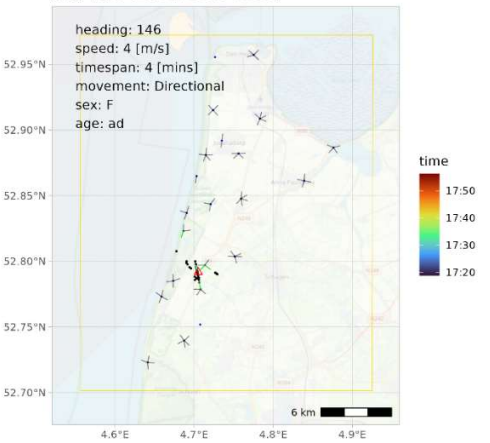

Last night in area (2022-09-05)
(tag depl 42227, 2022-08-05)
heading: 193
speed: 7 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
19:15
19:00
18:45
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Track until 2022-09-08
(tag depl 42227)
time
Sep 08
Sep 07
Sep 06
latitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
4.2°E
4.4°E
4.6°E
4.8°E
longitude
10 km

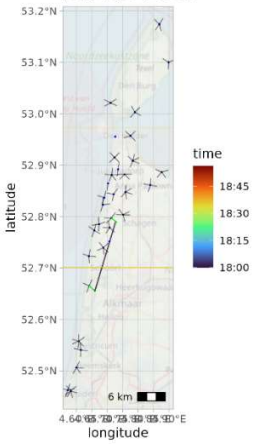
Last night in area (2022-09-15)
(tag depl 42229, 2022-09-12)



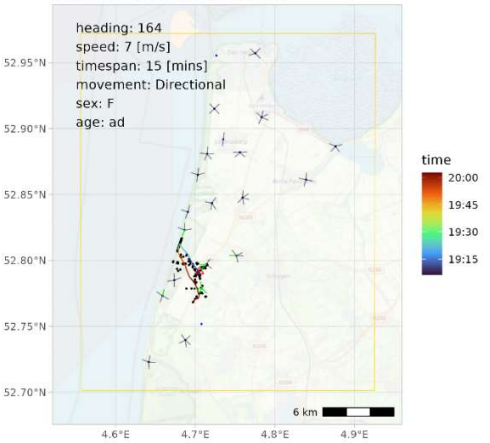
Last night in area (2022-10-02)
(tag depl 42231, 2022-08-31)



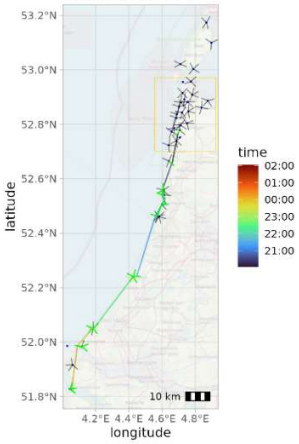
Track until 2022-10-02
(tag depl 42231)

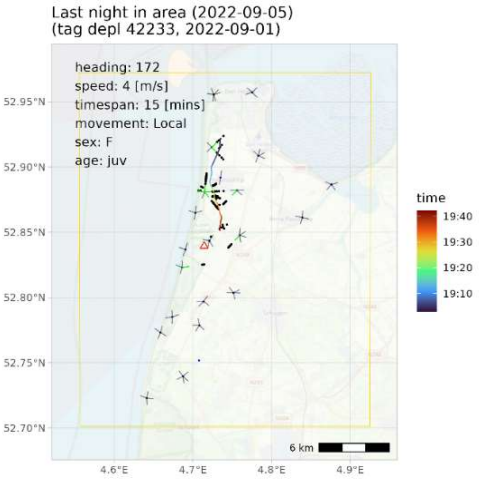


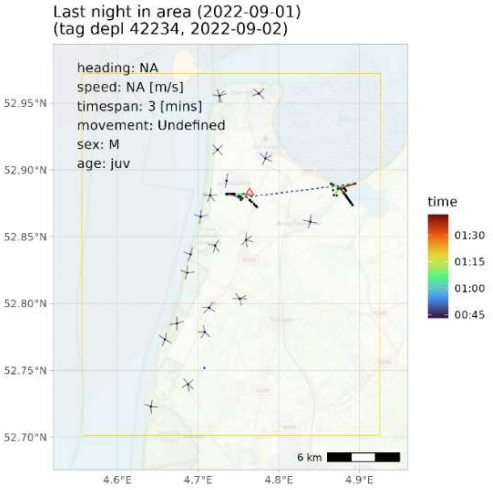
Last night in area (2022-09-03)
(tag depl 42232, 2022-08-31)

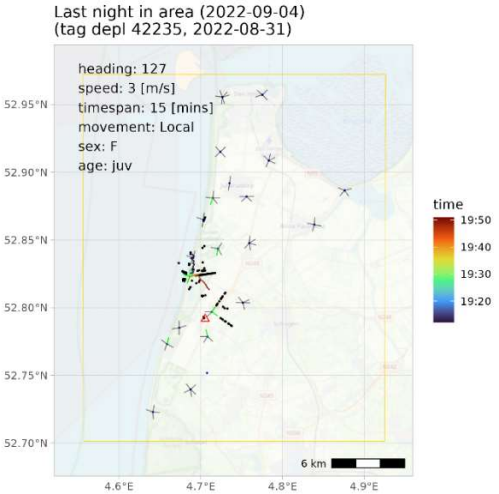


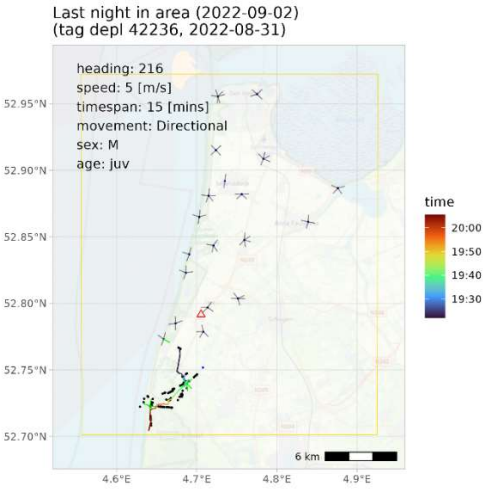
Track until 2022-09-03
(tag depl 42232)

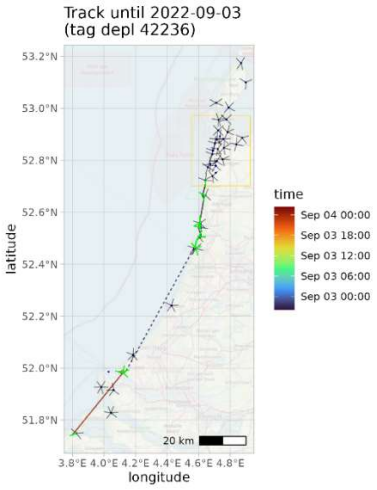


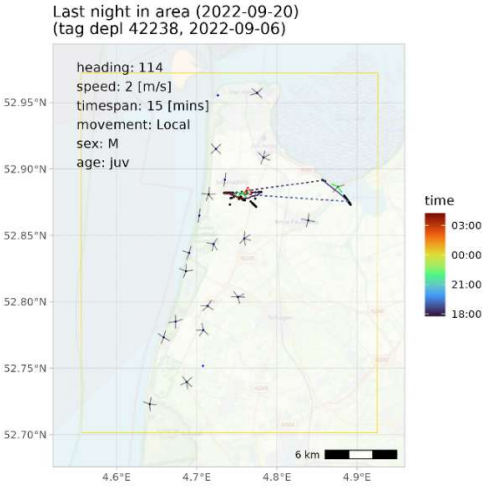

Last night in area (2022-09-05)
(tag depl 42233, 2022-09-01)
heading: 172
speed: 4 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
19:40
19:30
19:20
19:10
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

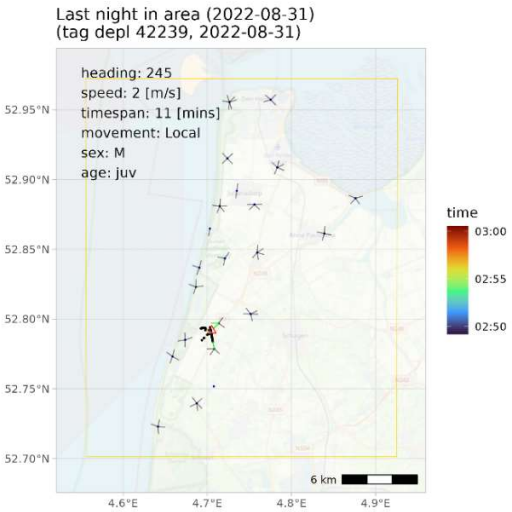

Last night in area (2022-09-01)
(tag depl 42234, 2022-09-02)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: M
age: juv
time
01:30
01:15
01:00
00:45
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

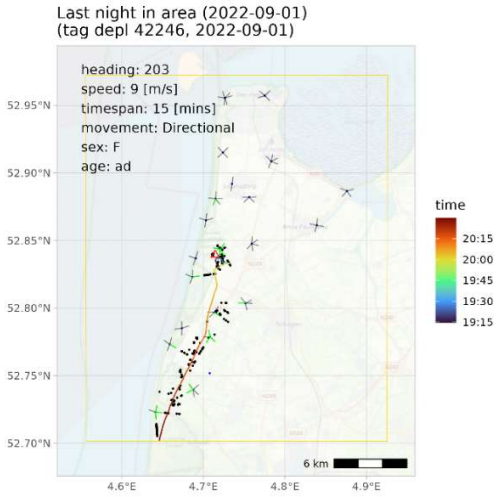

Last night in area (2022-09-04)
(tag depl 42235, 2022-08-31)
heading: 127
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
19:50
19:40
19:30
19:20
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

