# 2020 annual report

# Monk Seal Conservation Program at Cabo Blanco

Executed by

MONK SEAL CONSERVATION PROGRAM

CBD-Habitat

ANNAJAH NOUADHIBOU

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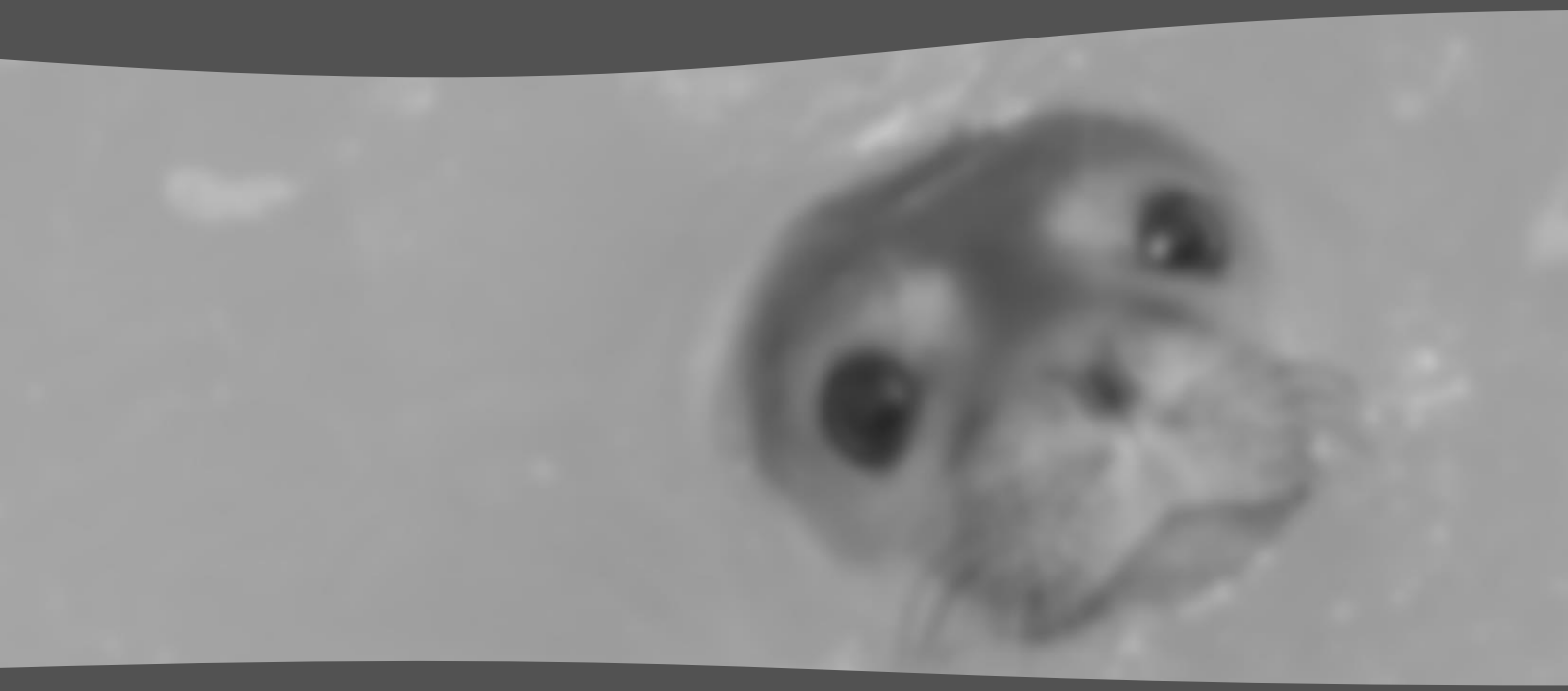
MONK SEAL CONSERVATION PROGRAM

# 2020 annual report



## Content



MONK SEAL CONSERVATION PROGRAM

# Control and surveillance of the marine and terrestrial reserve “Costa de las Focas”

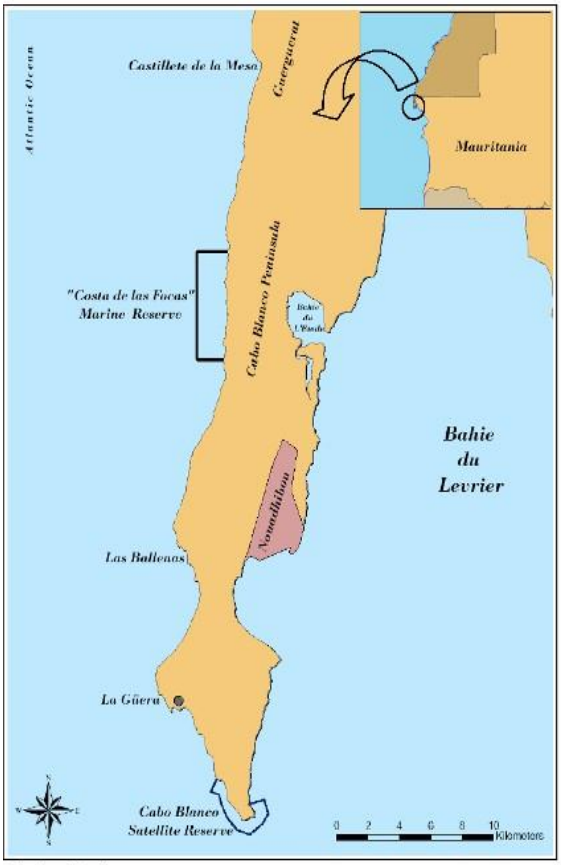
## Index

## 1. Introduction

The reserve "Costa de las Focas" created in 2001 to protect the last large colony of Mediterranean monk seals, is located at the Cabo Blanco peninsula, on the West African coast.

The Reserve extents 6.2 km along the coast from the parallel 21º00,631´ N to 21º04,00´ N. It protects the largest Mediterranean monk seal colony of the world on one of the most productive fishing grounds of the planet, where international fishing fleets and an important number of local artisanal pirogues operate.

It is important to remember as well that the reserve is just 7 km. from the second largest city of Mauritania, Nouadhibou, in clear expansion. Although, the local people do not harm the seals directly, their constant presence at the coast and in the caves is an important source of disturbance for breeding or use of determinate open beaches or accessible caves.



Cabo Blanco Peninsula

The goals of "Costa de las Focas" Reserve are:

- To keep tranquillity to the colony of the Mediterranean monk seal.
- To prevent the setting of fishing gears in the marine protected area.
- To assure the survival of the largest Mediterranean monk seal colony of the world.

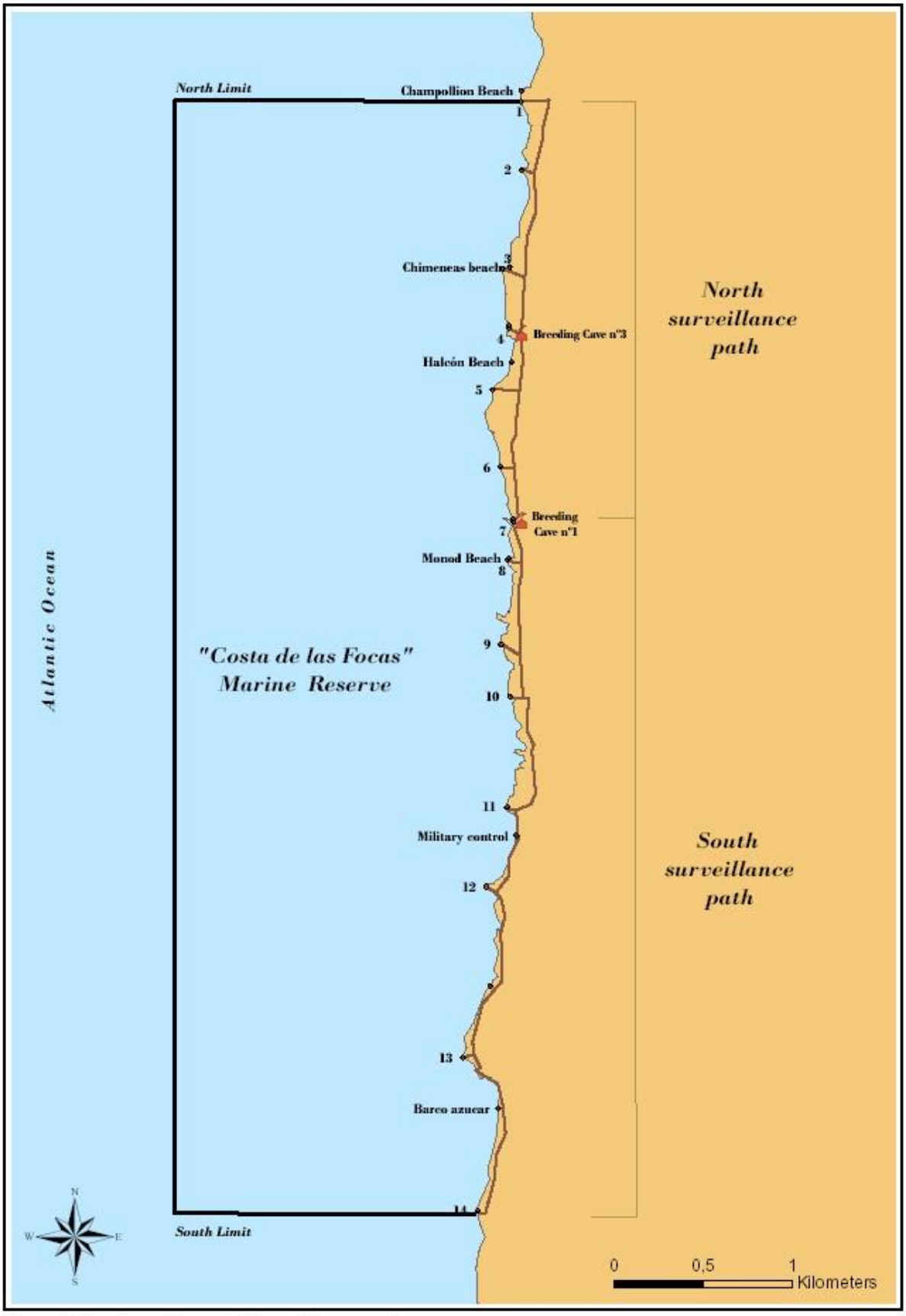
## 2. Methodology

The conservation agents take information of any infraction or disturbance detected at the inside limits of the reserve. Those infractions could be at land or sea, by day or night. That it is why there are three types of surveillance:

- Daily surveillance: Twice a day, the surveillance of the total coastal area of the reserve is performed to make sure there are no infractions at its inside.
- Night surveillance: Where industrial vessels are detected fishing closer than the legal limit of 12 nautical miles offshore.
- Monthly surveillance: to detect any signs or evidences of illegally activities (fishermen fishing from the cliff-tops, goose barnacle collectors, etc.) done at night or in between observatories

The information compiled from this surveillance work is sent to a data base which shows land and marine infractions, as well as any other notable event.

The map on the following page shows the location of the observatories, within the Reserve, from where the conservation agents carry out surveillance during their daily itineraries.




"Costa de las Focas" Terrestrial surveillance paths

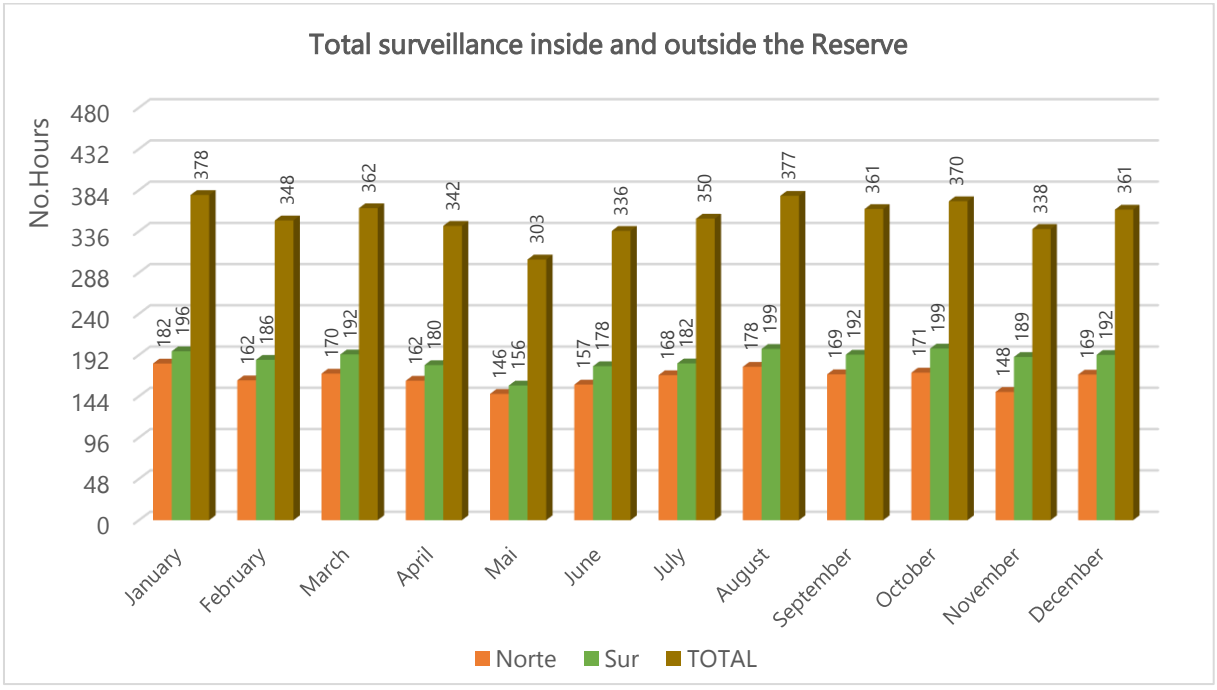
# 3. Results

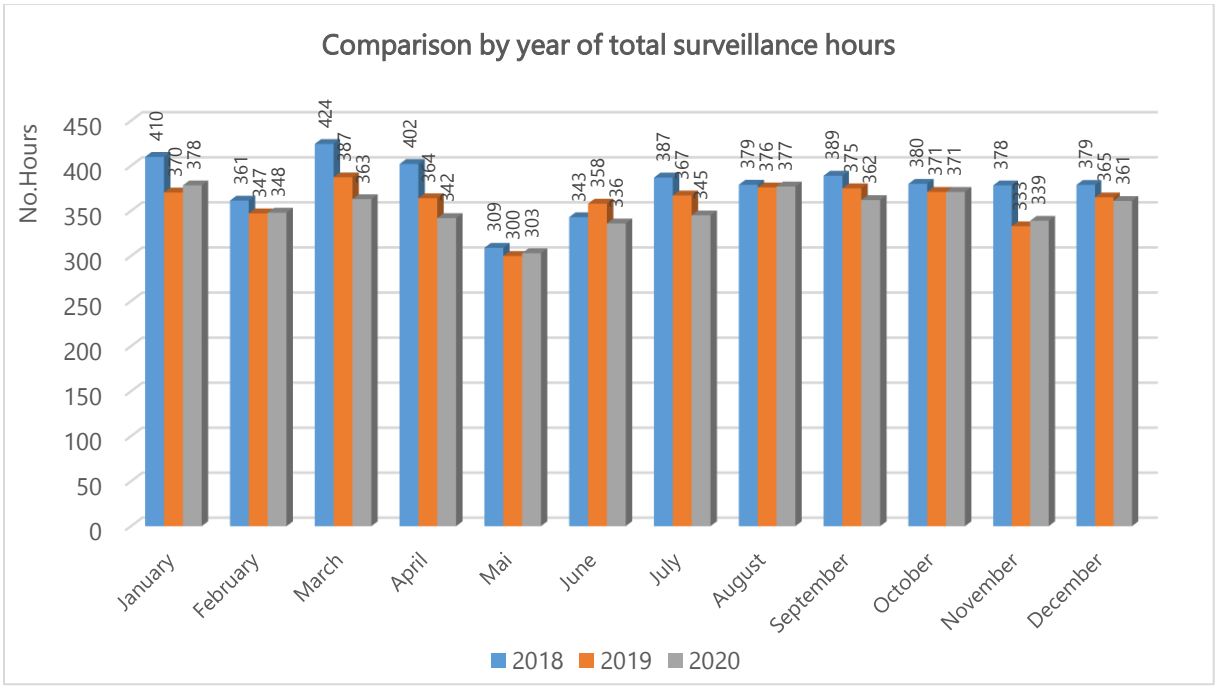
## 3.1. Daily surveillance

### *3.1.1. Effort of Surveillance*

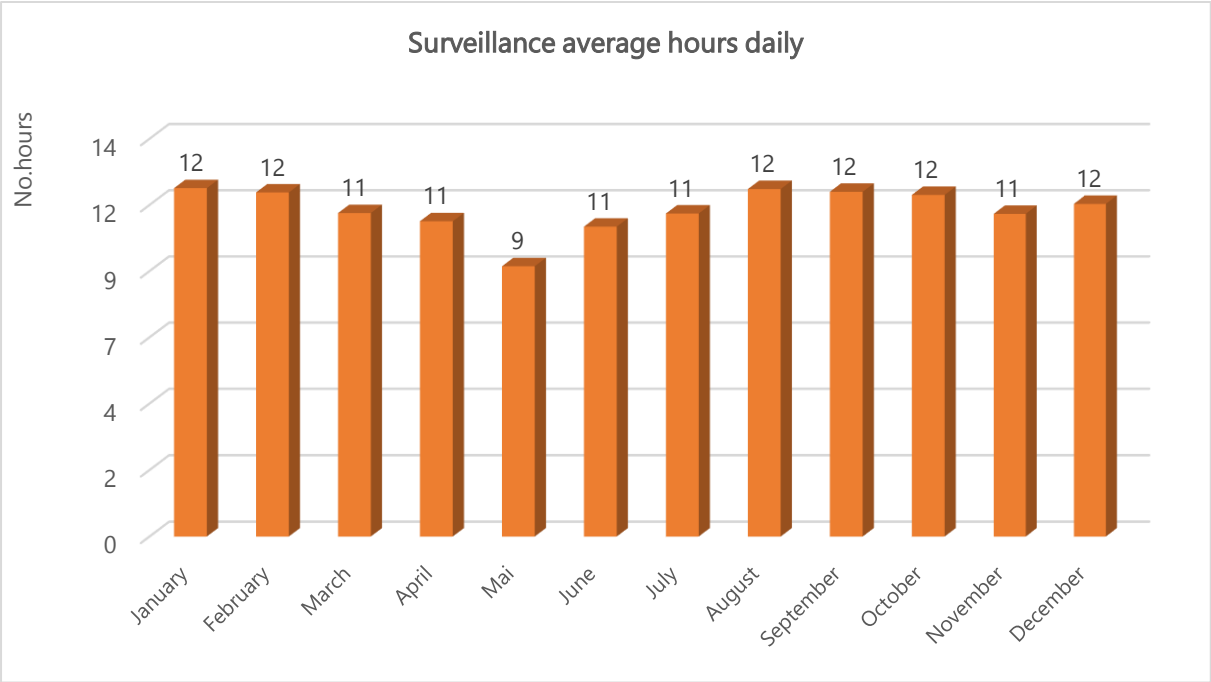
The conservation agents survey the entire coastline of the reserve using the 14 different observatories created for that purpose on top of the cliffs. From those observatories, they take the information of any land or marine infraction they detect. The results showed on this report are from the data registered from January to December 2020.