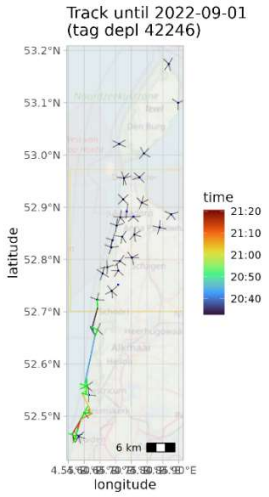

Last night in area (2022-09-02)
(tag depl 42236, 2022-08-31)
heading: 216
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
20:00
19:50
19:40
19:30
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

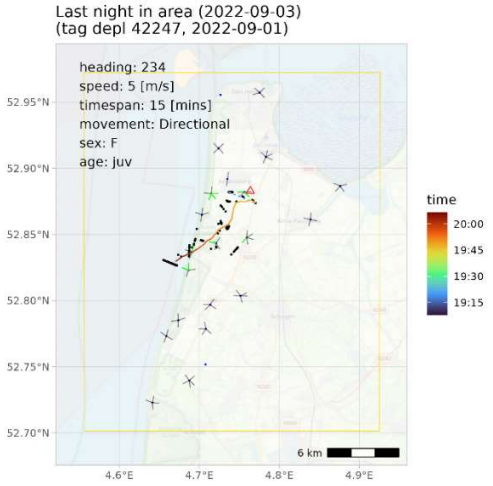

Track until 2022-09-03
(tag depl 42236)
time
Sep 04 00:00
Sep 03 18:00
Sep 03 12:00
Sep 03 06:00
Sep 03 00:00
20 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
51.8°N
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E

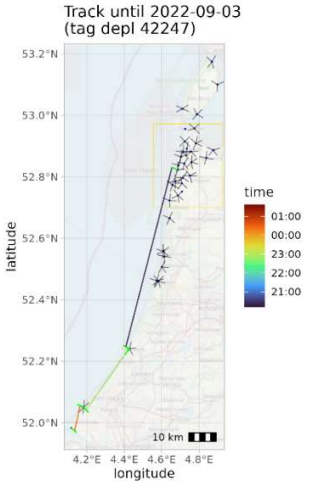

Last night in area (2022-09-20)
(tag depl 42238, 2022-09-06)
heading: 114
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
03:00
00:00
21:00
18:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-08-31)
(tag depl 42239, 2022-08-31)
heading: 245
speed: 2 [m/s]
timespan: 11 [mins]
movement: Local
sex: M
age: juv
time
03:00
02:55
02:50
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

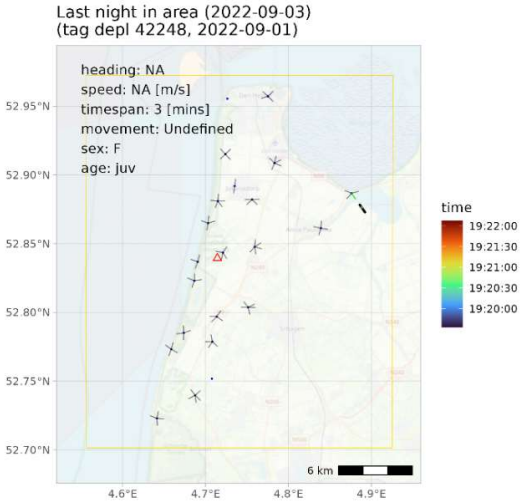


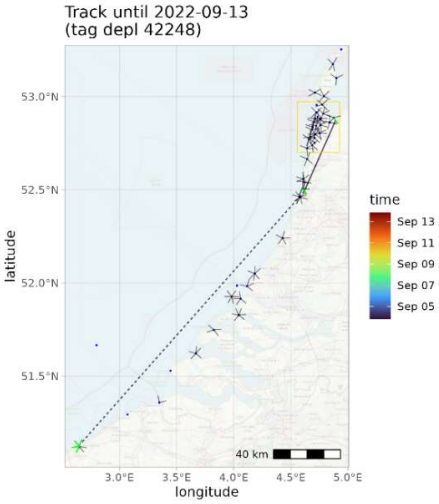


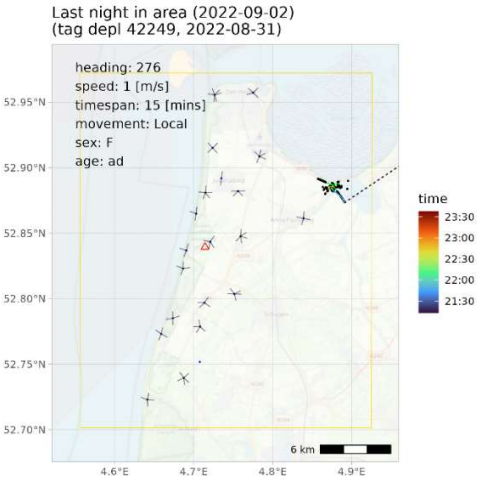


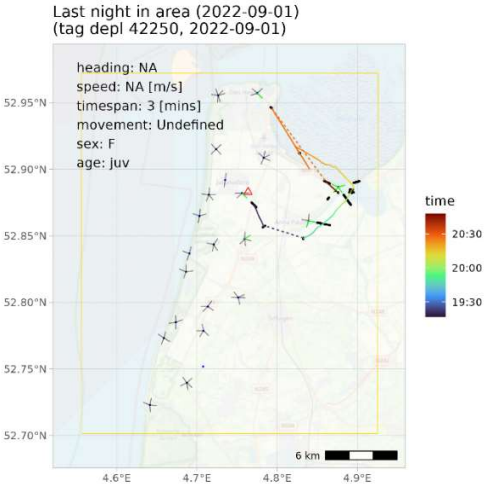


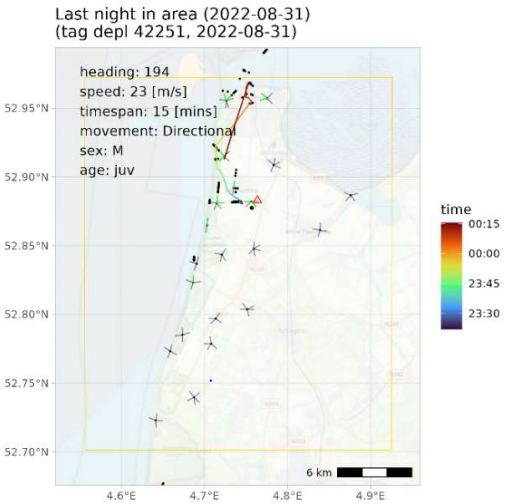
A definite departure over sea and a 65 km flight parallel to the coast

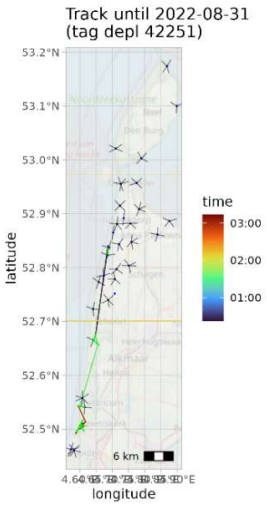


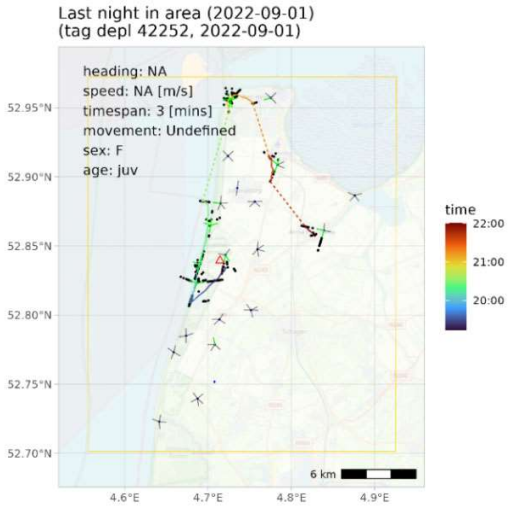


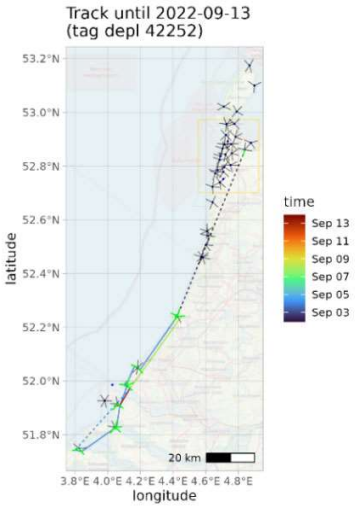

Last night in area (2022-09-02)
(tag depl 42249, 2022-08-31)
heading: 276
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
23:30
23:00
22:30
22:00
21:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

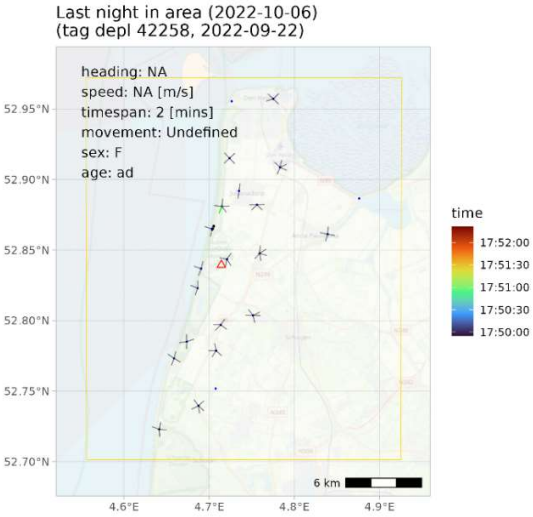

Last night in area (2022-09-01)
(tag depl 42250, 2022-09-01)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: F
age: juv
time
20:30
20:00
19:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

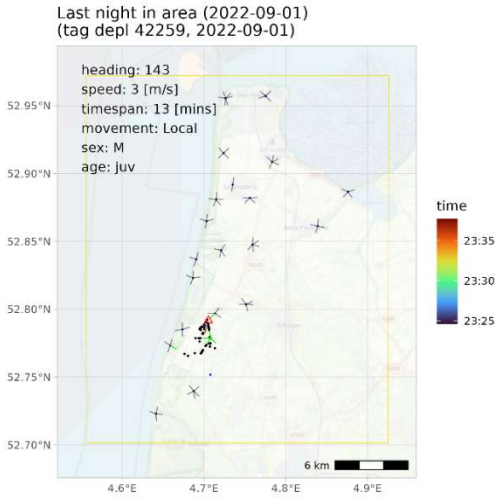

Last night in area (2022-08-31)
(tag depl 42251, 2022-08-31)
heading: 194
speed: 23 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
00:15
00:00
23:45
23:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

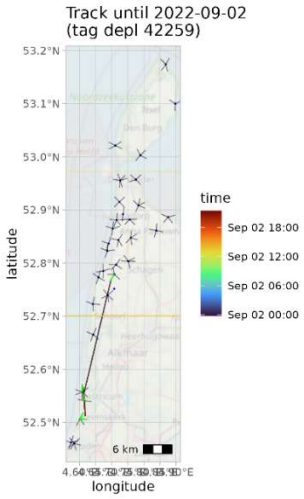

Track until 2022-08-31
(tag depl 42251)
time
03:00
02:00
01:00
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
6 km
longitude


Last night in area (2022-09-01)
(tag depl 42252, 2022-09-01)
heading: NA
speed: NA [m/s]
timespan: 3 [mins]
movement: Undefined
sex: F
age: juv
time
22:00
21:00
20:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

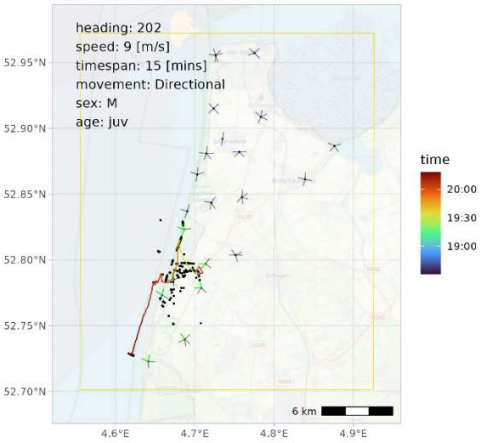

Track until 2022-09-13
(tag depl 42252)
time
Sep 13
Sep 11
Sep 09
Sep 07
Sep 05
Sep 03
20 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
51.8°N
3.8°E
4.0°E
4.2°E
4.4°E
4.6°E
4.8°E


Last night in area (2022-10-06)
(tag depl 42258, 2022-09-22)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: ad
time
17:52:00
17:51:30
17:51:00
17:50:30
17:50:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

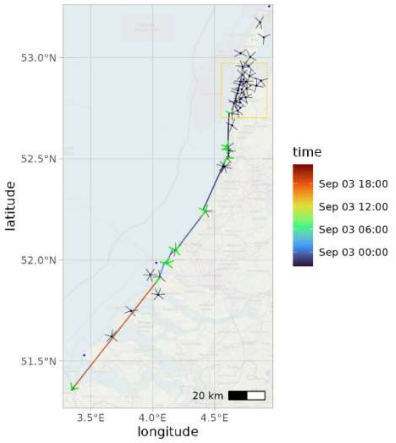

Last night in area (2022-09-01)
(tag depl 42259, 2022-09-01)
heading: 143
speed: 3 [m/s]
timespan: 13 [mins]
movement: Local
sex: M
age: juv
time
23:35
23:30
23:25
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2022-09-02
(tag depl 42259)
time
Sep 02 18:00
Sep 02 12:00
Sep 02 06:00
Sep 02 00:00
6 km
latitude
longitude
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N

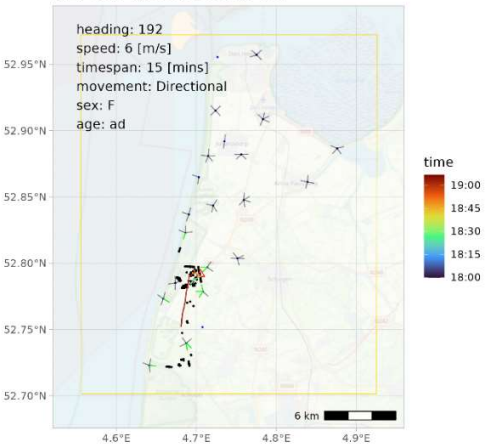
Last night in area (2022-09-02)
(tag depl 42260, 2022-09-01)



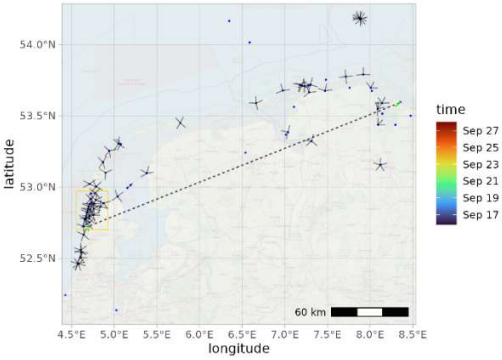
Track until 2022-09-03
(tag depl 42260)



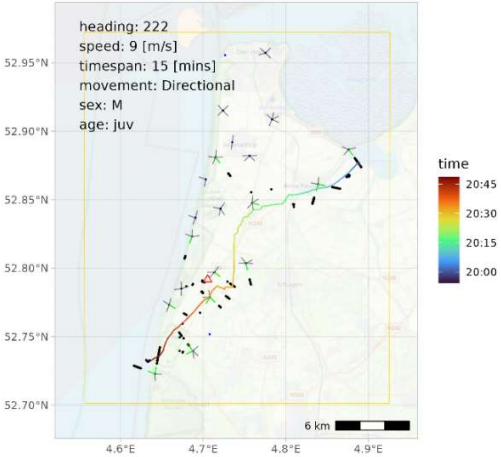
Last night in area (2022-09-15)
(tag depl 42261, 2022-09-05)

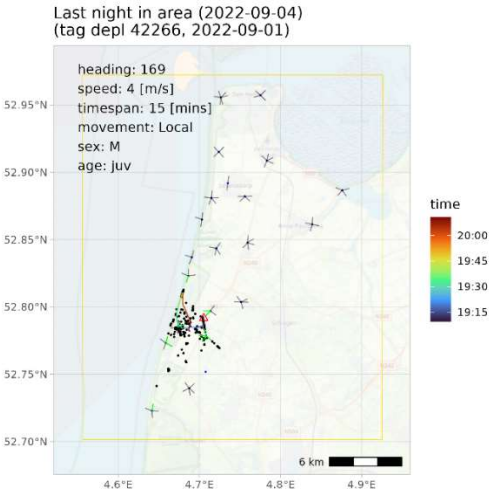


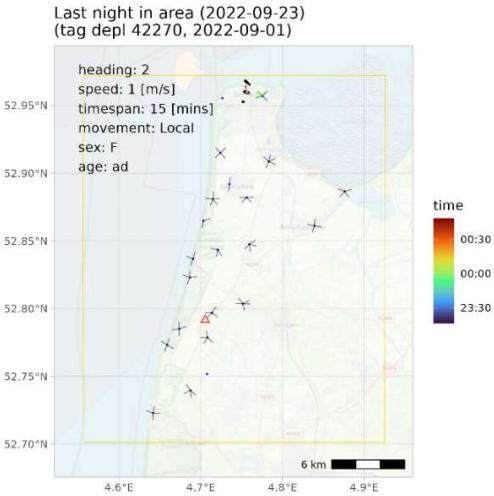
Track until 2022-09-27
(tag depl 42261)

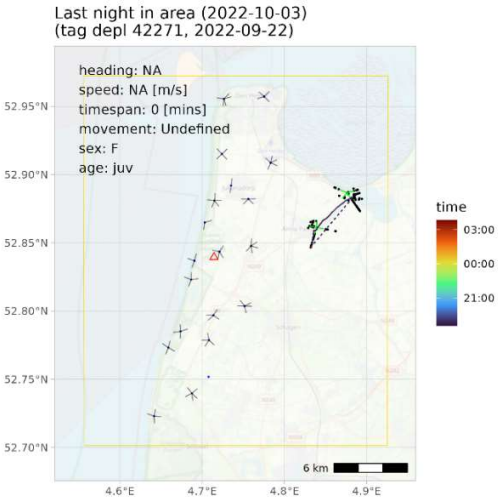


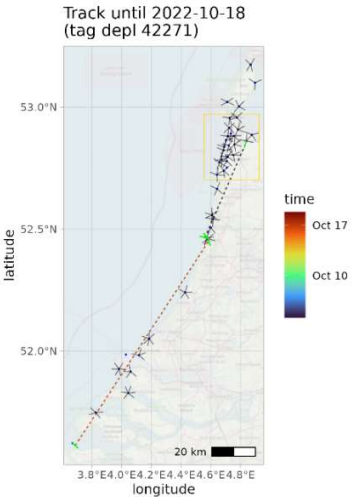
Last night in area (2022-09-13)
(tag depl 42263, 2022-09-02)