The total number of hours spent in reserve surveillance was **4232,5**, with a **daily average of 12 hours**, distributed according to the following graphic:

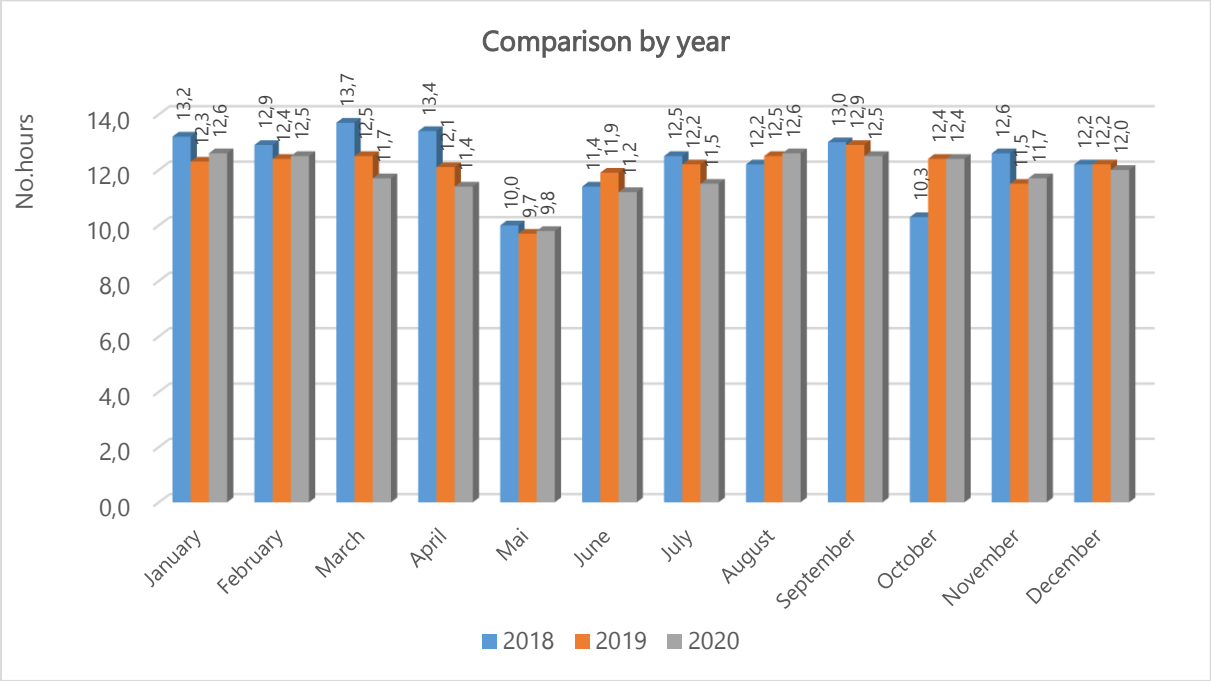


**Surveillance average hours daily**. Average time per day spent by the conservation agents on the two daily itineraries, both to the north and south of the Reserve.




**Comparison by year**. The average monthly hours of surveillance carried out during three consecutive years are compared.



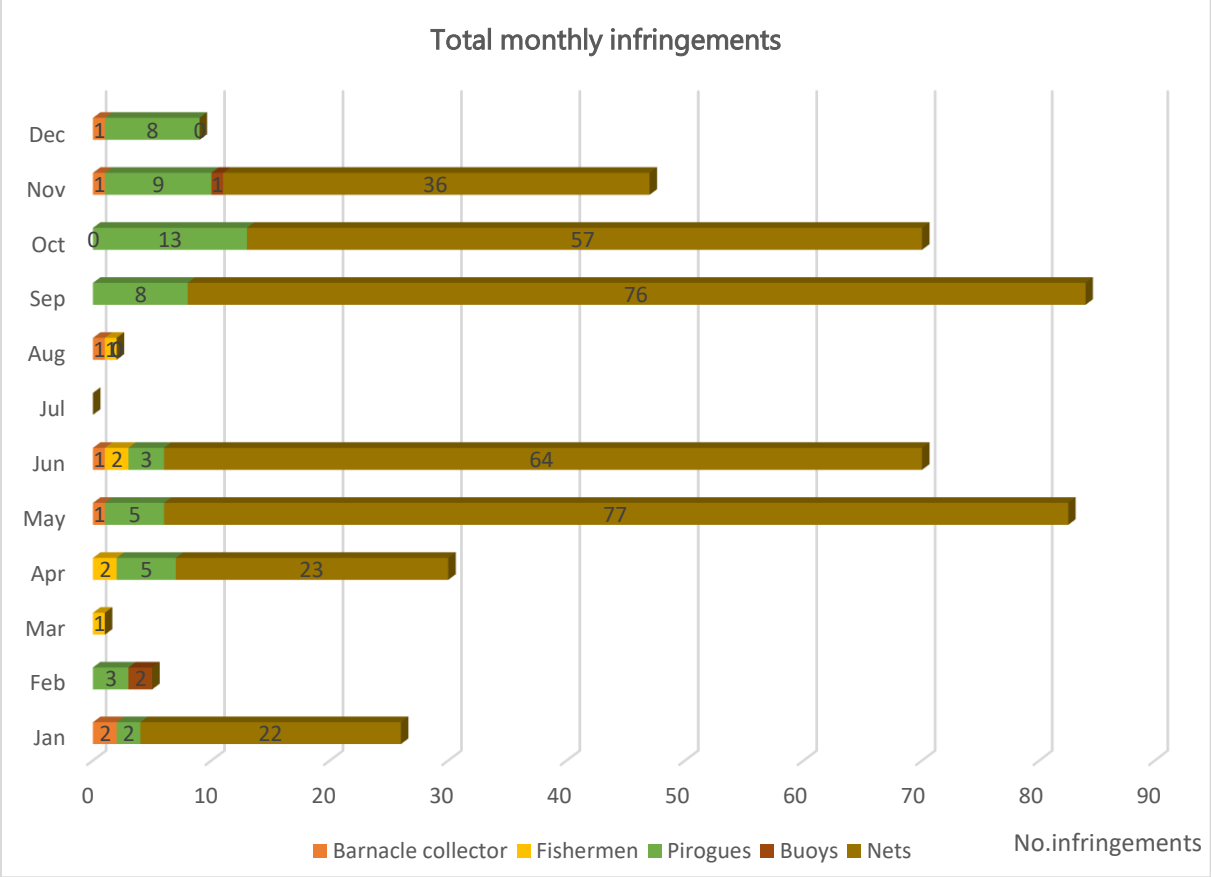

### *3.1.2. Offences inside the reserve*

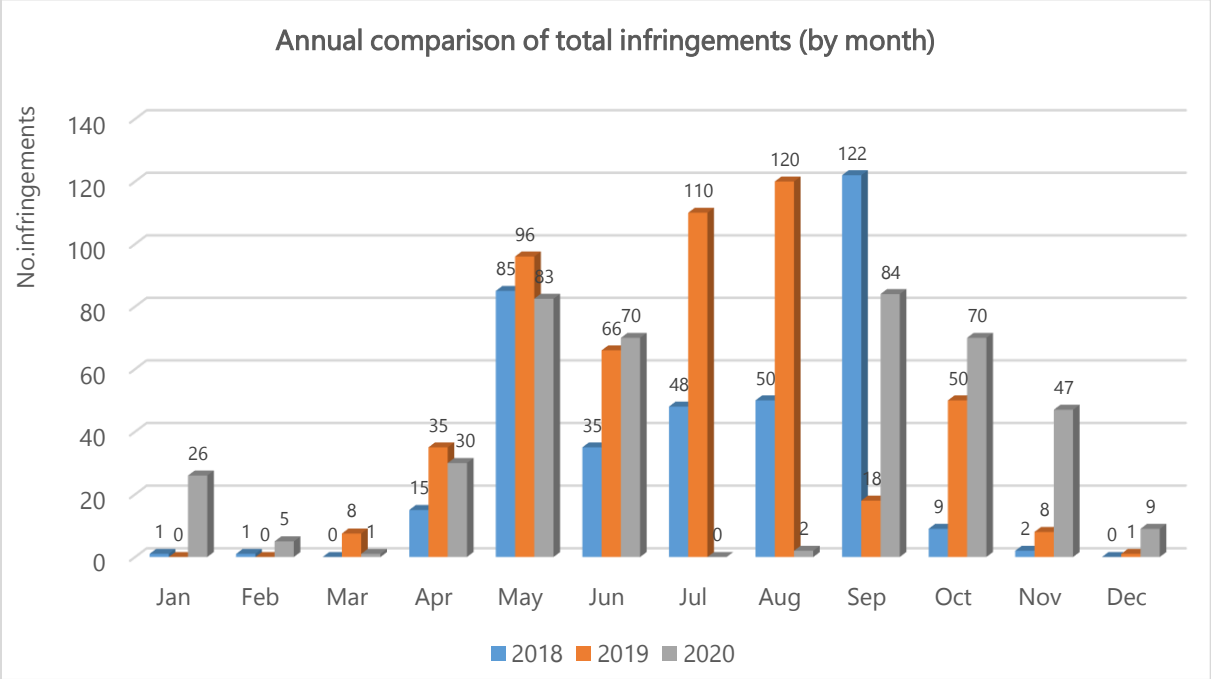
The surveillance of the marine area of the reserve, was daily performed from land. Conservation agents on their daily patrols, or every time they observed from the cliffs an offence within the limits of the

reserve, would inform the local coordinator who would go to the harbor to denounce the situation to local authorities and to make clear that the area is under surveillance.

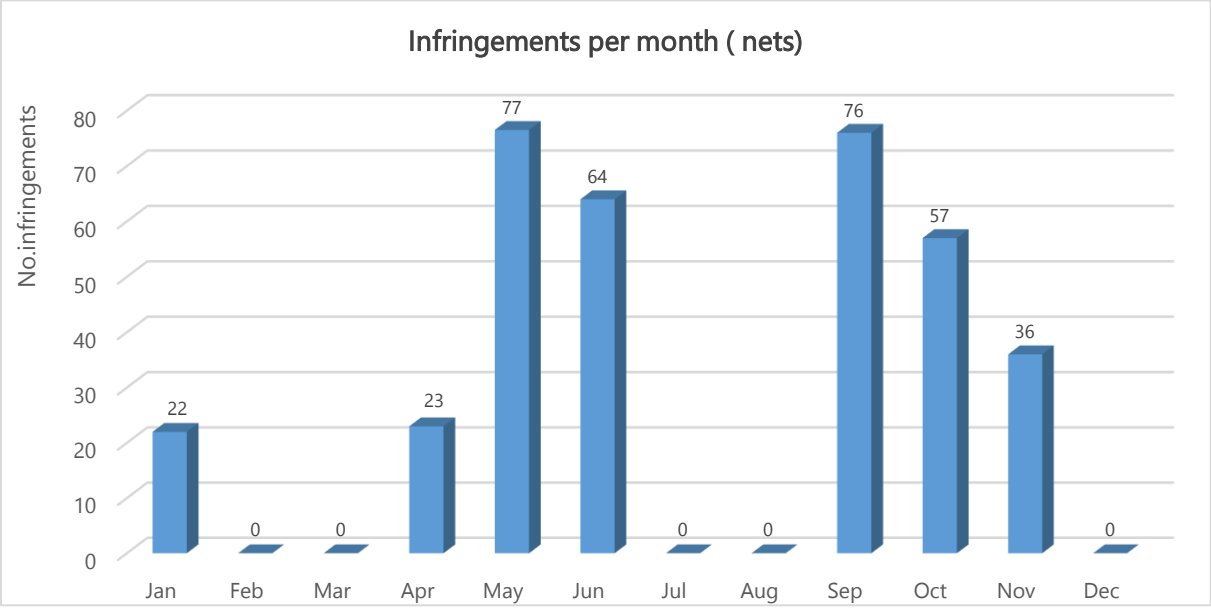
Land surveillance eliminated the negative impact the lack of marine surveillances implied. The work performed by land, was reinforced by taking pictures of the offences detected in the reserve.

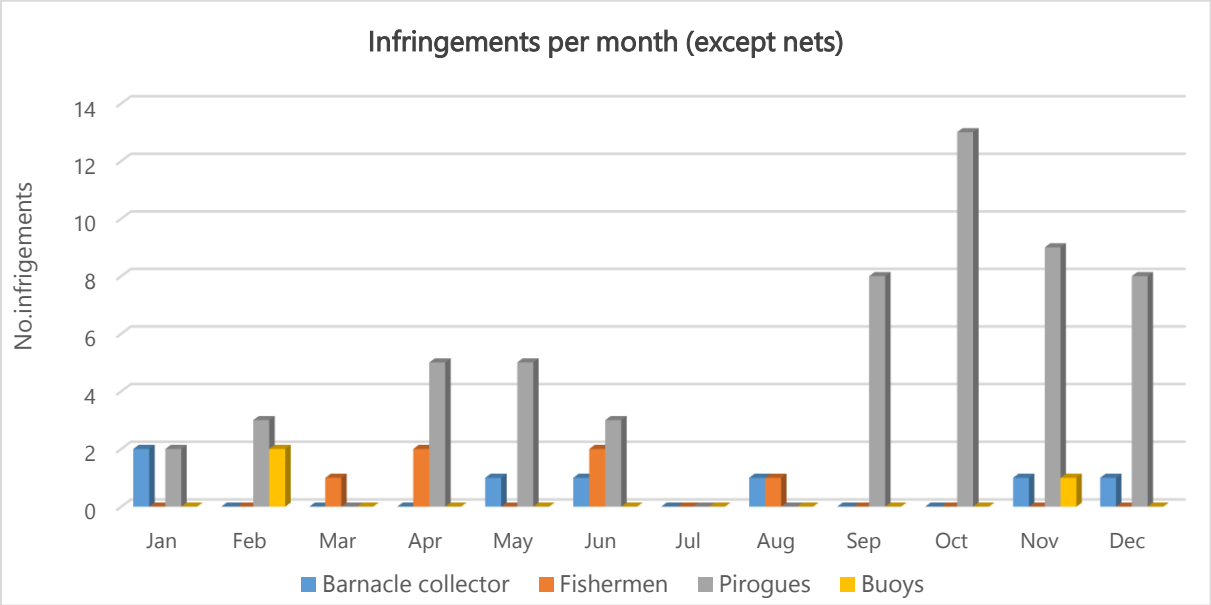
Infractions are distributed according to the following graphic:



**Infringements per month**, divided into two graphs. The first one looks only at nets, as this is usually the most common infringement. The next graph summarises the other four types:

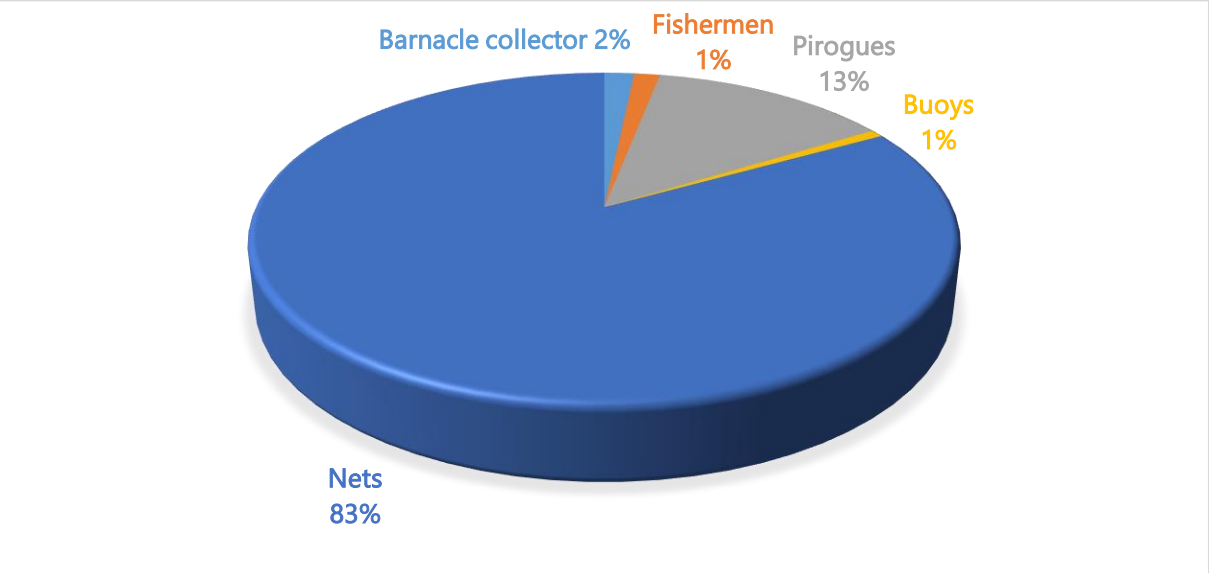


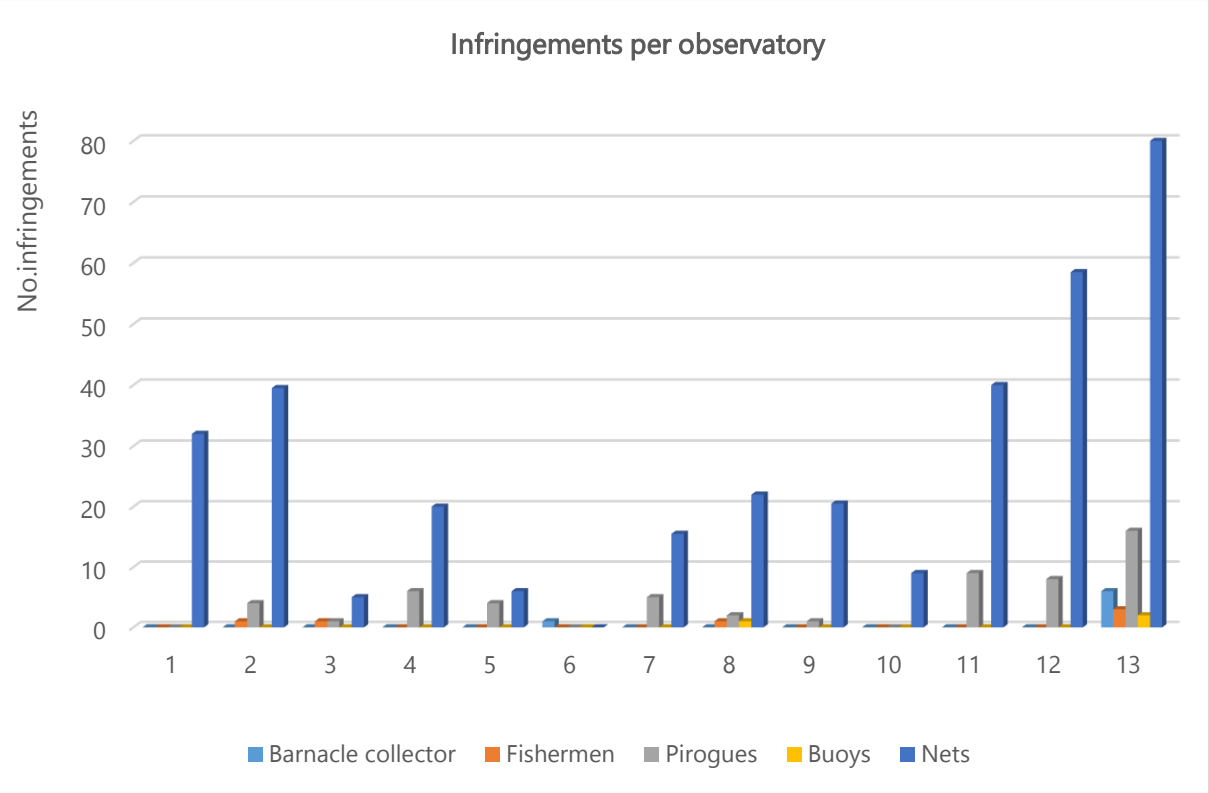

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Barnacle collector** | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| **Fishermen** | 0 | 0 | 1 | 2 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |
| **Pirogues** | 2 | 3 | 0 | 5 | 5 | 3 | 0 | 0 | 8 | 13 | 9 | 8 |
| **Buoys** | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| **Nets** | 22 | 0 | 0 | 23 | 77 | 64 | 0 | 0 | 76 | 57 | 36 | 0 |

A slight decrease in the number of offences detected this year in the reserve compared to the previous year (427 compared to 512 detected in 2019), indicates that the effectiveness of constant vigilance is high.

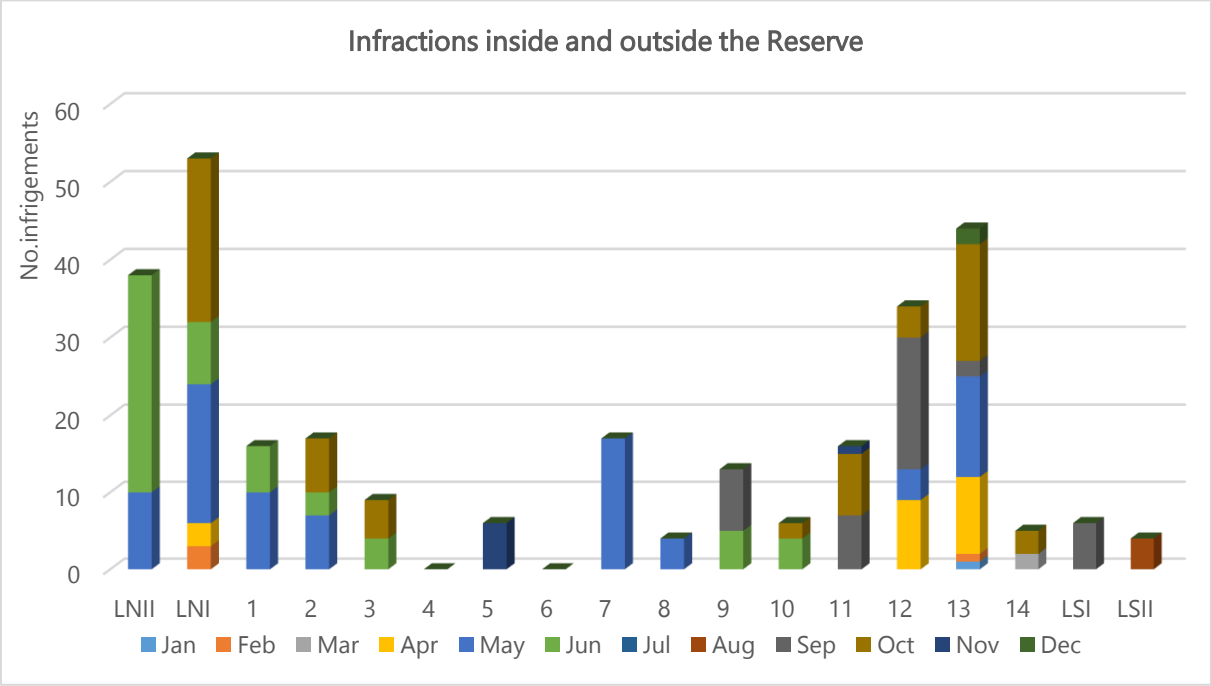
**Infringements by typology**. Gives an idea of the number (expressed as a percentage of the total) of each of the five categories of offences.




**Infringements per observatory**. Sum of the number of infringements recorded in each observatory.

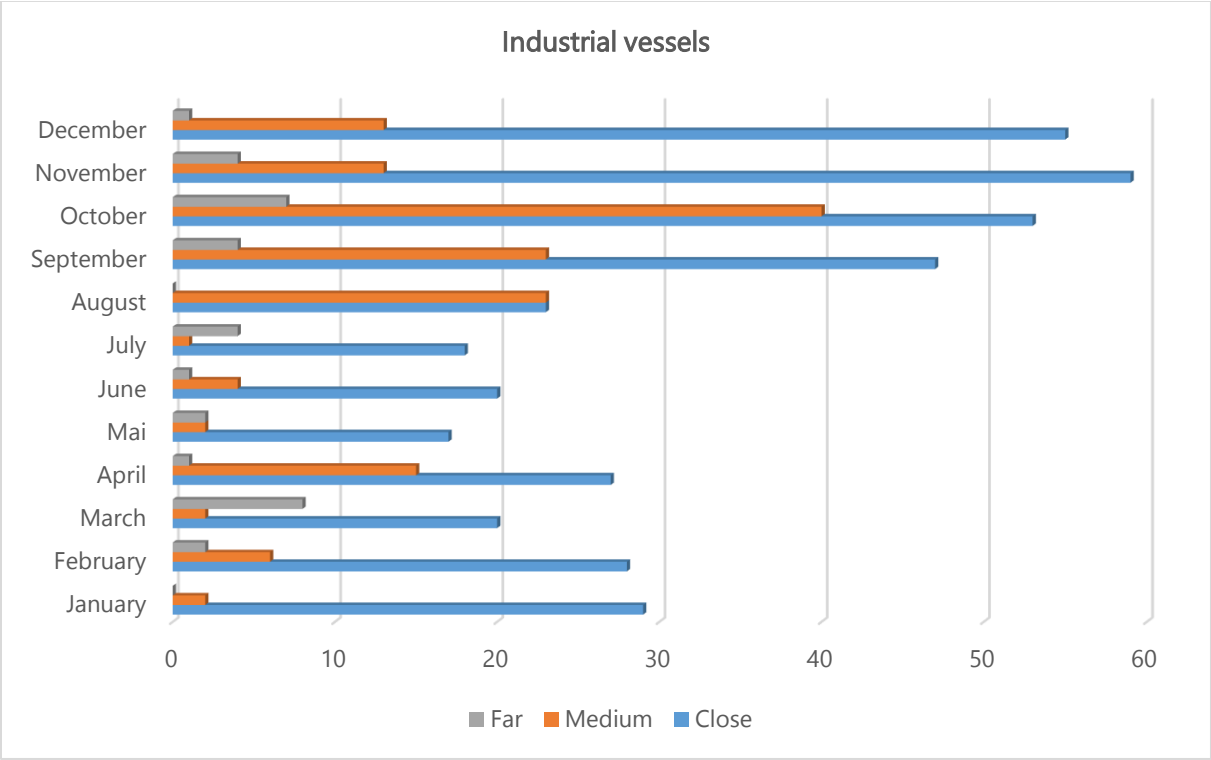


**Infractions inside and outside the Reserve**. This graph only compares infractions data collected in the Reserve on days when runs are made to the northern and southern boundaries, to equalise the effort.




### 3.2. Night surveillance

Industrial fishing is still a very serious threat to the Cabo Blanco monk seal population due to the high interaction rate that some industrial fishing gears may have (for example, pelagic trawling). Many ships have been sighted fishing at a much closer distance than the 12 miles legally allowed. Every time this type of infraction is detected, the Moroccan fishing authorities are warned of the fact and asked to intensify the surveillance of the area.



# Monitoring monk seal Cabo Blanco colony

## Index

## 1. Introduction

The aim of this initiative is to maintain a non-invasive monitoring system that does not cause disturbances on the seals' breeding and resting areas, while permitting:

- Seal counts inside the caves to define their habitat use and their population numbers.
- Define the number of pups born every year as well as the rates and causes of their mortality.
- Monitoring adult females and the definition of the population's breeding cycle.
- Individual identification of the members of the colony.
- Detection of any threat or catastrophe that could affect the breeding colony.
- Detection of dead, sick or injured seals.

## 2. Methodology

The inside of the breeding caves, were monitored from January to December 2018 using the following methods:

### 2.1. Direct observation using closed-circuit cameras installed in the two main breeding caves (Monitor)

The use of TV cameras is a highly efficient monitoring method which minimizes any potential disturbance caused by the physical presence of a person. This method facilitates the detection of births, monitoring of mother-pup couples, breeding behavior and the identification of individuals of each category, particularly adult males.

Pups are monitored individually without having to tag the individuals thanks to the exclusive unique design of the ventral patch of each pup until its first molt, at around 2 months of age. This ventral patch design enables us to individually identify them and also to sex them. A file is opened for each pup to record details about its growth patterns.

Monitoring of the breeding caves is performed on a daily basis, allowing an assessment of the colony's productivity as well as the neonatal mortality. It also permits the detection of pre-birth behavior, female gestation, adoption phenomenon and stealing of pups between different reproductive females, all of which is of great help to estimate the undetected productivity of the females who may have lost their pups.

### 2.2. Direct observation by researchers who are suspended at the cave entrances using climbing techniques ("Guíndola" or suspended chair)

This monitoring method is used as little as possible as in some cases it may be somewhat disturbing for the seals. It is therefore only used when the TV cameras cannot be used for monitoring due to rough sea conditions, and in cave 7 when its camera is not working (the camera of this cave is only used at the main breeding season months because the entrance of the cave is very low and waves could destroy the camera in fall and winter.

### 2.3. Observation from the cliff

The cliff offers the possibility of making controls and counts of the population. This is the third method used.

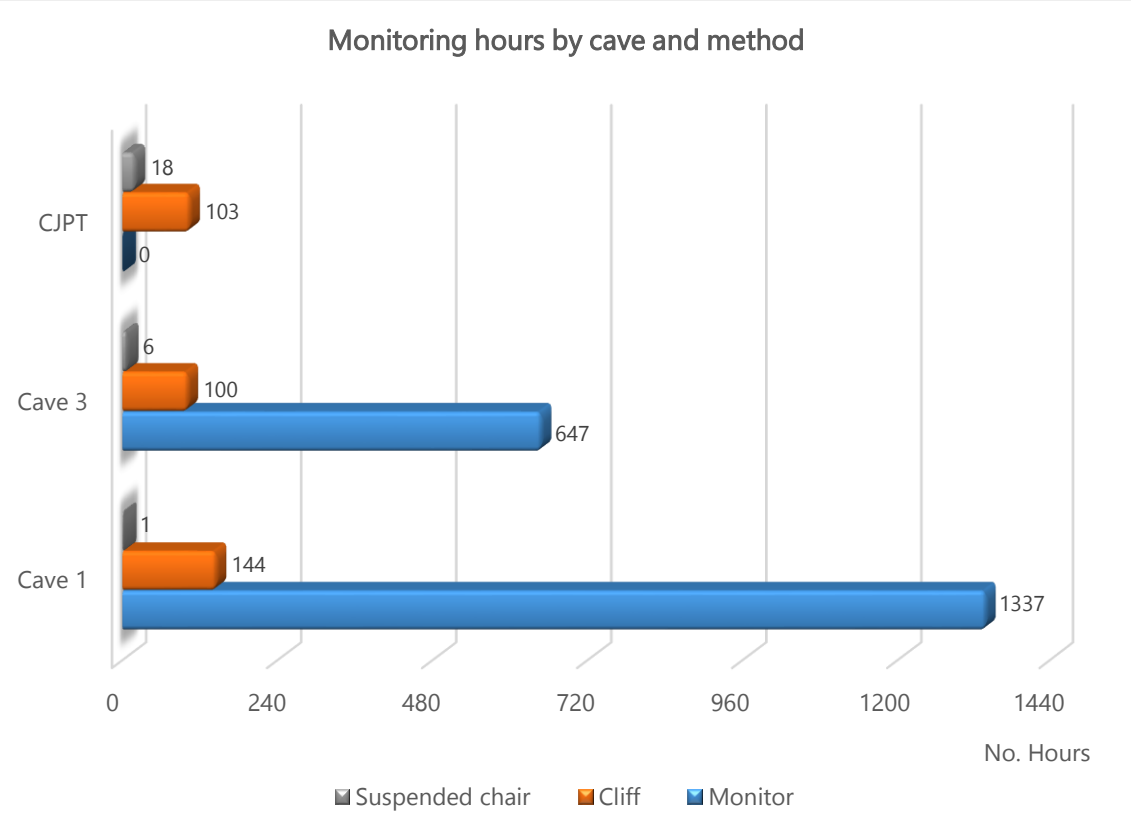
## 3. Results

### 3.1. Effort monitoring

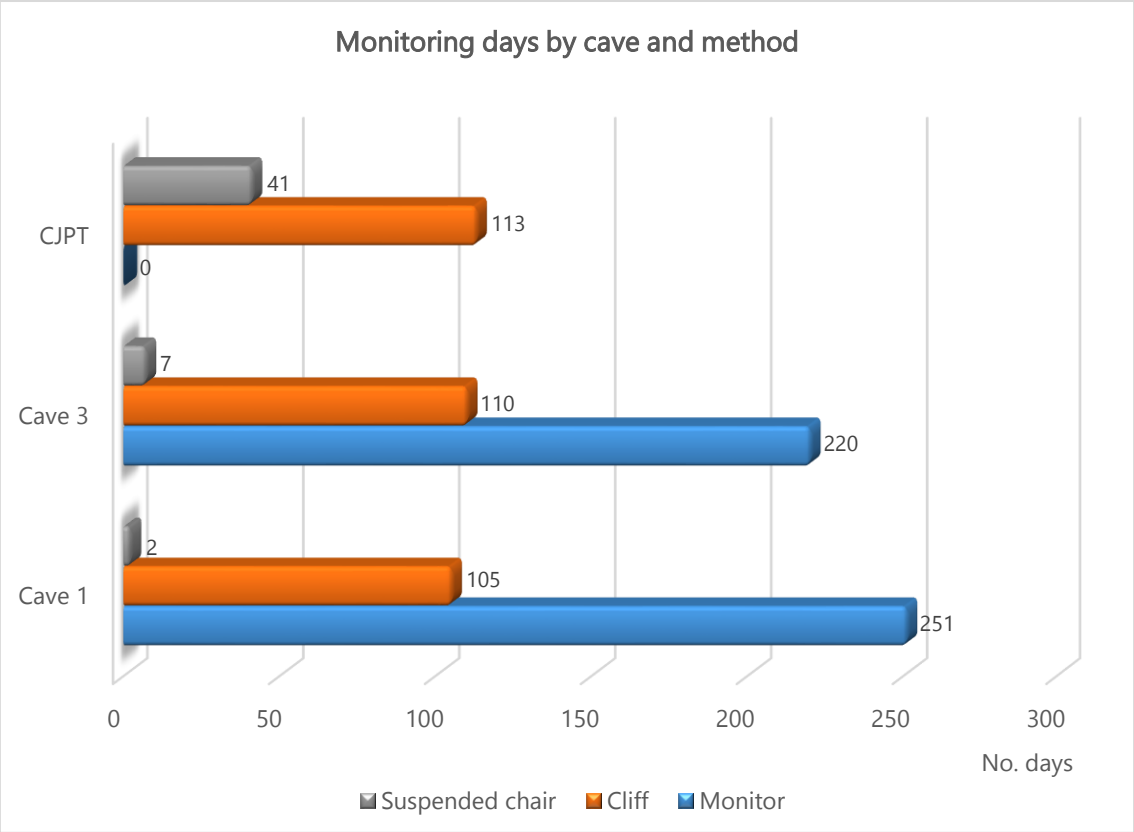
Between January and December 2020, **2356 observation hours** were spent at the breeding caves.