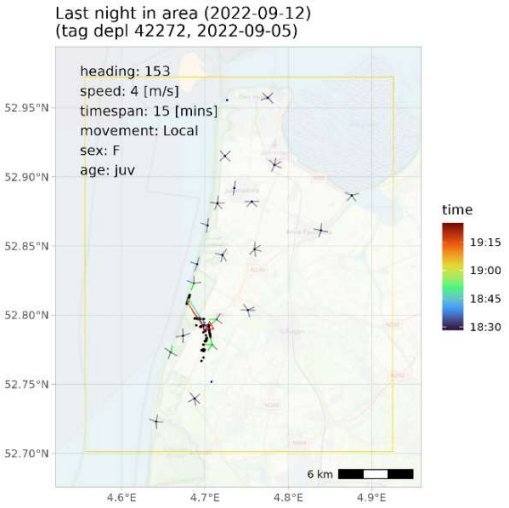


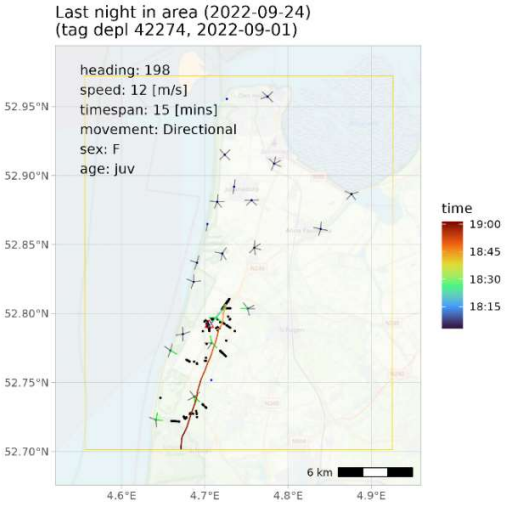

Last night in area (2022-09-04)
(tag depl 42266, 2022-09-01)
heading: 169
speed: 4 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
20:00
19:45
19:30
19:15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

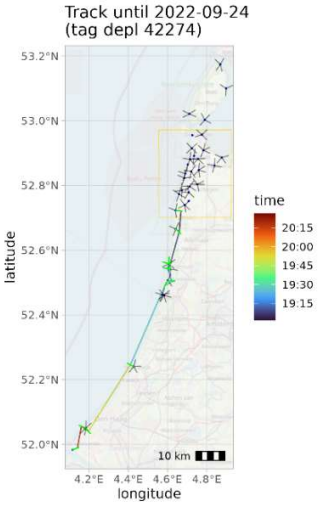

Last night in area (2022-09-23)
(tag depl 42270, 2022-09-01)
heading: 2
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
00:30
00:00
23:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

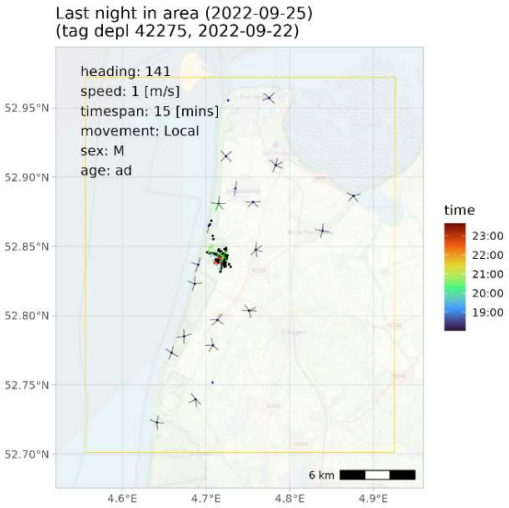

Last night in area (2022-10-03)
(tag depl 42271, 2022-09-22)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: juv
time
03:00
00:00
21:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Track until 2022-10-18
(tag depl 42271)
time
Oct 17
Oct 10
53.0°N
52.5°N
52.0°N
latitude
3.8°E4.0°E4.2°E4.4°E4.6°E4.8°E
longitude
20 km

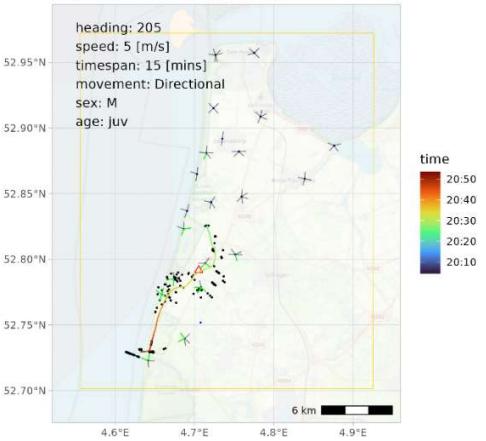

Last night in area (2022-09-12)
(tag depl 42272, 2022-09-05)
heading: 153
speed: 4 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
19:15
19:00
18:45
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km


Last night in area (2022-09-24)
(tag depl 42274, 2022-09-01)
heading: 198
speed: 12 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
19:00
18:45
18:30
18:15
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

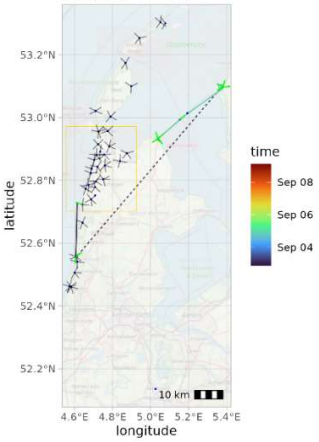

Track until 2022-09-24
(tag depl 42274)
time
20:15
20:00
19:45
19:30
19:15
latitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
4.2°E
4.4°E
4.6°E
4.8°E
longitude
10 km


Last night in area (2022-09-25)
(tag depl 42275, 2022-09-22)
heading: 141
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
23:00
22:00
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E
6 km

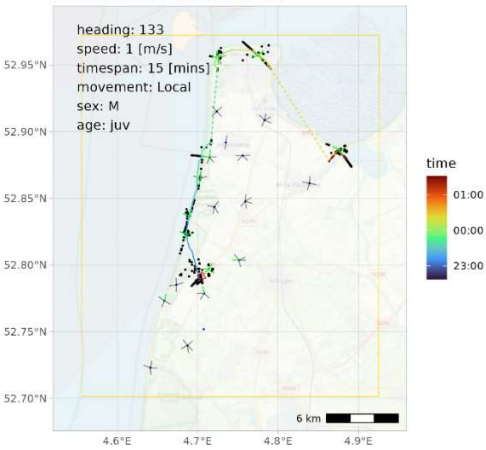
Last night in area (2022-09-02)
(tag depl 42276, 2022-09-01)



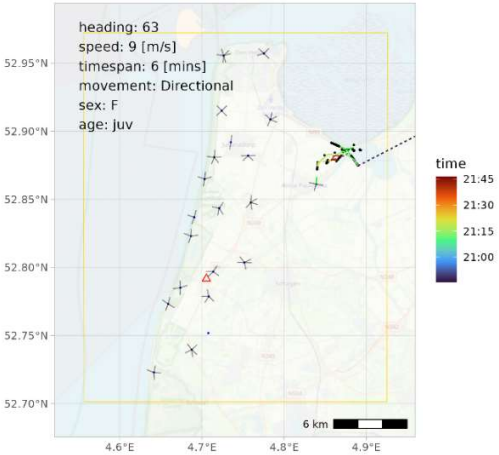
Track until 2022-09-08
(tag depl 42276)



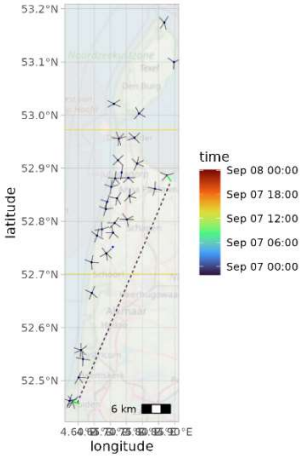
Last night in area (2022-09-01)
(tag depl 42277, 2022-09-01)

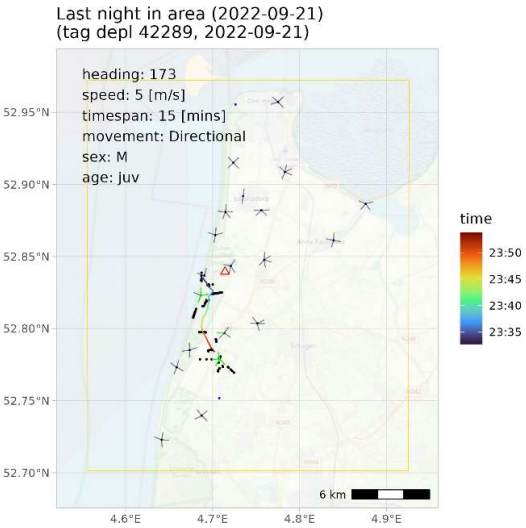


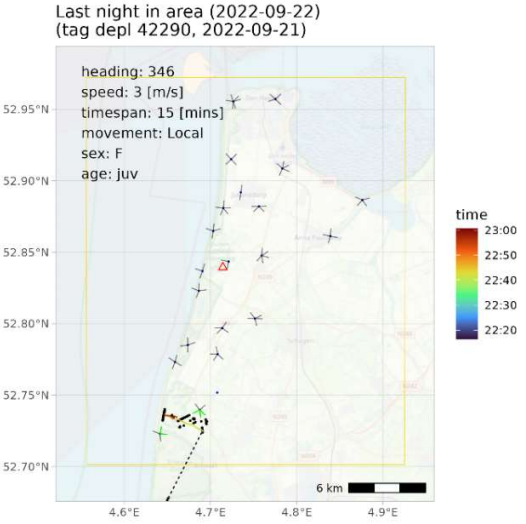
Last night in area (2022-09-06)
(tag depl 42278, 2022-09-01)

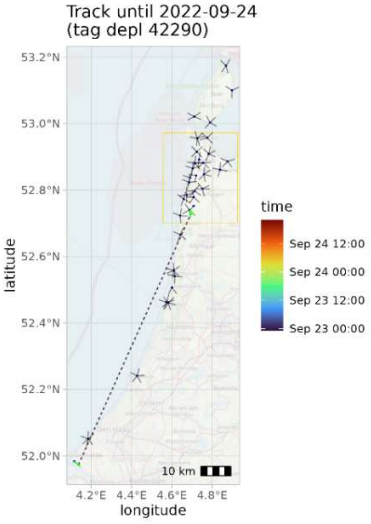


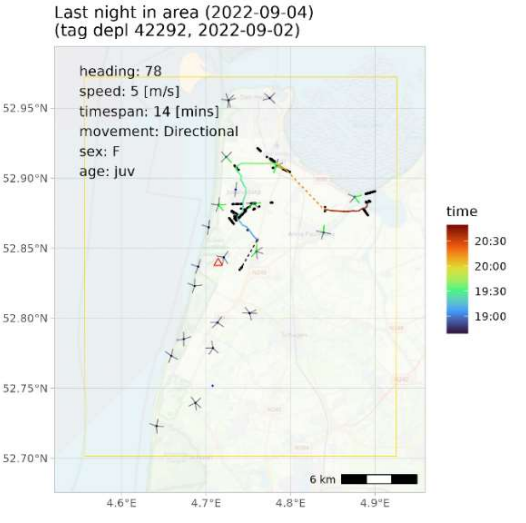
Track until 2022-09-07
(tag depl 42278)