The total number of monitoring hours per cave is higher in cave 1 than in the other two caves, because in these period most pups were born in its inside beach, which increased the surveillance effort in order to maintain a good monitoring of those first-borns.

But if instead of considering the effort by hours we do it by days, we can conclude that all areas were well monitored, but less hours of effort were required in cave 3 due to the reduce number of pups born there.



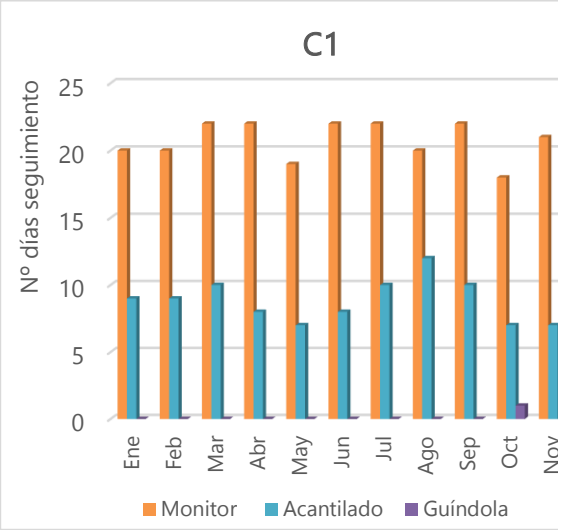

| HOURS | Cave 1 | Cave 3 | Cave 7 |
|---|---|---|---|
| **Monitor** | 1.337 | 647 | 0 |
| **Cliff** | 144 | 100 | 103 |
| **Susp.Chair** | 1 | 6 | 18 |
| **Total** | **1.482** | **753** | **121** |

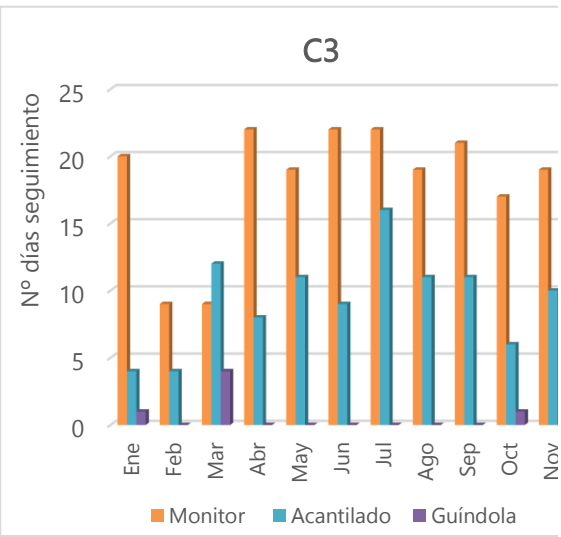


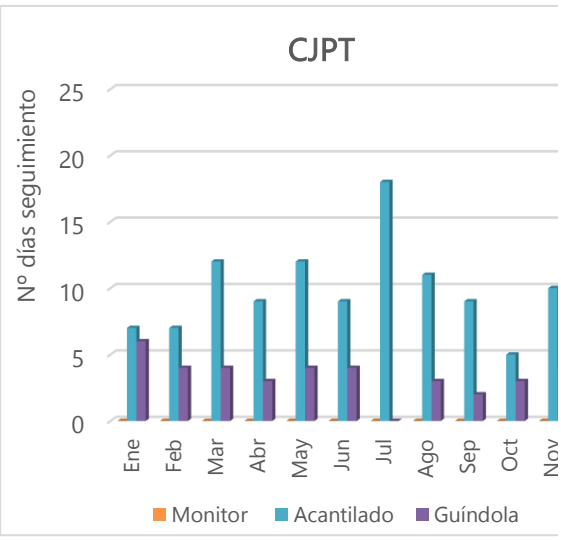

| DAYS | Cave 1 | Cave3 | Cave 7 |
|---|---|---|---|
| **Monitor** | 251 | 220 | 0 |
| **Cliff** | 105 | 110 | 113 |
| **Susp. Chair** | 2 | 7 | 41 |
| **Total** | **358** | **337** | **154** |

The surveillance monthly distribution shows a variable pattern throughout the year. This variation is in function of the occupancy of the places by the seals, of the development of other activities not related to direct observation, and of the sea conditions, especially in CJPT, where difficulty increases by the end of the year (due to the bad sea conditions). In the period from September to November, the monitoring effort decreased, due to the preparation and development of the capture and release operation. Also in December, the field team was in Madrid reviewing all the field protocols.

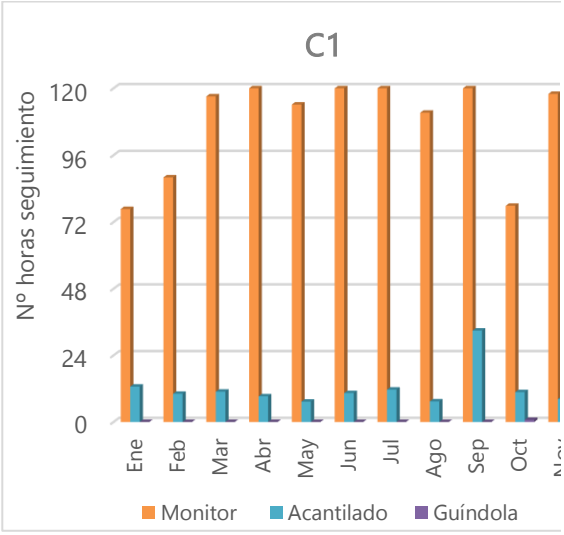
Monitoring days per cave and method[1]

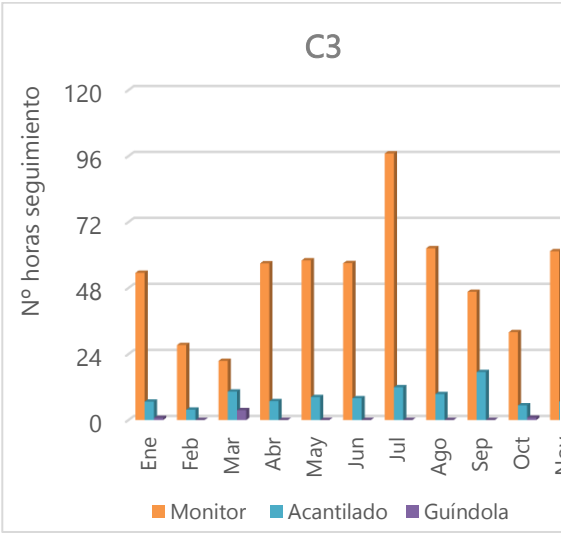


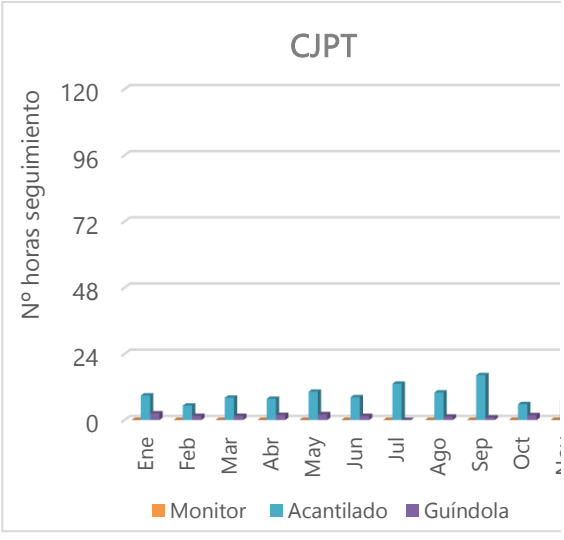




Monitoring hours per cave and method[1]




[1] The abscissae have the same value in order to be able to compare efforts.

### 3.2. Photo-identification effort

Four times a month, on average, identification sessions are carried out from the cliffs, taking as many photographs as necessary of each animal during one hour, which are then analyzed and identified.

During the months of September and October, intensive photo-identification sessions were carried out, involving 4 hours of photo-identification for 4 consecutive days of effort.

| Summary of effort | |
|---|---|
| *Total hours* | 103:35 |
| *Total photos* | 13.677 |
| *Number of sessions carried out* | 74 |
| *No. of sessions expected* | 48 |
| *Execution rate* | 154% |

| | No.sessions |
|---|---|
| *January* | 4 |
| *February* | 4 |
| *March* | 7 |
| *April* | 4 |
| *May* | 10 |
| *June* | 10 |
| *July* | 0 |
| *August* | 9 |
| *September* | 10 |
| *October* | 4 |
| *November* | 8 |
| *December* | 4 |

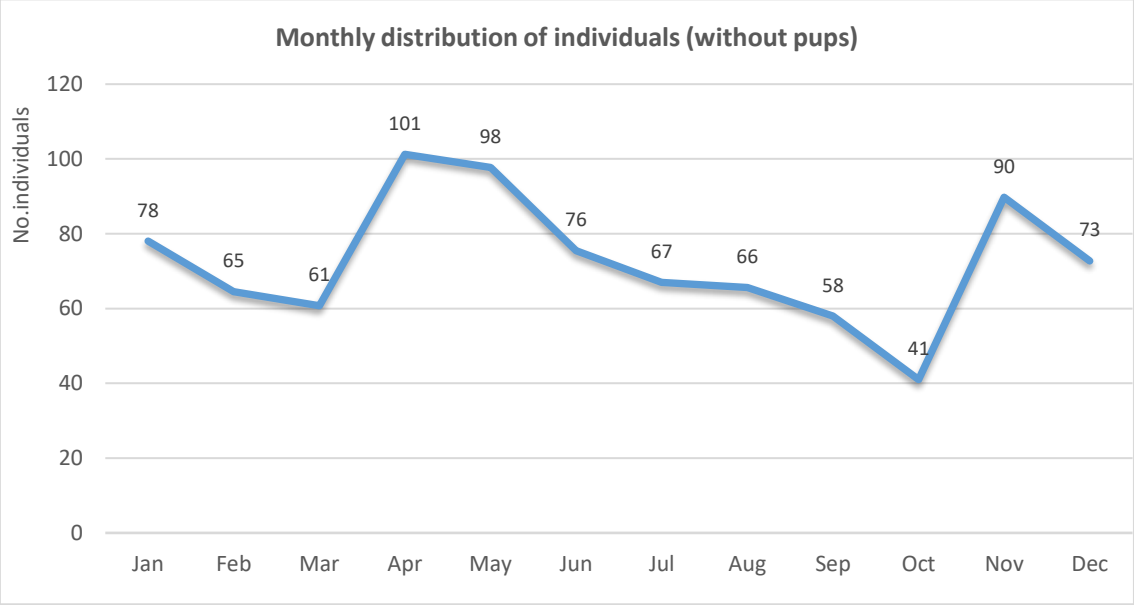
### 3.3. Seal counts in breeding caves at low tide

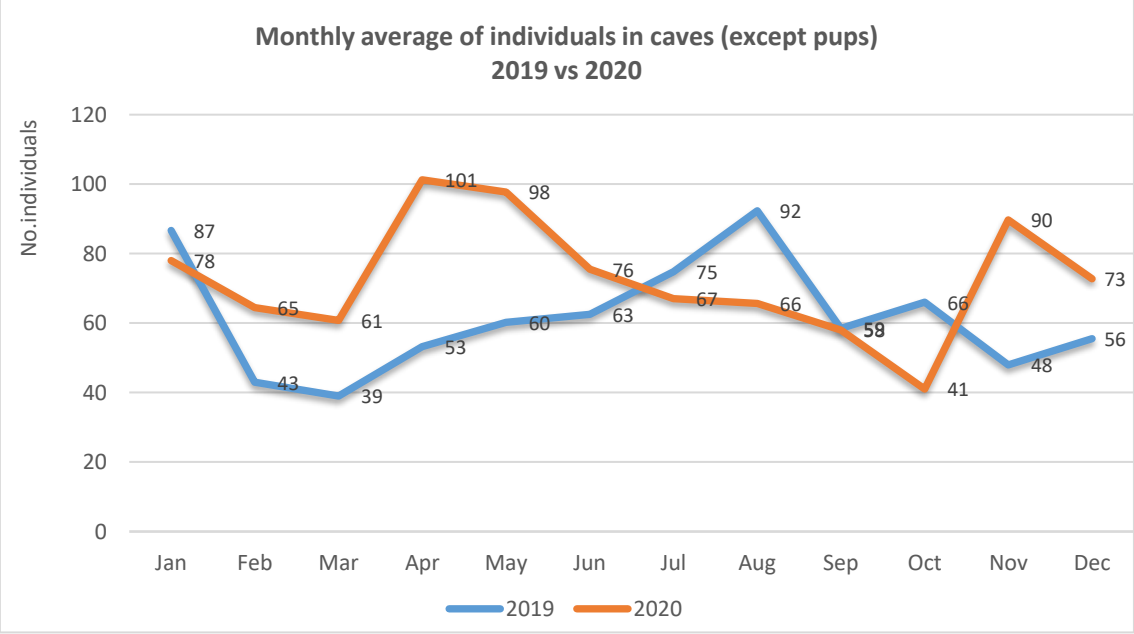
During 2020, a total of **46** counts at low tide were conducted in each breeding cave, resulting in an average of **3,8** counts per month. Beaches close to the breeding caves are added to the counts at low tide. At the counts, pups and youngsters are not taken into account.

| | |
|---|---|
| January | 4 |
| February | 4 |
| March | 4 |
| April | 4 |
| May | 4 |
| June | 4 |
| July | 4 |
| August | 3 |
| September | 4 |
| October | 3 |
| November | 4 |
| December | 4 |

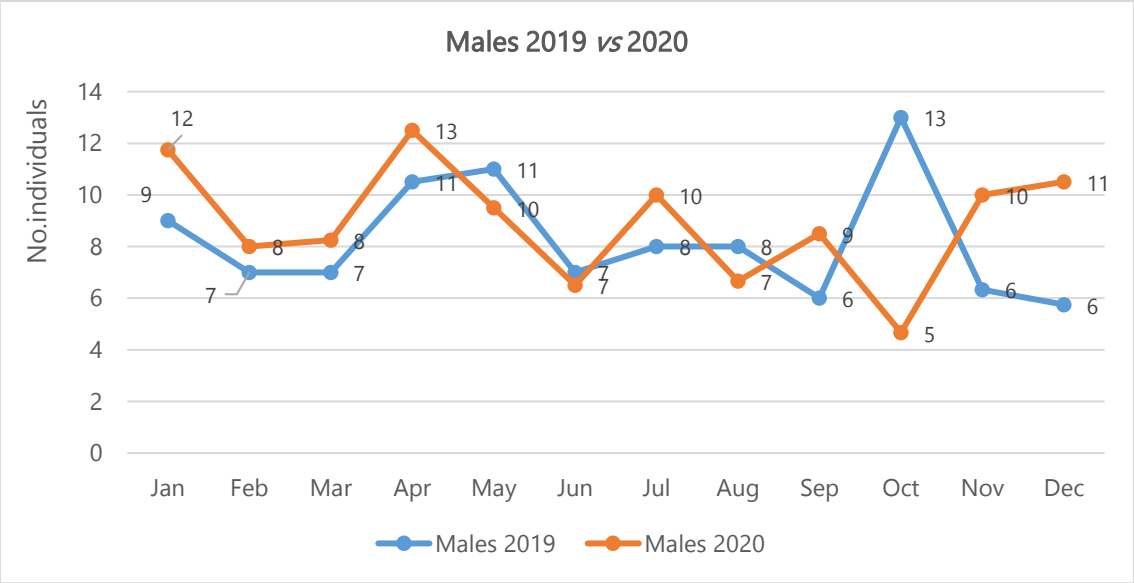
| | |
|---|---|
| **Expected counts** | 48 |
| **Counts carried out** | 46 |
| **Percentage of implementation** | 96% |

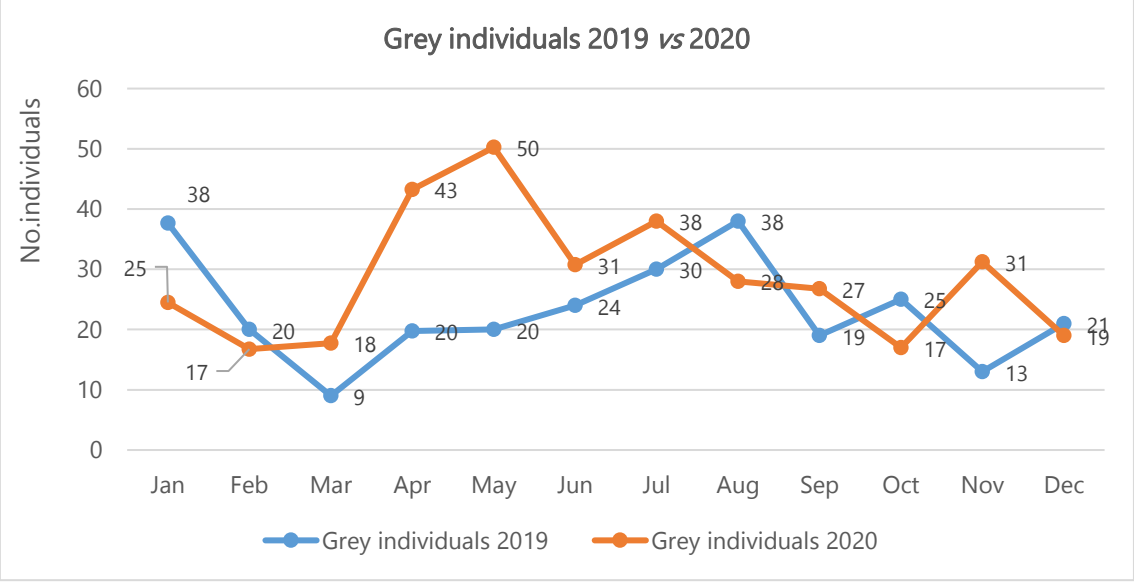
Counts at low tide (without pups and youngsters) results show a very variable use of the caves. The maximum number of seals counted in each cave for this period of time was **40, 102, and 38** for cave 1, cave 3 and cave CJPT.

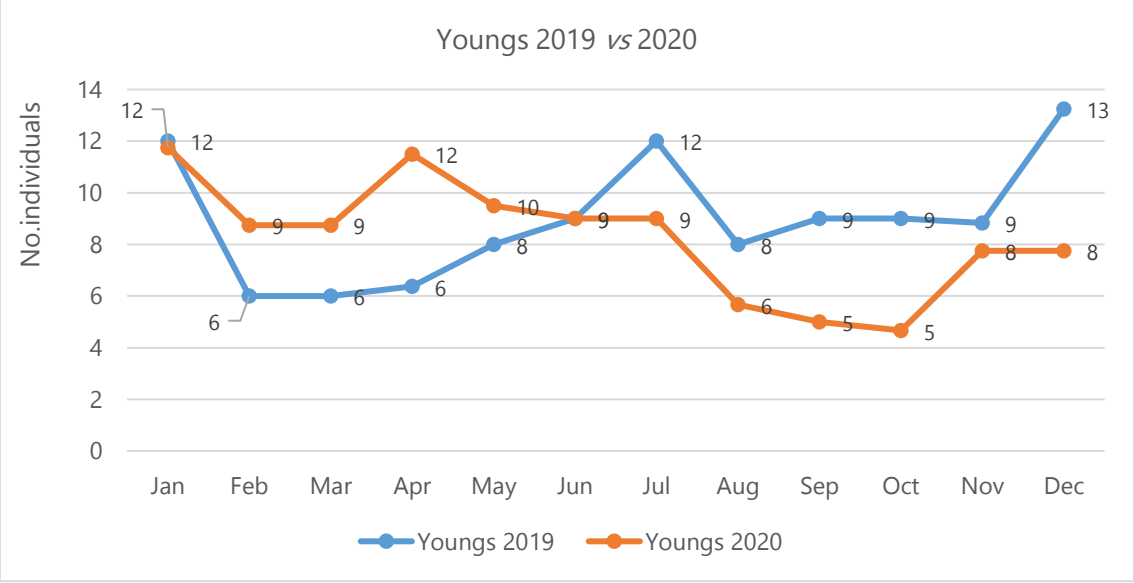


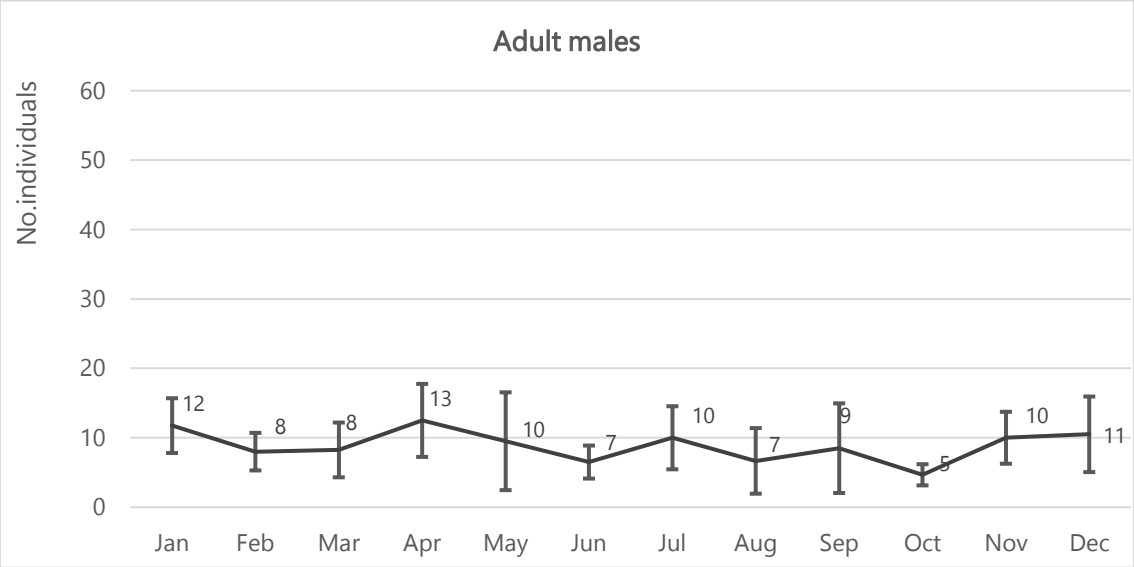

The monthly average distribution of the results obtained from the counts at the three caves and the beaches of their surroundings at low tide indicates, in average, a regular use of them all year around. Nevertheless, we have to take into account that the visibility of the inner beach of Jean Paul Taris cave is very partial, so when the animals are occupying this cave, most of them are not visible, which affects the results of the counts.

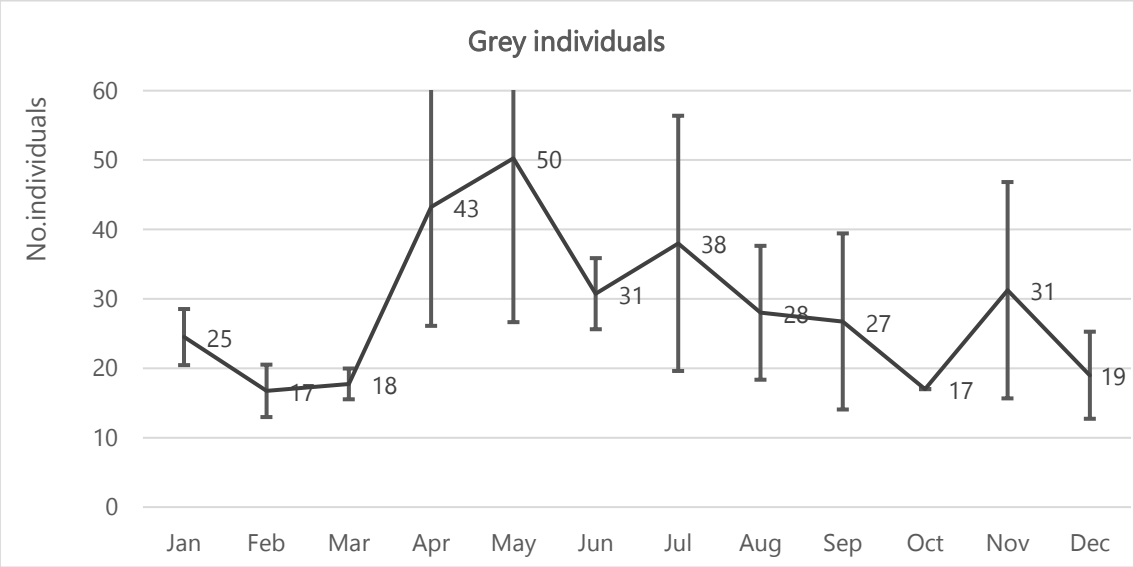

Males 2019 vs 2020
No.individuals
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Males 2019
Males 2020

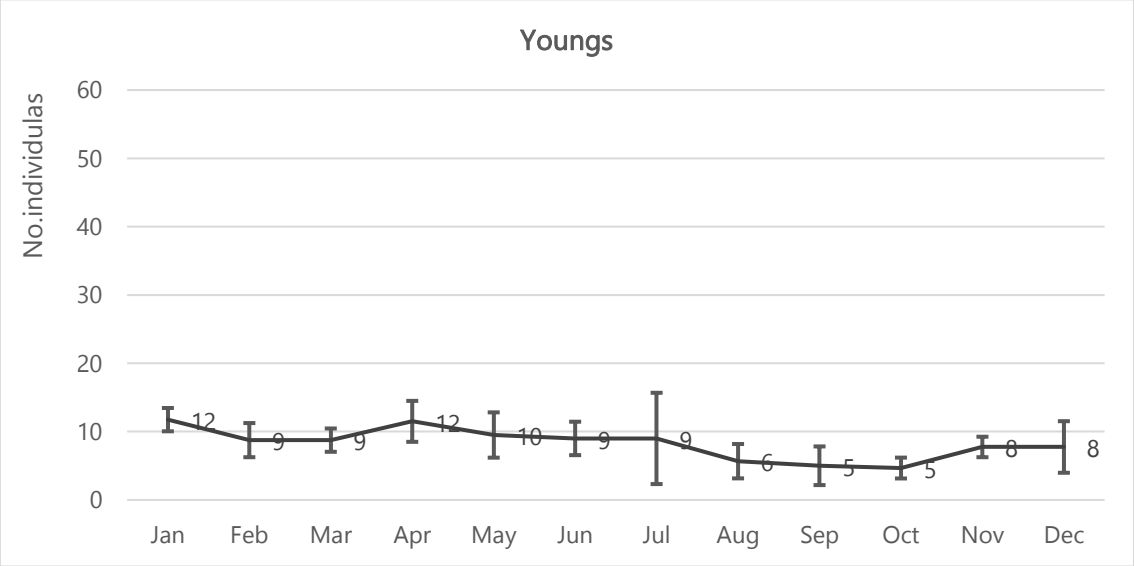

Grey individuals 2019 vs 2020
No.individuals
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Grey individuals 2019
Grey individuals 2020


Youngs 2019 vs 2020
No.individuals
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Youngs 2019
Youngs 2020

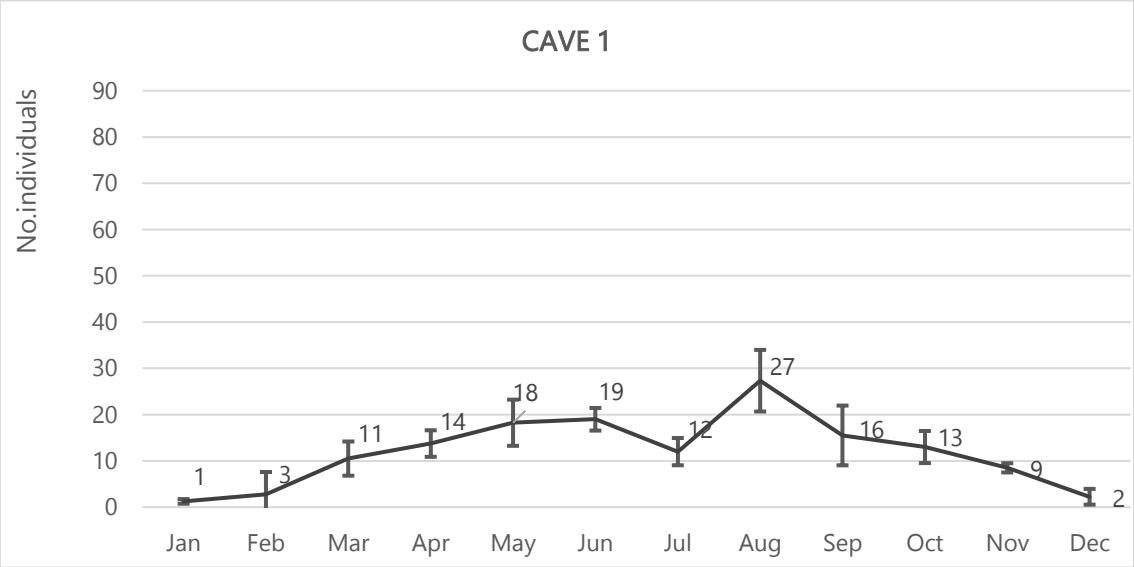
**Monthly evolution of individuals inside caves by category (μ and σ)**