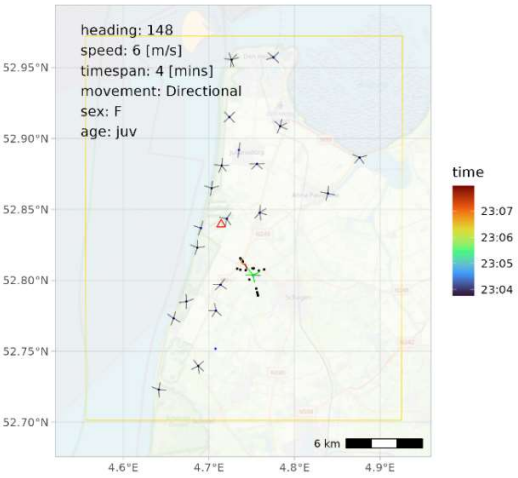

Last night in area (2022-09-21)
(tag depl 42289, 2022-09-21)
heading: 173
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
23:50
23:45
23:40
23:35
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-09-22)
(tag depl 42290, 2022-09-21)
heading: 346
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
23:00
22:50
22:40
22:30
22:20
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

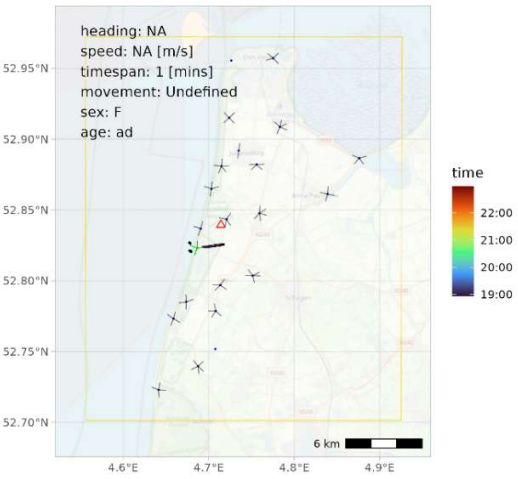

Track until 2022-09-24
(tag depl 42290)
time
Sep 24 12:00
Sep 24 00:00
Sep 23 12:00
Sep 23 00:00
latitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
52.0°N
10 km
4.2°E
4.4°E
4.6°E
4.8°E
longitude


Last night in area (2022-09-04)
(tag depl 42292, 2022-09-02)
heading: 78
speed: 5 [m/s]
timespan: 14 [mins]
movement: Directional
sex: F
age: juv
time
20:30
20:00
19:30
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

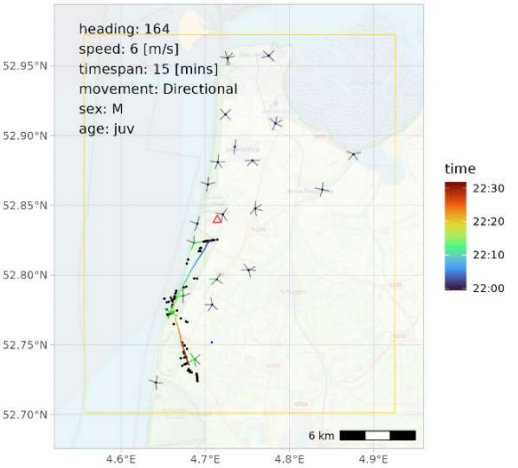
Last night in area (2022-09-01)
(tag depl 42293, 2022-09-01)



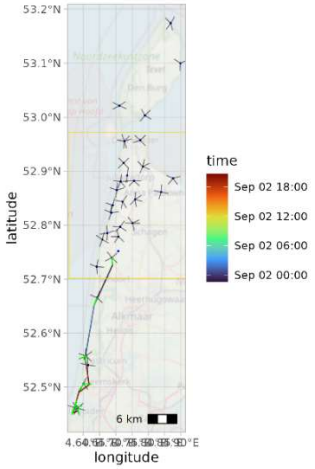
Last night in area (2022-09-09)
(tag depl 42294, 2022-09-01)



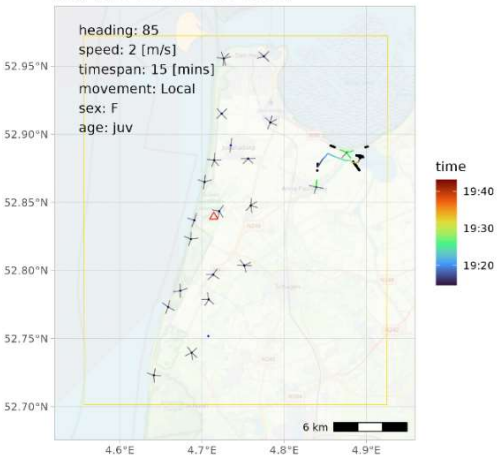
Last night in area (2022-09-01)
(tag depl 42296, 2022-09-01)



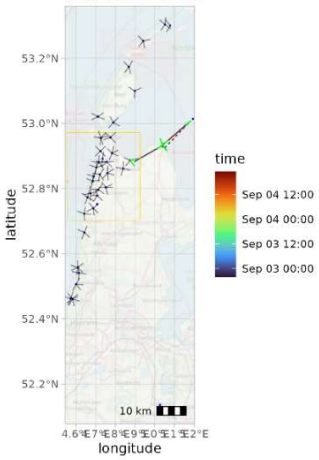
Track until 2022-09-02
(tag depl 42296)



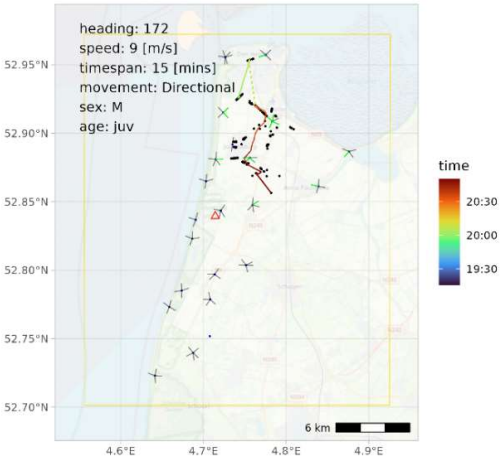
Last night in area (2022-09-02)
(tag depl 42297, 2022-09-01)



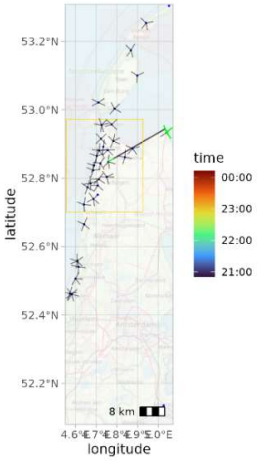
Track until 2022-09-04
(tag depl 42297)



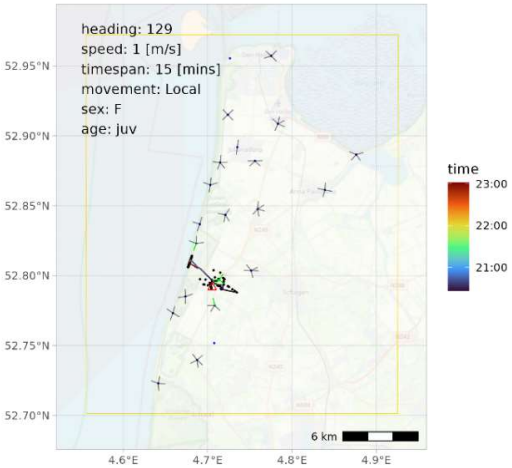
Last night in area (2022-09-06)
(tag depl 42298, 2022-09-01)



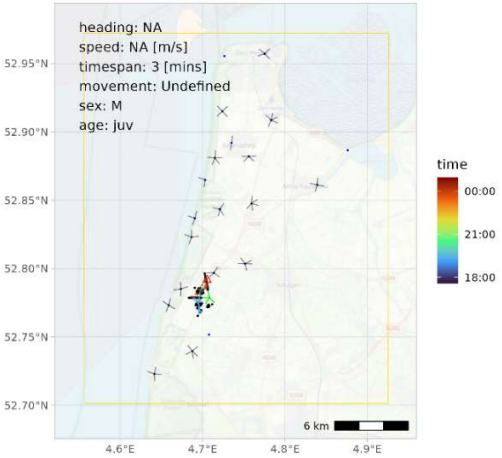
Track until 2022-09-06
(tag depl 42298)



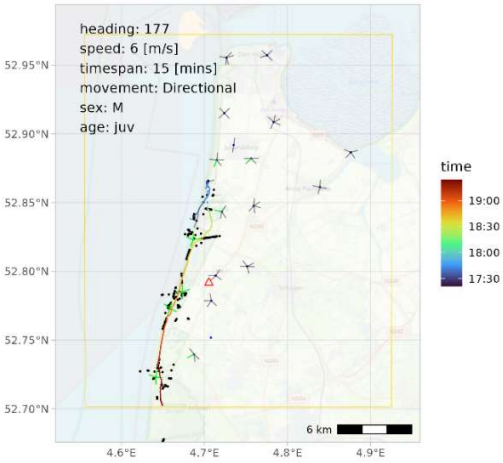
Last night in area (2022-09-21)
(tag depl 42299, 2022-09-15)



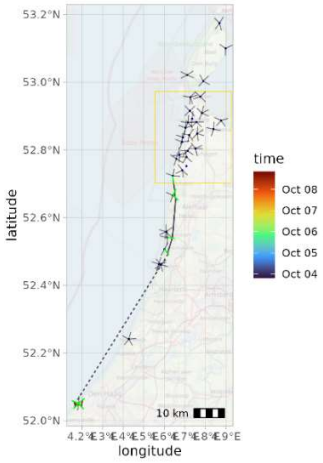
Last night in area (2022-10-06)
(tag depl 42300, 2022-09-14)



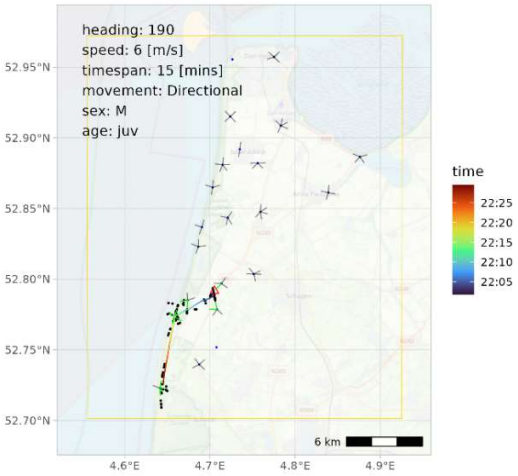
Last night in area (2022-10-03)
(tag depl 42301, 2022-09-20)

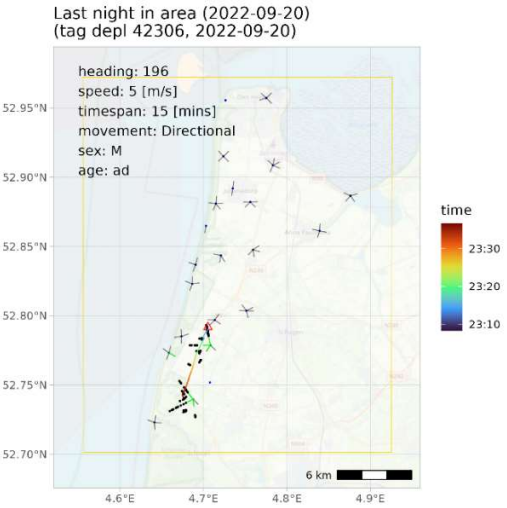


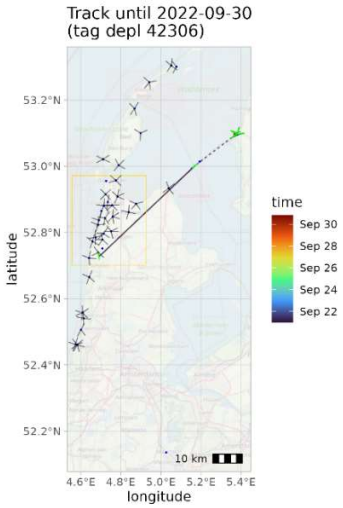
Track until 2022-10-08
(tag depl 42301)

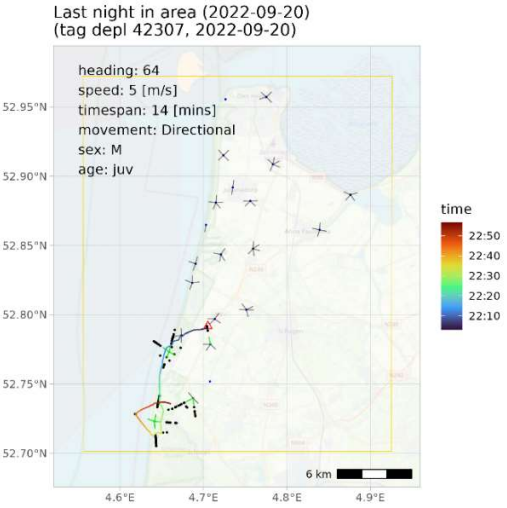


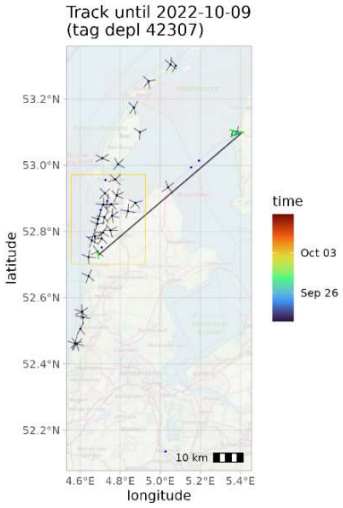
Last night in area (2022-09-21)
(tag depl 42305, 2022-09-21)

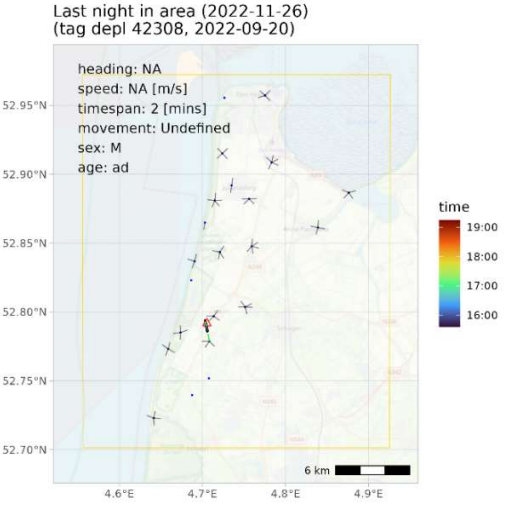


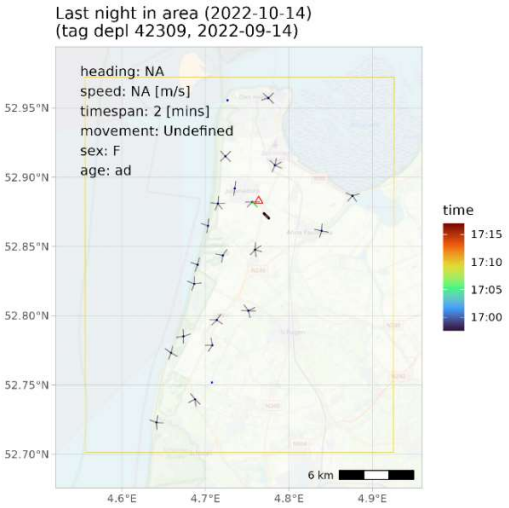

Last night in area (2022-09-20)
(tag depl 42306, 2022-09-20)
heading: 196
speed: 5 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: ad
time
23:30
23:20
23:10
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

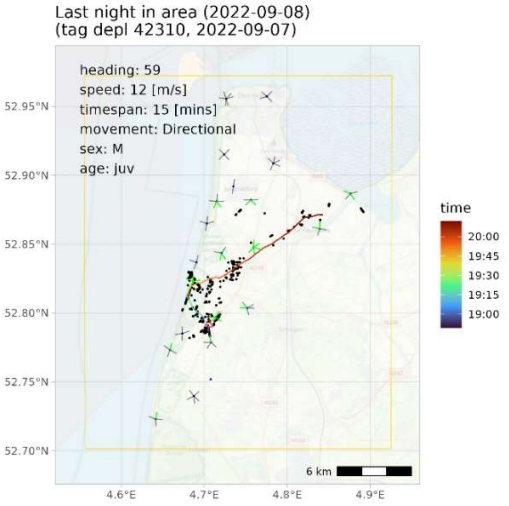

Track until 2022-09-30
(tag depl 42306)
time
Sep 30
Sep 28
Sep 26
Sep 24
Sep 22
10 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
4.6°E
4.8°E
5.0°E
5.2°E
5.4°E

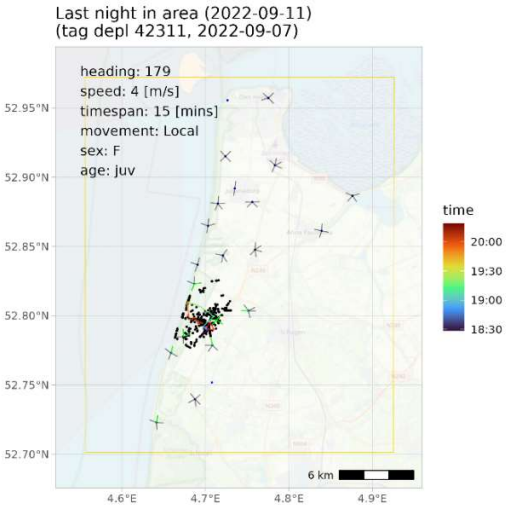

Last night in area (2022-09-20)
(tag depl 42307, 2022-09-20)
heading: 64
speed: 5 [m/s]
timespan: 14 [mins]
movement: Directional
sex: M
age: juv
time
22:50
22:40
22:30
22:20
22:10
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Track until 2022-10-09
(tag depl 42307)
time
Oct 03
Sep 26
10 km
latitude
longitude
53.2°N
53.0°N
52.8°N
52.6°N
52.4°N
52.2°N
4.6°E
4.8°E
5.0°E
5.2°E
5.4°E

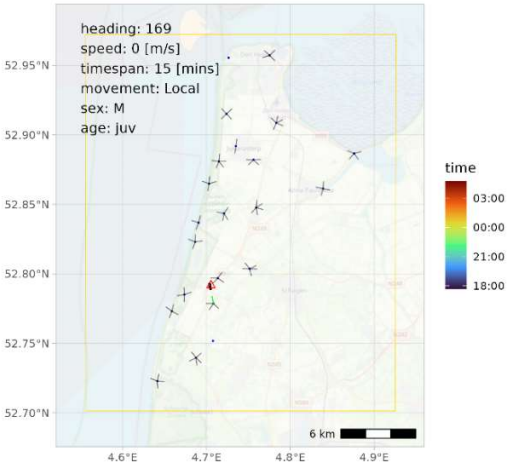

Last night in area (2022-11-26)
(tag depl 42308, 2022-09-20)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: M
age: ad
time
19:00
18:00
17:00
16:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-10-14)
(tag depl 42309, 2022-09-14)
heading: NA
speed: NA [m/s]
timespan: 2 [mins]
movement: Undefined
sex: F
age: ad
time
17:15
17:10
17:05
17:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