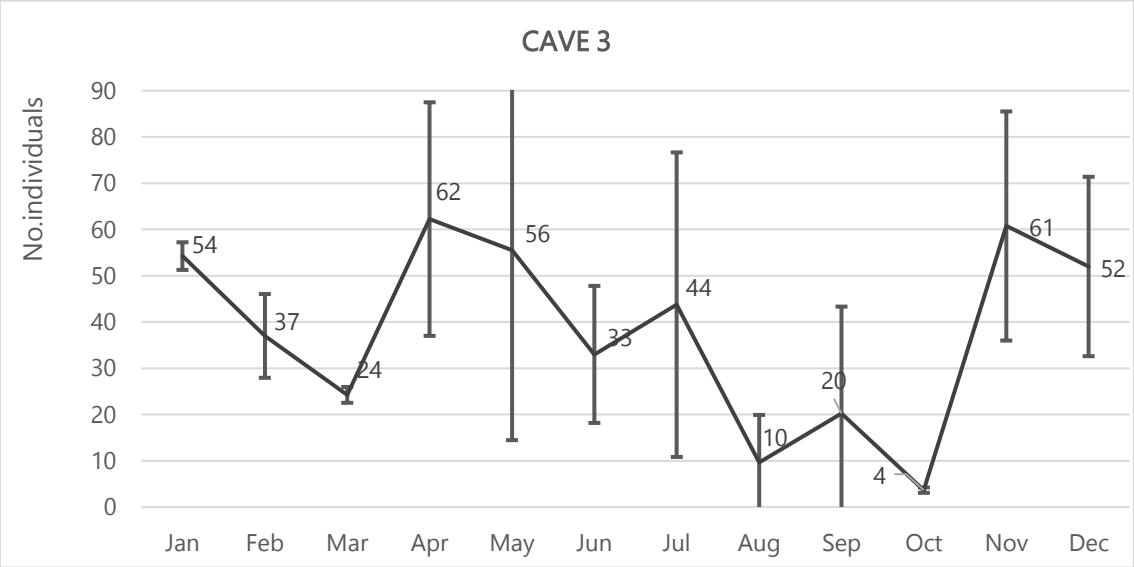


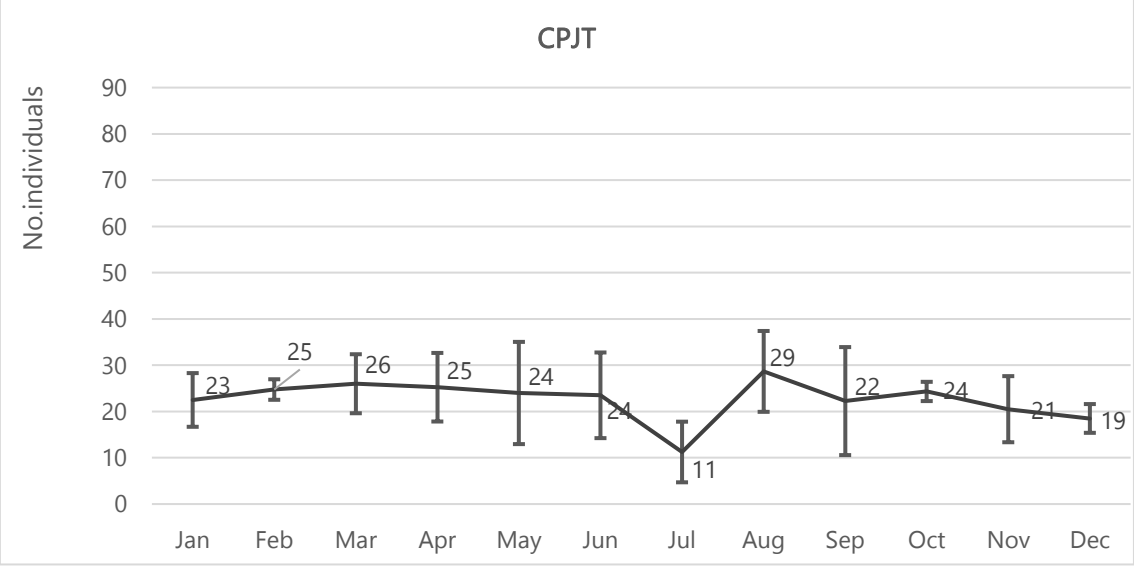



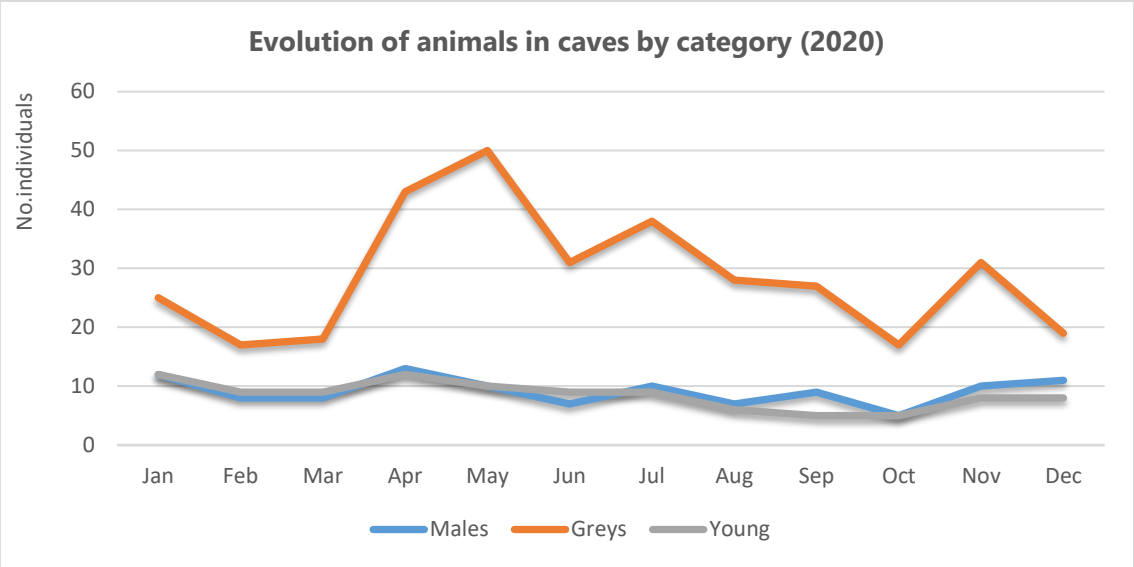



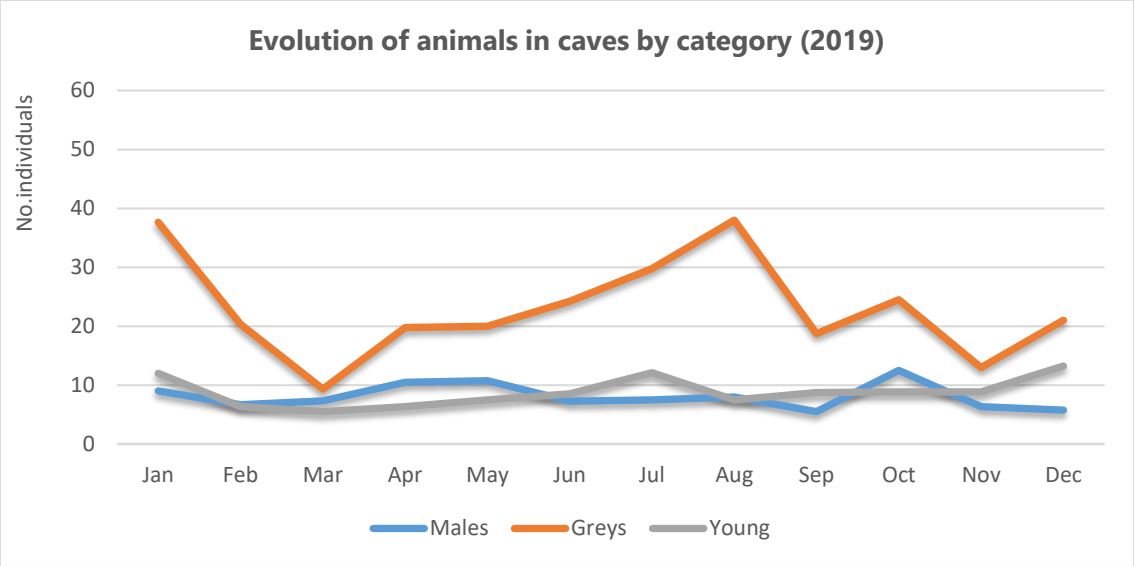
**Monthly evolution of individuals inside caves by cave (μ and σ)**



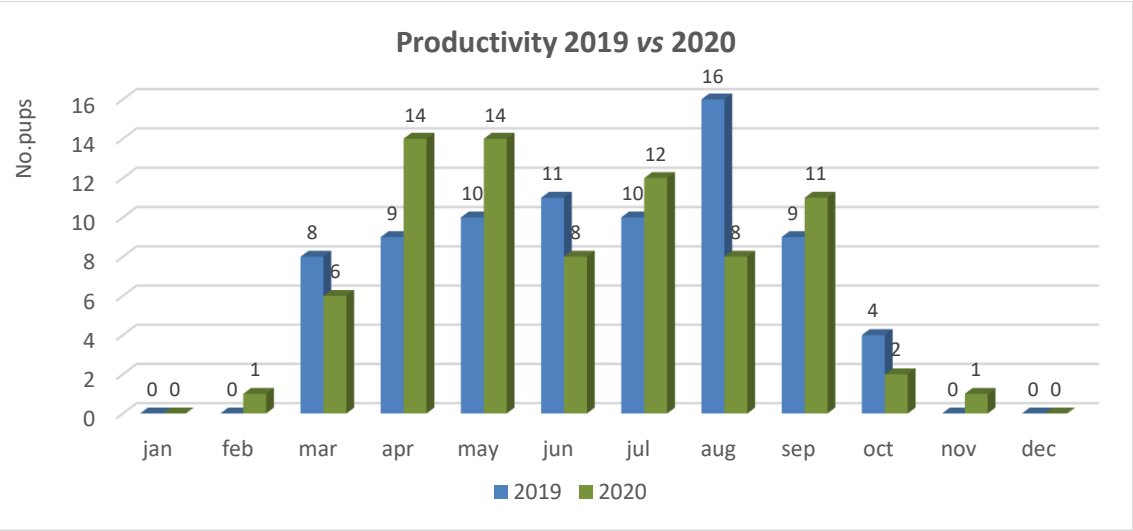


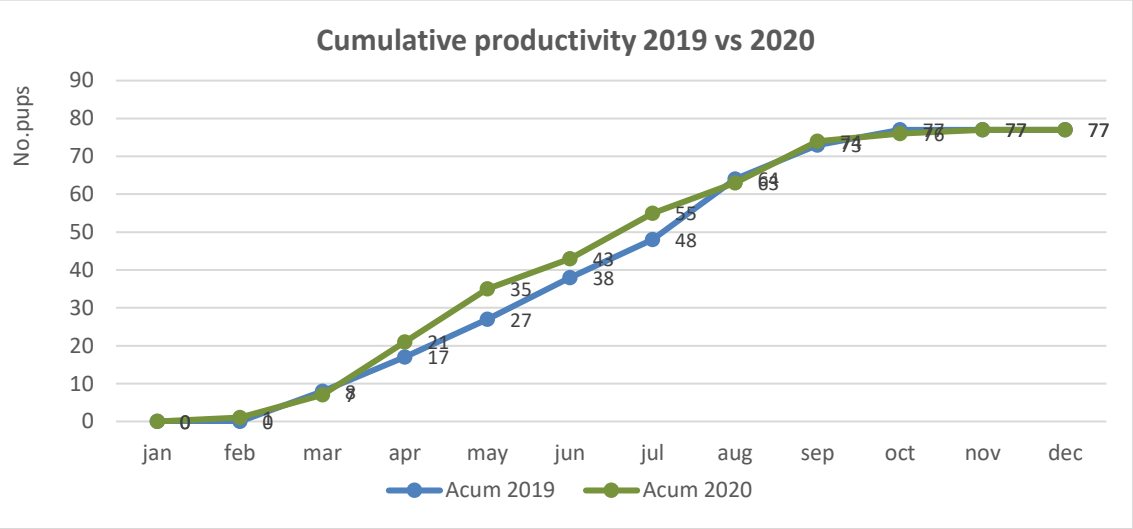




| 2020 | Adult males | Grey individuals | Juveniles |
|---|---|---|---|
| January | 12 | 25 | 12 |
| February | 8 | 17 | 9 |
| March | 8 | 18 | 9 |
| April | 13 | 43 | 12 |
| May | 10 | 50 | 10 |
| June | 7 | 31 | 9 |
| July | 10 | 38 | 9 |
| August | 7 | 28 | 6 |
| September | 9 | 27 | 5 |
| October | 5 | 17 | 5 |
| November | 10 | 31 | 8 |
| December | 11 | 19 | 8 |

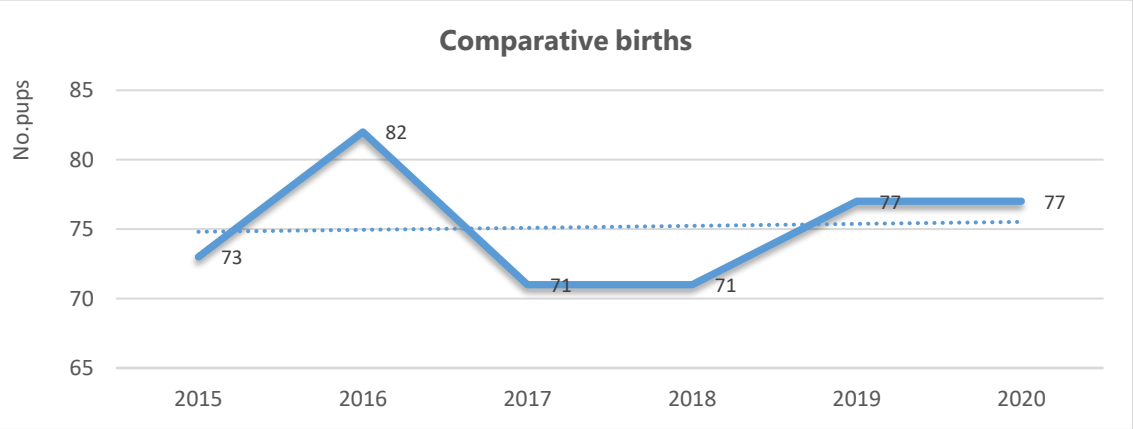
### 3.4. Productivity

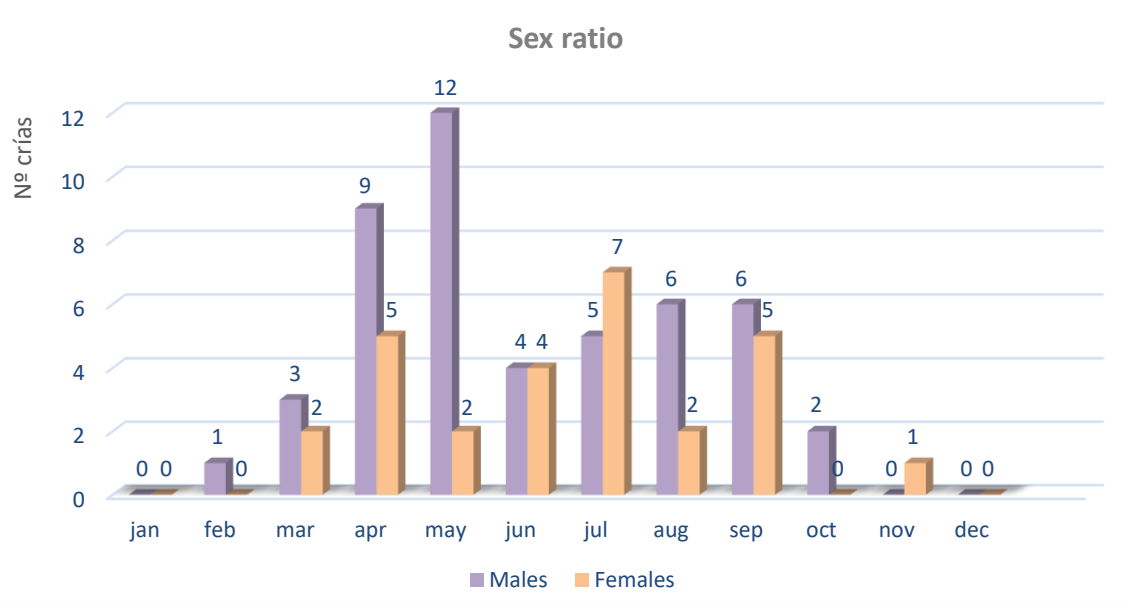
In total 77 pups were born between February and November. Of those pups, 48 were males and 28 were females, the rest (1) were of unknown sex (meaning that we detected their birth but we were not able to determine their gender before disappearing).

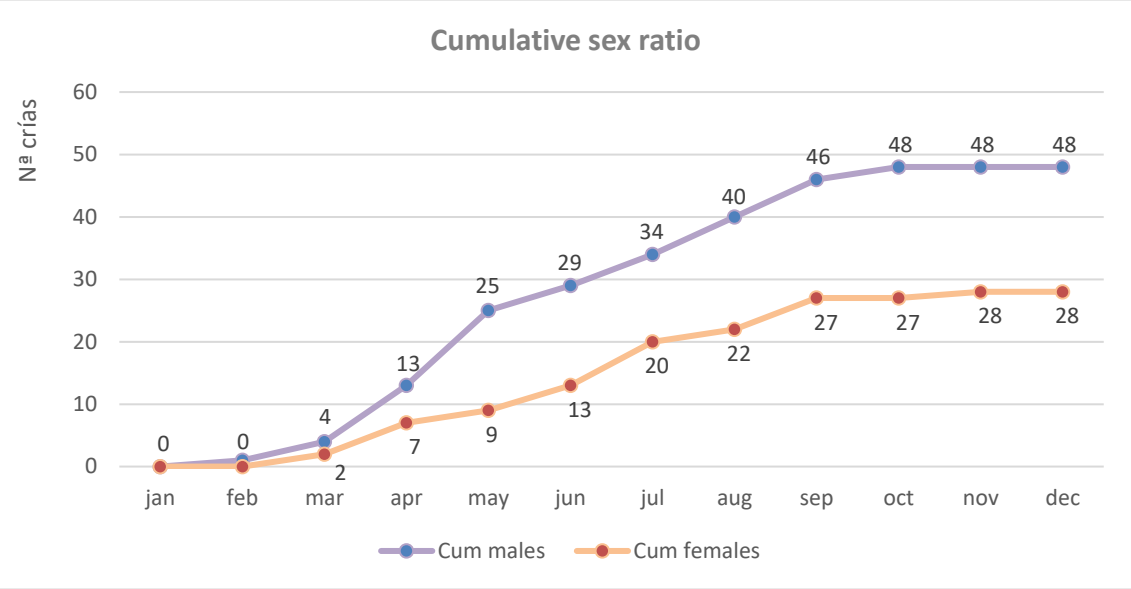


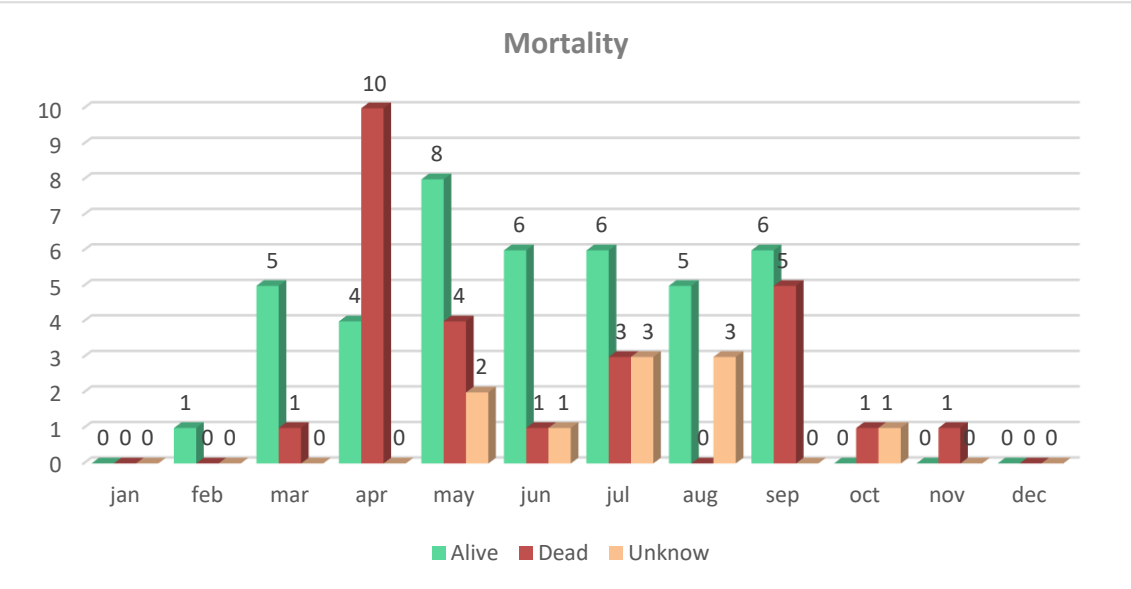



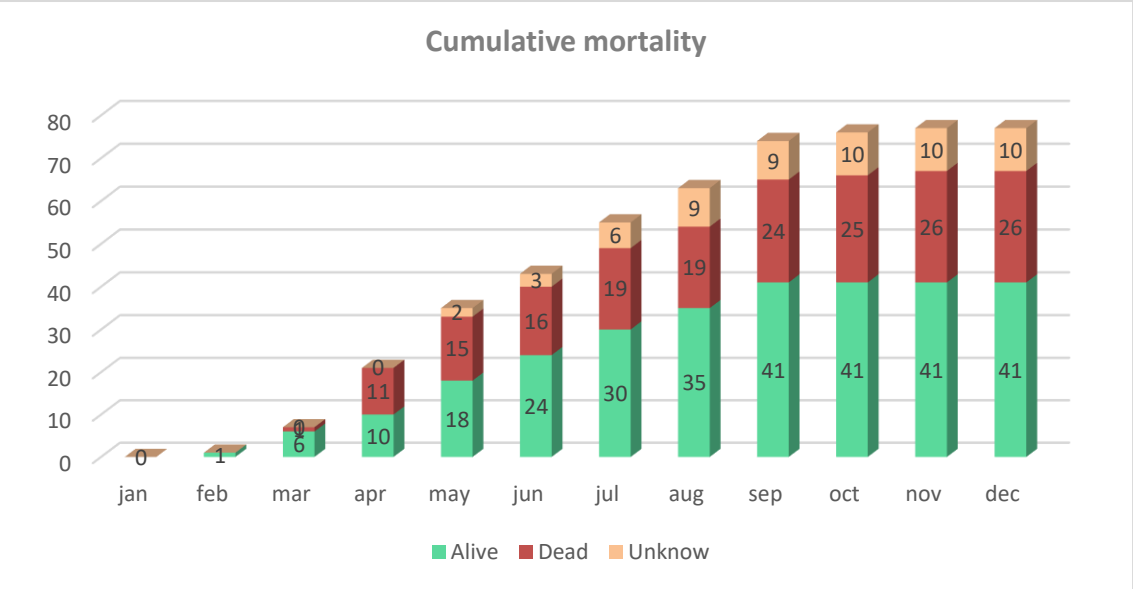

If compare the number of births in the last five years, the trend is stable and no appreciable deviations are observed:

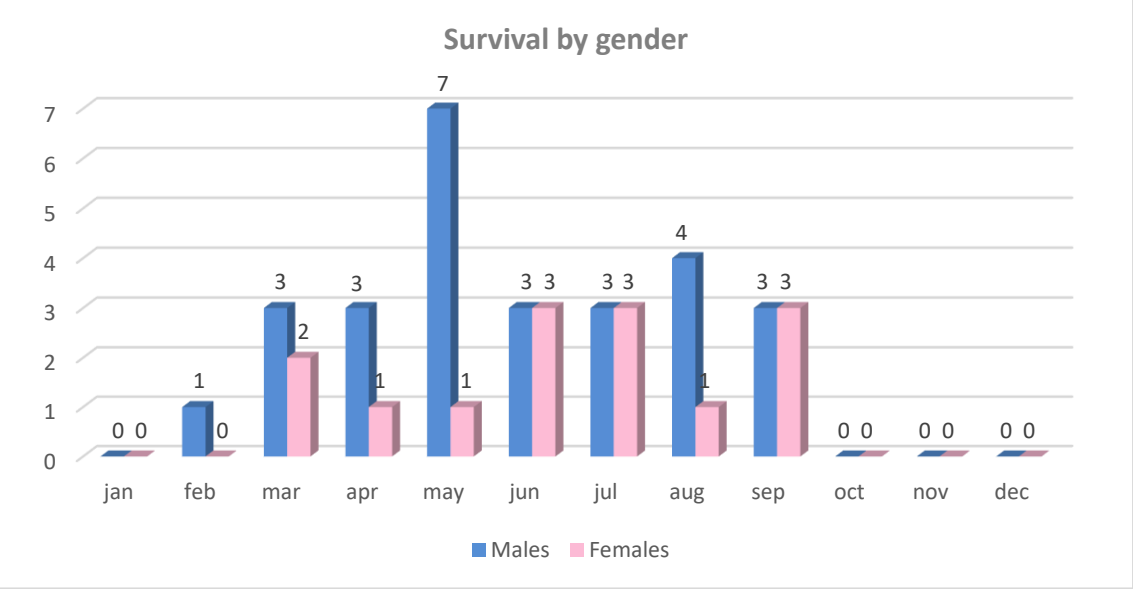


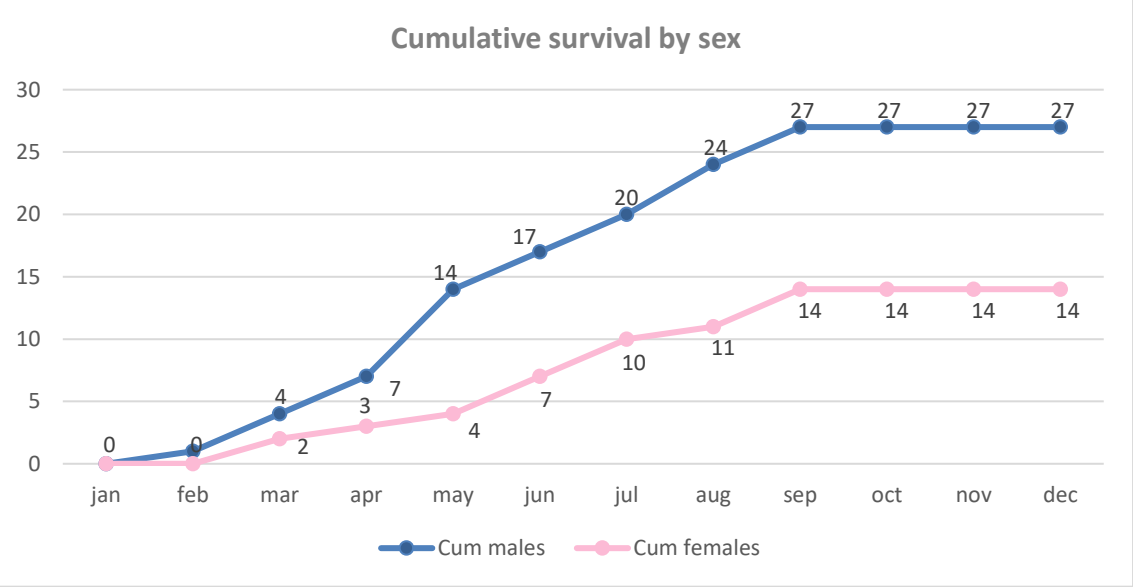

Sex ratio
Nº crías
0 2 4 6 8 10 12
jan feb mar apr may jun jul aug sep oct nov dec
0 0 1 0 3 2 9 5 12 2 4 4 5 7 6 2 6 5 2 0 0 1 0 0
Males
Females

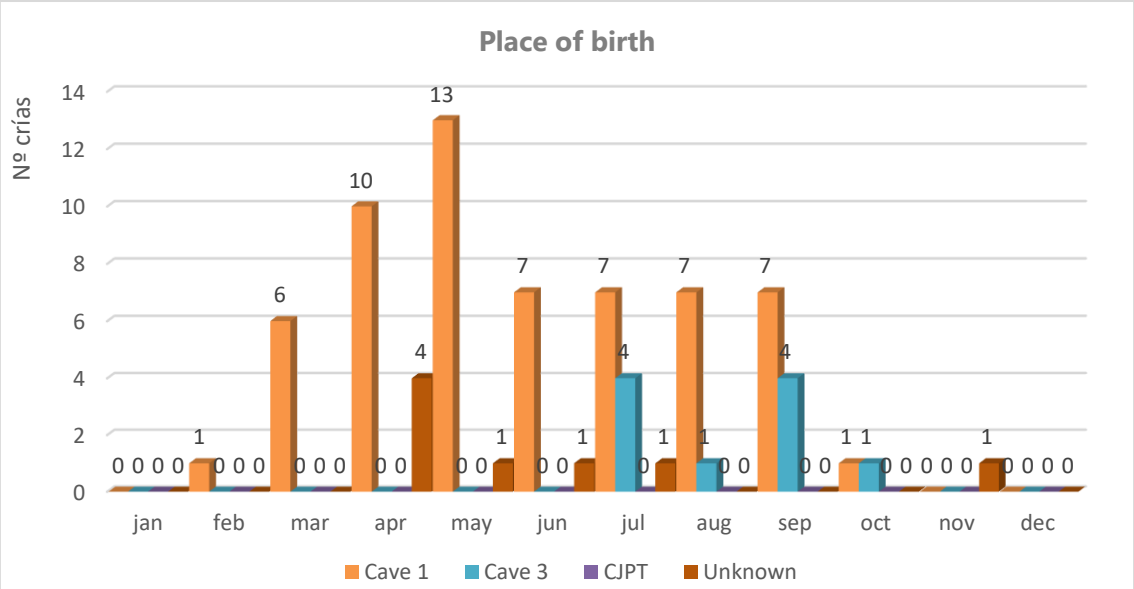

Cumulative sex ratio
Nª crías
0 10 20 30 40 50 60
jan feb mar apr may jun jul aug sep oct nov dec
0 0 4 2 13 7 25 9 29 13 34 20 40 22 46 27 48 27 48 28 48 28
Cum males
Cum females

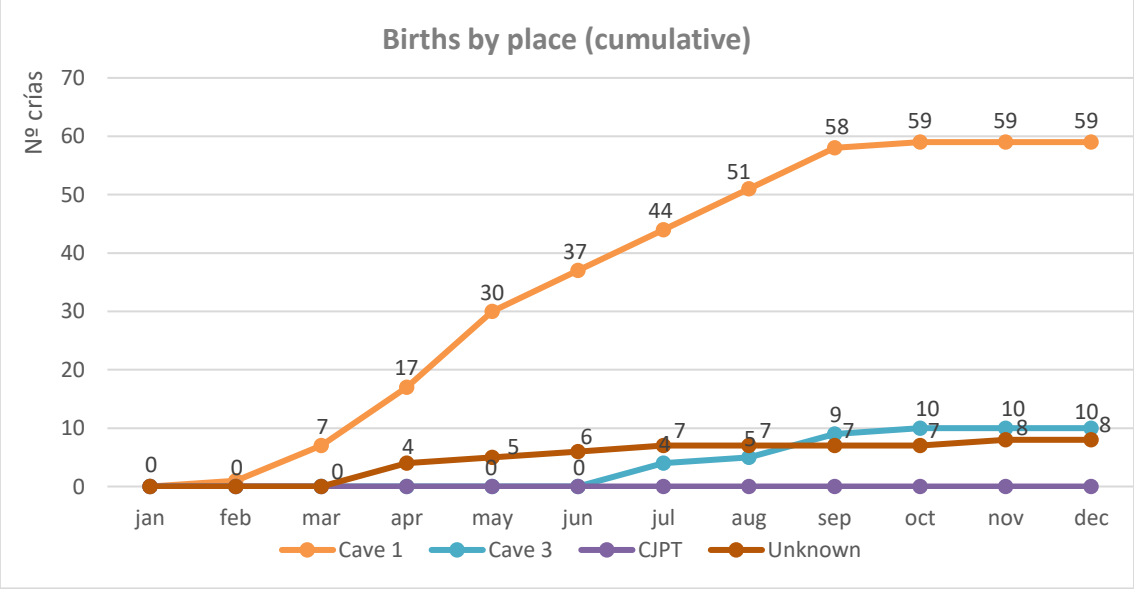

Mortality
0 1 2 3 4 5 6 7 8 9 10
jan feb mar apr may jun jul aug sep oct nov dec
0 0 0 1 0 0 5 1 0 4 10 0 8 4 2 6 1 1 6 3 3 5 0 3 6 5 0 0 1 1 0 1 0 0 0 0
Alive
Dead
Unknow


Cumulative mortality
80
70
60
50
40
30
20
10
0
jan feb mar apr may jun jul aug sep oct nov dec
0 1 6 10 18 24 30 35 41 41 41 41
0 0 0 11 15 16 19 19 24 25 26 26
0 0 0 0 2 3 6 9 9 10 10 10
Alive
Dead
Unknow


Survival by gender
7
6
5
4
3
2
1
0
jan feb mar apr may jun jul aug sep oct nov dec
0 0 1 0 3 2 3 1 7 1 3 3 3 3 4 1 3 3 0 0 0 0 0 0
Males
Females


Cumulative survival by sex
30
25
20
15
10
5
0
jan feb mar apr may jun jul aug sep oct nov dec
0 0 4 7 14 17 20 24 27 27 27 27
0 0 2 3 4 7 10 11 14 14 14 14
Cum males
Cum females


Place of birth
Nº crías
jan feb mar apr may jun jul aug sep oct nov dec
Cave 1
Cave 3
CJPT
Unknown


Births by place (cumulative)
Nº crías
jan feb mar apr may jun jul aug sep oct nov dec
Cave 1
Cave 3
CJPT
Unknown

| EXPECTED LABOUR OF BREEDING FEMALES | | | | | |
|---|---|---|---|---|---|
| Nº | | Female | 2018 | 2019 | 2020 |
| 4 | 2006 | | | | |
| 23 | 2111 | 10/07/2017 | | | 06/07/2020 |
| 32 | 2125 | 29/08/2017 | | 03/08/2019 | 10/08/2020 |
| 34 | 2130 | 04/09/2017 | | 16/09/2019 | 23/09/2020 |
| 37 | 2135 | 03/07/2017 | 16/07/2018 | | |
| 39 | 2137 | 24/07/2017 | 30/07/2018 | | |
| 43 | 2141 | | | | |
| 45 | 2145 | 06/09/2017 | | | |
| 47 | 2154 | | 19/05/2018 | | |
| 48 | 2156 | 15/05/2017 | | | |
| 49 | 2158 | | | | |
| 50 | 2166 | 25/09/2017 | 03/10/2018 | | 14/09/2020 |
| 51 | 2168 | | | | 01/09/2020 |
| 52 | 2177 | 18/08/2017 | | | |
| 53 | 2183 | | 02/05/2018 | | 08/04/2020 |
| 54 | 2188 | 17/05/2017 | 28/05/2018 | | |
| 55 | 2189 | | | 09/06/2019 | |
| 56 | 2196 | 07/09/2017 | | 20/09/2019 | 14/09/2020 |
| 57 | 2198 | | | | |
| 58 | 2199 | 17/05/2017 | | | |
| 59 | 2290 | | 30/04/2018 | | |
| 60 | 2291 | 15/05/2017 | 07/05/2018 | 04/05/2019 | 05/05/2020 |
| 61 | 2294 | 27/06/2017 | | | |
| 62 | 2313 | 22/08/2017 | | 30/08/2019 | 02/09/2020 |
| 63 | 2318 | | 07/05/2018 | | 18/05/2020 |
| 64 | 2320 | | | | 14/08/2020 |
| 65 | 2321 | 17/07/2017 | 09/07/2018 | | |
| 66 | 2323 | 20/03/2017 | 26/03/2018 | 13/03/2019 | |
| 67 | 2324 | | | | 04/08/2020 |
| 68 | 2326 | 15/05/2017 | | | 08/04/2020 |
| 69 | 2329 | | | | |
| 70 | 2332 | | 24/09/2018 | 20/09/2019 | |
| 71 | 2333 | 16/05/2017 | 19/05/2018 | 07/05/2019 | 27/04/2020 |
| 72 | 2334 | 21/08/2017 | | | |
| 73 | 2335 | 12/07/2017 | | | |
| 74 | 2342 | | | | |
| 75 | 2345 | 14/06/2017 | 13/06/2018 | 03/06/2019 | 04/06/2020 |

| Nº | | Female | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| 76 | 2346 | Adoptive mother | | | |
| 77 | 2352 | Adoptive mother | | | |
| 78 | 2353 | | 14/05/2018 | 01/05/2019 | |
| 79 | 2358 | 24/07/2017 | 26/07/2018 | 27/07/2019 | 27/07/2020 |
| 80 | 2361 | | | | |
| 81 | 2363 | | | | 13/05/2020 |
| 82 | 2364 | | | | 28/08/2020 |
| 83 | 2367 | 25/08/2017 | 16/08/2018 | 18/08/2019 | 24/08/2020 |
| 84 | 2369 | Adoptive mother | 18/06/2018 | | |
| 85 | 2373 | | 30/07/2018 | | |
| 86 | 2377 | 16/10/2017 | 29/10/2018 | 29/09/2019 | 13/10/2020 |
| 87 | 2378 | | 13/07/2018 | | 06/07/2020 |
| 88 | 2379 | 27/03/2017 | 26/03/2018 | 20/03/2019 | 30/03/2020 |
| 89 | 2382 | | | 02/07/2019 | 01/07/2020 |
| 90 | 2392 | | | | |
| 91 | 2397 | 02/05/2017 | 02/05/2018 | 04/05/2019 | |
| 92 | 2385 | 02/05/2017 | | Adoptive mother | |
| 93 | 2402 | | 06/08/2018 | 29/06/2019 | 06/07/2020 |
| 94 | 2404 | 25/09/2017 | | | 21/09/2020 |
| 95 | 2405 | 11/10/2016 | | | |
| 96 | 2410 | | 14/06/2018 | 15/06/2019 | |
| 97 | 2417 | | 08/10/2018 | | 27/07/2020 |
| 98 | 2421 | 04/09/2017 | | | |
| 99 | 2423 | 02/05/2017 | | | |
| 100 | 2426 | | | 11/07/2019 | |
| 101 | 2427 | 20/03/2017 | | | |
| 102 | 2429 | | 04/06/2018 | | |
| 103 | 2433 | 27/03/2017 | 06/04/2018 | 04/05/2019 | 30/03/2020 |
| 104 | 2437 | | | | 09/06/2020 |
| 105 | 2441 | | | | 13/07/2020 |
| 106 | 2447 | 24/03/2017 | | 12/03/2019 | 09/03/2020 |
| 107 | 2448 | 20/09/2017 | 03/09/2018 | 30/08/2019 | |
| 108 | 2449 | 12/09/2017 | 29/08/2018 | 23/08/2019 | 15/07/2020 |
| 108 | 2450 | | | 06/03/2019 | 10/03/2020 |
| 108 | 2454 | | | | 16/07/2020 |
| 108 | 2457 | 25/10/2017 | | | |
| 111 | 2461 | | 10/05/2018 | 29/04/2019 | |
| 112 | 2462 | | | 22/04/2019 | |

| Nº | | Female | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| **113** | **2463** | **02/06/2017** | **05/06/2018** | **10/06/2019** | |
| **114** | **2464** | | **15/08/2018** | **03/08/2019** | **29/06/2020** |
| **115** | **2465** | | | | **25/08/2020** |
| **116** | **2466** | | **26/07/2018** | | |
| **117** | **2471** | | **02/07/2018** | **12/06/2019** | **09/06/2020** |
| **118** | **2474** | **Adoptive mother** | | | |
| **119** | **2477** | | | | **Adoptive mother** |
| **120** | **2479** | | **17/07/2018** | | |
| **121** | **2482** | | | | **Adoptive mother** |
| **122** | **2486** | | **03/04/2018** | **09/04/2019** | |
| **123** | **2489** | **14/04/2017** | **03/04/2018** | | **06/04/2020** |
| **124** | **2491** | | | | **14/05/2020** |
| **125** | **2505** | | | | **03/06/2020** |
| **126** | **2517** | | | | **18/05/2020** |

Becomes young
Dies
Adoptive mother
Unresolved doubt
Breeding in follow-up
Breeding female with no offspring detected none of the years of monitoring

# Coastline Inspections

## Index

## 1. Introduction

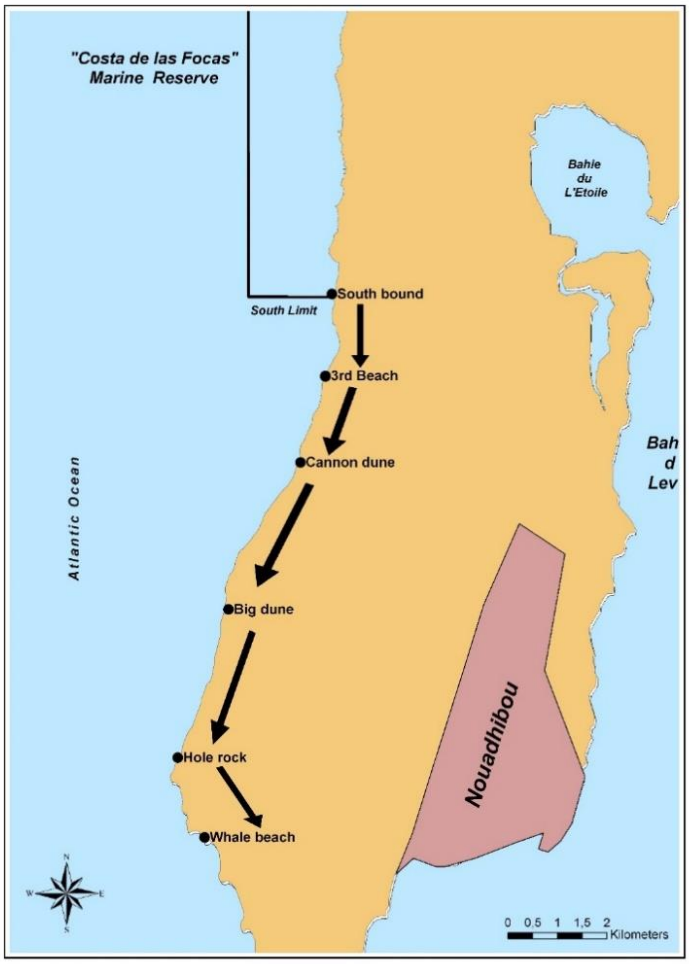
Coastline inspections permit the assessment of mortality associated with the colony using counts of corpses stranded on the beaches south of the breeding caves.