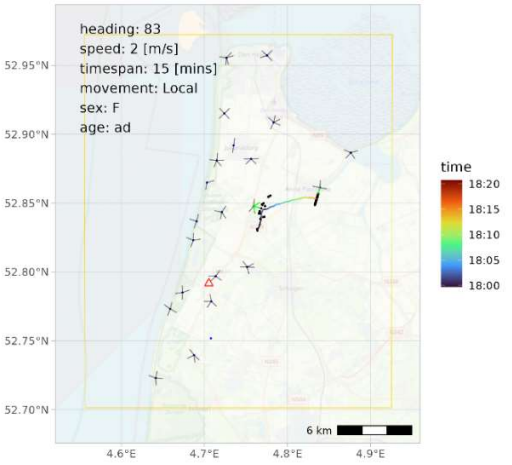

Last night in area (2022-09-08)
(tag depl 42310, 2022-09-07)
heading: 59
speed: 12 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
20:00
19:45
19:30
19:15
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-09-11)
(tag depl 42311, 2022-09-07)
heading: 179
speed: 4 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
20:00
19:30
19:00
18:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

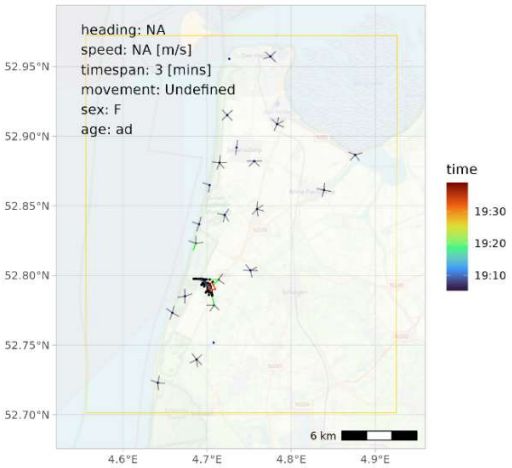
Last night in area (2022-09-23)
(tag depl 42312, 2022-09-07)

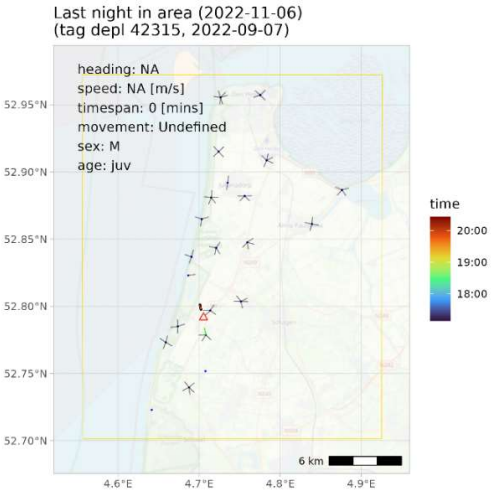


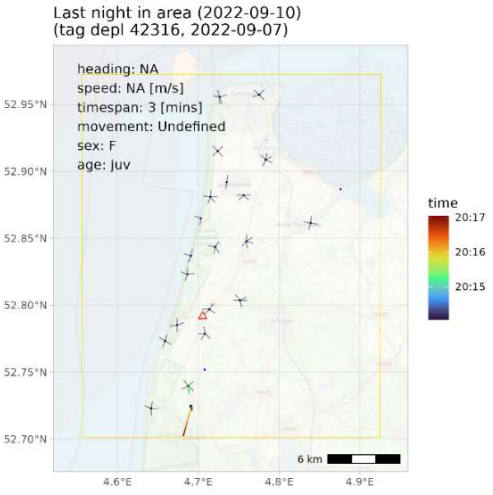
Last night in area (2022-10-03)
(tag depl 42313, 2022-09-06)

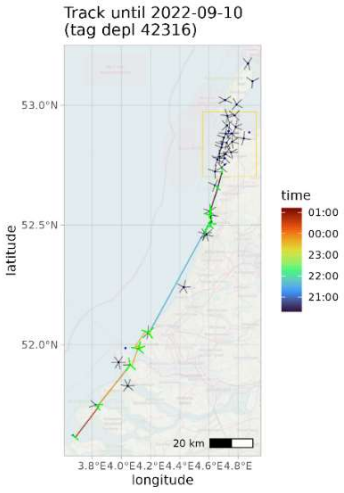


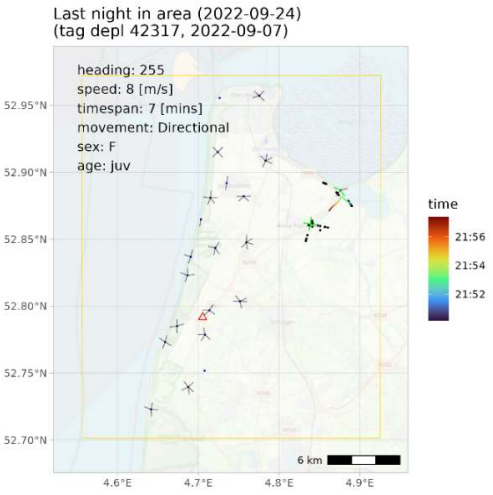
Last night in area (2022-09-15)
(tag depl 42314, 2022-09-06)



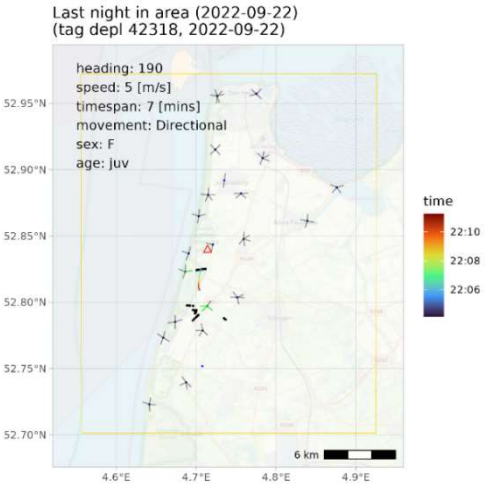


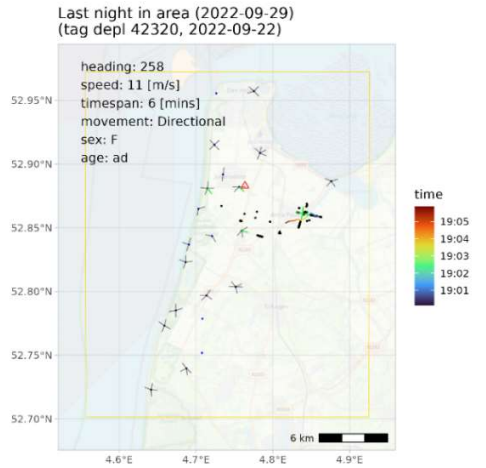


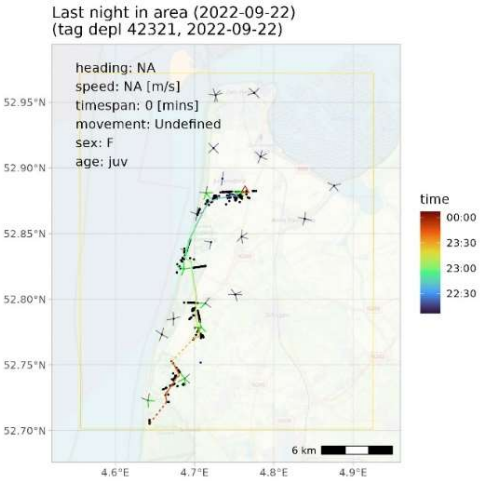


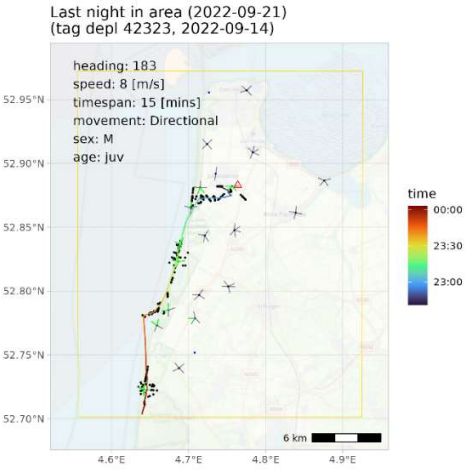


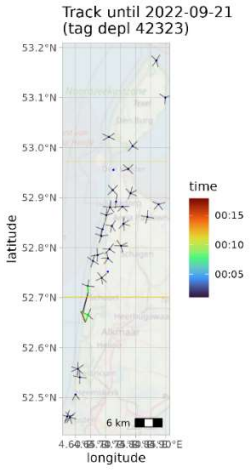
heading seems to be more southerly orientated (not heading towards the coast)

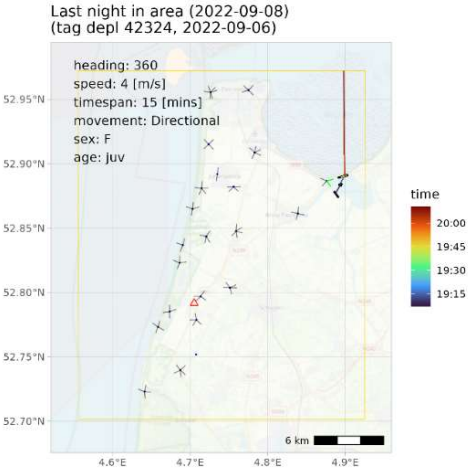

Last night in area (2022-09-22)
(tag depl 42318, 2022-09-22)
heading: 190
speed: 5 [m/s]
timespan: 7 [mins]
movement: Directional
sex: F
age: juv
time
22:10
22:08
22:06
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

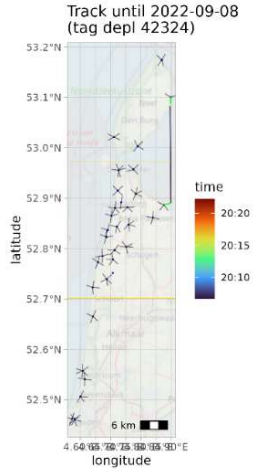

Last night in area (2022-09-29)
(tag depl 42320, 2022-09-22)
heading: 258
speed: 11 [m/s]
timespan: 6 [mins]
movement: Directional
sex: F
age: ad
time
19:05
19:04
19:03
19:02
19:01
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

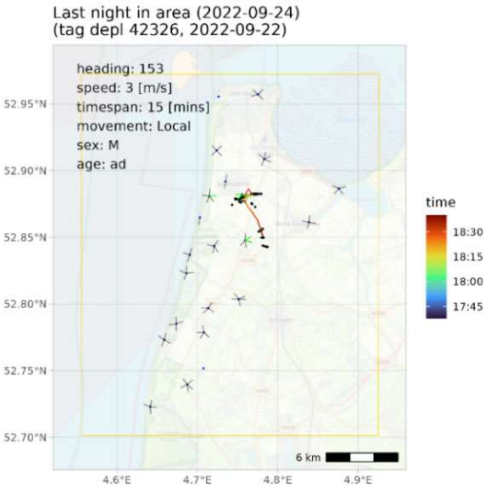

Last night in area (2022-09-22)
(tag depl 42321, 2022-09-22)
heading: NA
speed: NA [m/s]
timespan: 0 [mins]
movement: Undefined
sex: F
age: juv
time
00:00
23:30
23:00
22:30
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

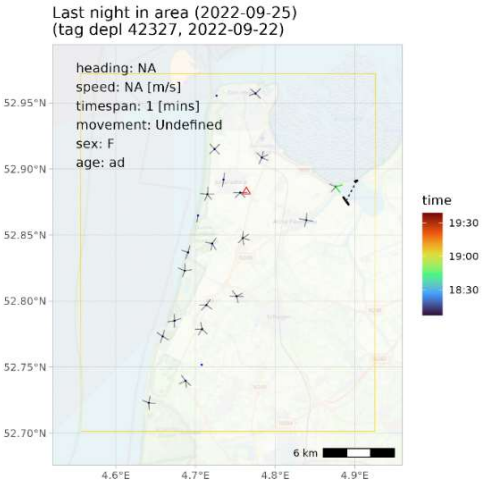

Last night in area (2022-09-21)
(tag depl 42323, 2022-09-14)
heading: 183
speed: 8 [m/s]
timespan: 15 [mins]
movement: Directional
sex: M
age: juv
time
00:00
23:30
23:00
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

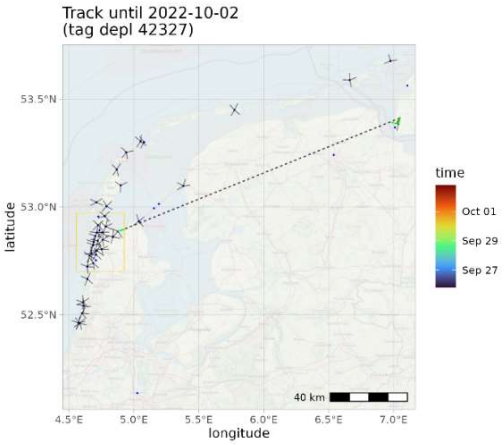

Track until 2022-09-21
(tag depl 42323)
time
00:15
00:10
00:05
6 km
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
longitude

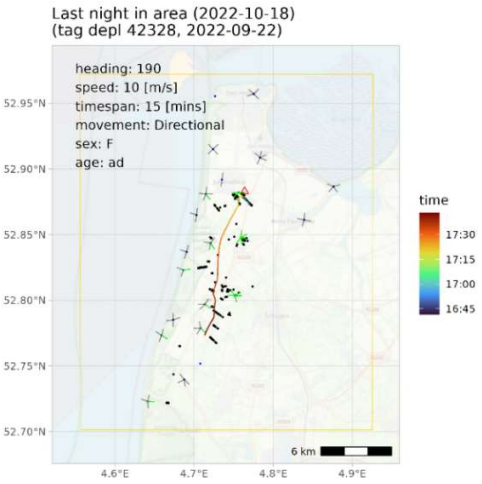

Last night in area (2022-09-08)
(tag depl 42324, 2022-09-06)
heading: 360
speed: 4 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: juv
time
20:00
19:45
19:30
19:15
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

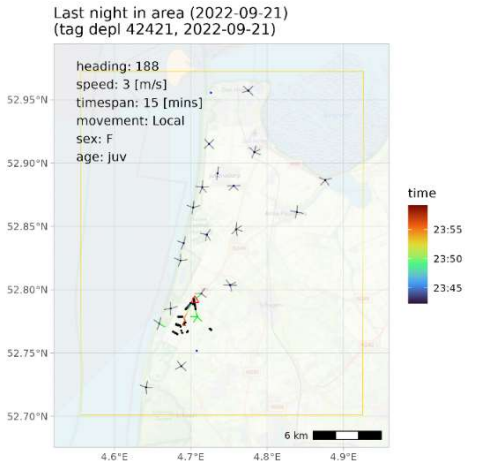

Track until 2022-09-08
(tag depl 42324)
time
20:20
20:15
20:10
6 km
53.2°N
53.1°N
53.0°N
52.9°N
52.8°N
52.7°N
52.6°N
52.5°N
latitude
longitude

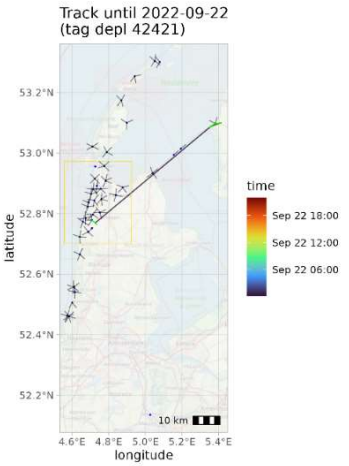

Last night in area (2022-09-24)
(tag depl 42326, 2022-09-22)
heading: 153
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: ad
time
18:30
18:15
18:00
17:45
6 km
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
4.6°E
4.7°E
4.8°E
4.9°E

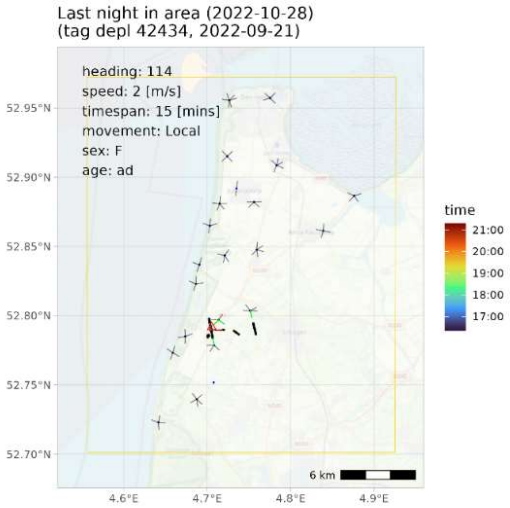

Last night in area (2022-09-25)
(tag depl 42327, 2022-09-22)
heading: NA
speed: NA [m/s]
timespan: 1 [mins]
movement: Undefined
sex: F
age: ad
time
19:30
19:00
18:30
6 km

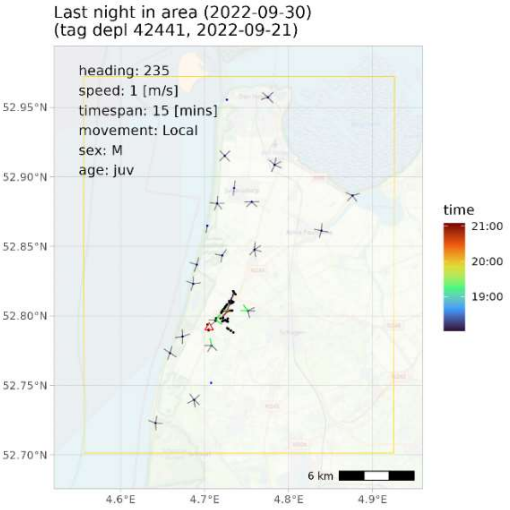

Track until 2022-10-02
(tag depl 42327)
latitude
longitude
time
Oct 01
Sep 29
Sep 27
40 km


Last night in area (2022-10-18)
(tag depl 42328, 2022-09-22)
heading: 190
speed: 10 [m/s]
timespan: 15 [mins]
movement: Directional
sex: F
age: ad
time
17:30
17:15
17:00
16:45
6 km


Last night in area (2022-09-21)
(tag depl 42421, 2022-09-21)
heading: 188
speed: 3 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: juv
time
23:55
23:50
23:45
6 km


Track until 2022-09-22
(tag depl 42421)
latitude
longitude
time
Sep 22 18:00
Sep 22 12:00
Sep 22 06:00
10 km


Last night in area (2022-10-28)
(tag depl 42434, 2022-09-21)
heading: 114
speed: 2 [m/s]
timespan: 15 [mins]
movement: Local
sex: F
age: ad
time
21:00
20:00
19:00
18:00
17:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E


Last night in area (2022-09-30)
(tag depl 42441, 2022-09-21)
heading: 235
speed: 1 [m/s]
timespan: 15 [mins]
movement: Local
sex: M
age: juv
time
21:00
20:00
19:00
52.95°N
52.90°N
52.85°N
52.80°N
52.75°N
52.70°N
6 km
4.6°E
4.7°E
4.8°E
4.9°E

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