The Cabo Blanco Peninsula beaches south of the reserve are frequently surveyed to detect new carcasses. Sometimes, pups that are still alive are also found, these animals are rescued, rehabilitated and returned to their habitat. During the period the project lasted, no pups alive were found at those coast inspections.

The coastline south of the colony has been divided into sections between identifiable points on the shore. Therefore, a total of 13 km of the coast were fragmented into five sections that are inspected by a quad on an average of 1 per week.

## 2. Itinerary during inspections

The sections are classified as follows (abbreviation in Spanish):




South land surveillance

**L.S - 3ªPl**:
from the Southern Boundary to the Third Beach.

**3ªPl - D.C**:
from the Third Beach to the Cannon Dune.

**D.C - D.B**:
from the Cannon Dune to the Big Dune.

**D.B - R.A**:
from the Big Dune to Hole Rock.

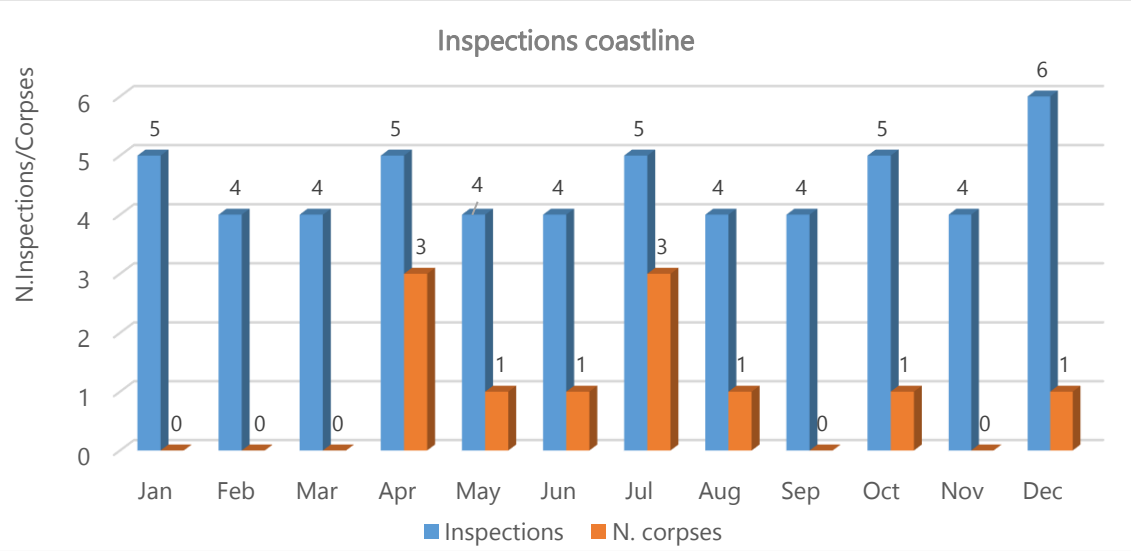
**R.A - L.B**:
from Hole Rock to Whale Beach.

## 3. Results

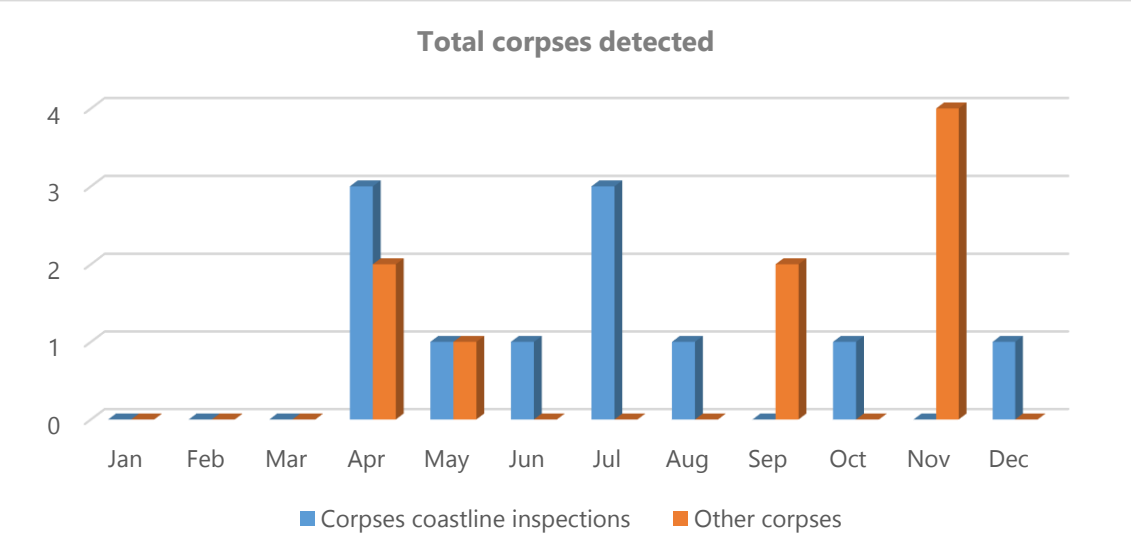
In the period of the report (between 1th January to 31th December 2020), a total of **54** coastline inspections were conducted at the "Costa de las Focas" Reserve.

| Coastline inspections | 2020 |
|---|---|
| Total number of journeys | 54 |
| Monthly average number of journeys | 4,5 |
| Seal necropsies | 11 |
| Cetacean necropsies | 0 |
| Turtle necropsies | 0 |

The inspections have been carried out throughout the year, as shown in the following graph:




During those inspections, 11 carcasses were discovered, 1 of them were adult, 2 youngs, and 8 were pups (less than 2 months old). In addition, 9 other carcasses were detected, mainly in the breeding caves.



| | MN | GG | MG-GG | MG | J-MG | J | JC | PUP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| January | --- | --- | --- | --- | --- | --- | --- | --- | 0 |
| February | --- | --- | --- | --- | --- | --- | --- | --- | 0 |
| March | --- | --- | --- | --- | --- | --- | --- | --- | 0 |
| April | --- | --- | --- | --- | --- | --- | --- | 5 | 5 |
| May | --- | --- | --- | --- | --- | --- | --- | 2 | 2 |
| June | --- | --- | --- | --- | --- | --- | --- | 1 | 1 |
| July | --- | --- | --- | --- | --- | --- | --- | 3 | 3 |
| August | --- | --- | --- | --- | 1 | --- | --- | --- | 1 |
| September | 1 | --- | --- | --- | --- | --- | --- | 1 | 2 |
| October | --- | --- | 1 | --- | --- | --- | --- | --- | 1 |
| November | --- | --- | --- | --- | --- | --- | --- | 4 | 4 |
| December | --- | --- | --- | --- | --- | --- | --- | 1 | 1 |
| Total NECROPSIES | **1** | **0** | **1** | **0** | **1** | **0** | **0** | **17** | **20** |

| **No. Necropsy** | **Date** | **Place (GPS)** | | | | **Age category** | **Gender** | **Identity** |
|---|---|---|---|---|---|---|---|---|
| | | **Carcasse** | | **Tomb** | | | | |
| | | **N** | **W** | **N** | **W** | | | |
| **01/20** | 06/04/2020 | 21.01228º | 17.06387º | 21.01223º | 17.06391º | CNP-CN | H | P 1187 |
| **02/20** | 10/04/2020 | 21.02025º | 17.06459º | 21.02015º | 17.06446º | Ca cc | M | P 1192 |
| **03/20** | 24/04/2020 | 20.99278º | 17.06648º | 20.99278º | 17.06637º | CN | M | P 1194 |
| **04/20** | 27/04/2020 | Detected | inside C1 | corpse | not located | Ca | H | P 1196 |
| **05/20** | 30/04/2020 | 21.01431º | 17.06352º | 21.01490º | 17.06344º | Ca cc | M | P 1199 |
| **06/20** | 12/05/2020 | 21.01001º | 17.06458º | 21.00999º | 17.06450º | Ca cc | M | P 1202 |
| **07/20** | 15/05/2020 | 20.98580º | 17.06900º | 20.98563º | 17.06886º | CNP | M | P 1206 |
| **08/20** | 12/06/2020 | 21.01760º | 17.06477º | 21.01752º | 17.06414º | CNP | M | P 1219 |
| **09/20** | 14/07/2020 | 20.97046º | 017.07735º | 20.97037º | 017.07726º | CNP | H | P 1225 |
| **10/20** | 22/07/2020 | 21.01765º | 017.06480º | 21.01777º | 017.06451º | CNP | H | P 1227 |
| **11/20** | 24/07/2020 | 21.02139º | 017.06441º | 21.02116º | 017.06422º | Ca | M | P 1230 |
| **12/20** | 07/08/2020 | 20.98590º | 17.06907º | 20.98580º | 17.06881º | J/MG | M | P 1049 |
| **13/20** | 01/09/2020 | Detected | inside C3 | | | MN | M | ? |
| **14/20** | 22/09/2020 | 20.99773º | 17.06461º | 20.99770º | 17.06459º | CNP | M | P 1245 |
| **15/20** | 30/10/2020 | 20.96200º | 17.08256º | 20.96224º | 17.08209º | MG-GG | H | |
| **16/20** | 02/11/2020 | 21.05820º | 17.06384º | 21.05805º | 17.06391º | CN | M | P 1253 |
| **17/20** | 04/11/2020 | 21.01743º | 17.06420º | 21.01749º | 17.06415º | CNG | H | P 1252 |
| **18/20** | 10/11/2020 | 21.05836º | 17.06372º | 21.05839º | 17.06367º | JC/J | M | ? |
| **19/20** | 16/11/2020 | 21.01630º | 17.06345º | 21.01630º | 17.06328º | Ca cc | H | P 1255 |
| **20/20** | 17/12/2020 | 20.97626º | 17.07285º | 20.97614º | 17.07260º | JC | H | P 1217 |

# Photographic annex

# ANNEXE PHOTOGRAPHIQUE SURVEILLANCE 2020
# CÔTE DES PHOQUES

## BATEAUX DE PÊCHE INDUSTRIELLE À L'INTÉRIEUR DE LA RÉSERVE

5 janvier

13 février

2 juin

5 juin

9 juin

9 juin

9 juin

9 juin

8 septembre

8 septembre

8 septembre

9 septembre

9 septembre

9 septembre

9 septembre

10 septembre

9 octobre

19 octobre

19 octobre

15 novembre

15 novembre

## PIROGUES À L'INTÉRIEUR DE LA RÉSERVE

13 janvier

29 janvier

7 avril

6 mai

13 mai

16 mai

16 mai

17 mai

26 mai

31 mai

Pirogue à senne coulissante devant la grotte 3, le 2 juin. On peut voir un phoque près des filets

2 juin

2 juin

2 juin

3 juin

3 juin

3 juin

3 juin

11 juin

24 juin

15 juillet

25 août

1 septembre

2 septembre

3 septembre

7 septembre

8 septembre

8 septembre

9 septembre

9 septembre

9 septembre

14 septembre

16 septembre

17 septembre

23 septembre

25 septembre

27 septembre

6 octobre

6 octobre

7 octobre

1 novembre

9 novembre

10 novembre

29 novembre

30 novembre

10 décembre

10 décembre

12 décembre


12 décembre

22 décembre

23 décembre

## ACTIVIDAD DENTRO DE LA RESERVA

Pêcheur de pouces-pieds, 11 janvier

Pêcheur de pouces-pieds, 9 mars

Pêcheurs à l'intérieur de la réserve 28 mars

11 avril

25 avril

25 avril

29 avril

Pêcheur 6 juin

3 septembre

6 septembre

6 septembre

26 décembre

## NETTOYAGE ET MAINTENANCE RÉSERVE

Nettoyage des panneaux. Février


Nettoyage de la signalisation. Février


Nettoyage Réserve. Février


Maintenance des panneaux de signalisation la réserve. Février

Nettoyage Réserve. Mars

Nettoyage Réserve. Avril


Nettoyage des panneaux. Mai

Nettoyage Réserve.Mai

Nettoyage Réserve. Juin

Nettoyage Réserve. Août

Nettoyage Réserve. Septembre

Nettoyage Réserve. Septembre


Nettoyage des panneaux. Septembre

Nettoyage Réserve. Novembre

Nettoyage Réserve. Décembre

## TRAVAUX DE MAINTENANCE

Installation de la barrière. Juin






Moulin à vent endommagé par la tempête. Juin

Réparation de l'installation des panneaux solaires endommagés par la tempête. Juin






Réparation d'auvent endommagé par la tempête. Juin



Travaux de maintenance des installations. Octobre

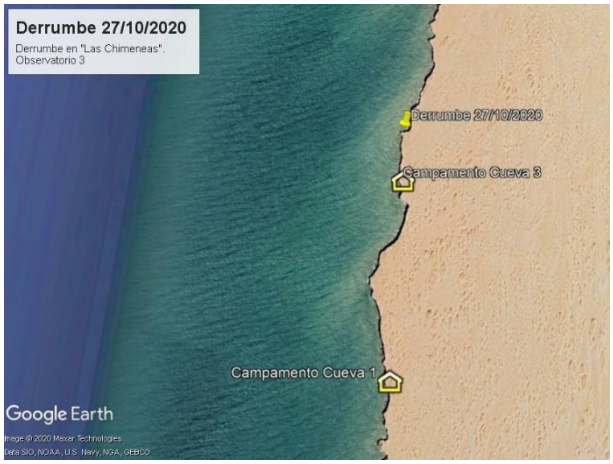







Maintenance du matériel d'escalade


## Effondrement

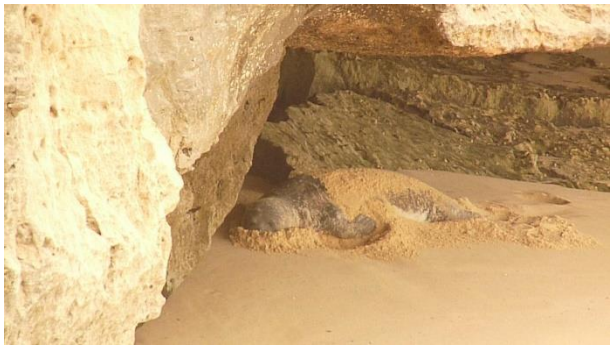



# PHOTOGRAPHIC ANNEX MONITORING 2020

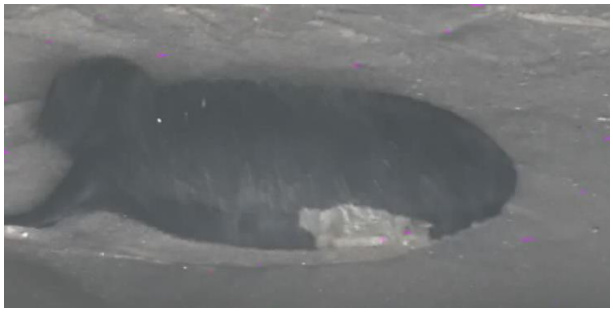
# «COSTA DE LAS FOCAS»

Asuad, a black male, resting on the “Banco de Azúcar” beach.
Sighted several times between January and May


Aymerich, black male resting on Escuelas beach. June

February 17th. Birth of P1179, the first seal of 2020

Unusual ventral pattern in a pup

Possible case of supernumerary breasts. Female called Oca

## VIDEO SURVEILLANCE SYSTEM MAINTENANCE


Camera maintenance Cave3. March




Cave Jean Paul Taris installation review. August and September



Coastline inspections. Detection of corpses

## OTHER ACTIONS


Recording images

## VISITS TO THE PROJECT


MAVA Delegation

Spanish Agency for Development Cooperation Delegation

European Union delegation