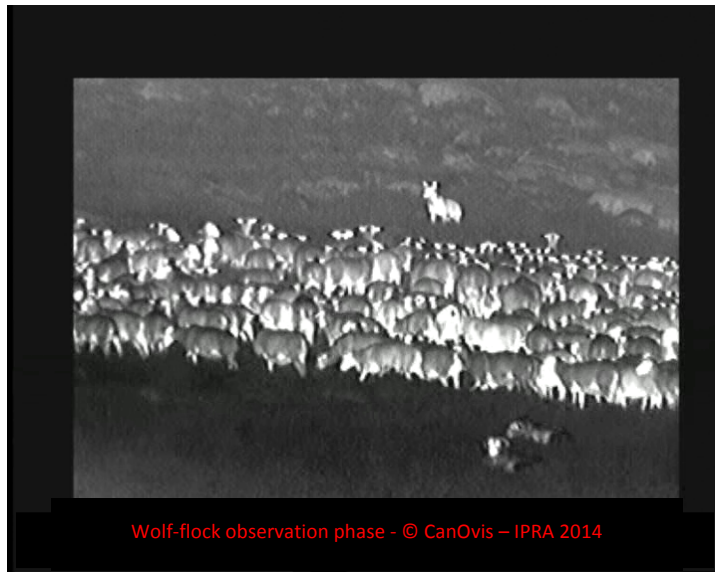


CANOVIS PROJECT / 2013-2017

**ACTIVITY REPORT 2014
AND PRELIMINARY RESULTS**



***STUDY OF WOLF-FLOCK-GUARDING DOG INTERACTION
TO IMPROVE FLOCK-PROTECTION DOGS AND SYSTEMS***

– IPRA –

Institute for the Promotion of and Research into Guardian Animals

December 2014

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INTRODUCTION

With the growth in France's wolf population, damage to domesticated flocks caused by predation is steadily increasing.

"Every year since 2010, more than half of flocks that are attacked experience it once per season, around a third suffer two to five attacks, with around 10 % suffering six to 10 attacks and the rest (...) suffering over 10 attacks (...). These two last categories of flock (around 3 % of flocks in 2013) account for some 35 % of victims compensated in 2013."

Wolf bulletin No. 31
French Hunting and Wildlife Agency
(ONCFS), June 2014

In some contexts, and despite the increasingly widespread nature of protection systems, this increase in damage is location-sensitive, particularly in the Mercantour Range (Alpes Maritimes) and the Canjuers Plateau (Var). Today, these two areas account for over 50 % of damage nationwide and illustrate all the difficulties with overcoming flocks' vulnerability to predation, despite the high level of livestock protection and the concerted efforts of breeders.

These uplands therefore represent major sites for investigation to understand which factors and situations increase or limit the effectiveness of protection techniques and, more specifically, of livestock guardian dogs (LGDs). These remain a central element of the strategy for direct flock protection in France and across the world.

The gathering of new knowledge on the "wolf-dog-flock" trinity should provide responses to critical situations in which, although indispensable, protection tools seem to be displaying some limitations when implemented as they currently are.

That is the rationale of the CanOvis project, with the aim of reducing the risk of wolf predation on domesticated flocks.

Summary of the CanOvis Project

By studying the relationships between wolves, flocks and guardian dogs, the CanOvis project aims, in pastoral areas subject to significant predation pressure, to define better depredatory wolves' behaviour,¹ the protection capability of so-called "guardian" dogs (LGDs) and the vulnerability factors at pastoral unit (PU) level.

The first stage, basic research (2013-2015), will lead to analysis of the historical and newly gathered data on the various relationships and interactions.

The initial results obtained will be tested locally during the second stage: applied research (2015-2017). All this will be done in close collaboration with the partner livestock breeders and shepherds.

All the work conducted in the complementary areas of Mercantour and Canjuers will, in the medium term, lead to specific (and transferrable) recommendations for optimising flock-protection systems, specifically by making LGDs more efficient through the adjustment of prevention strategies and methods for taking action against depredatory wolves.

Operational Objectives

- Studying **internal factors**: *every improvement that can be made to **LGD** performance:*

➡ **Specifying a behavioural model for LGDs' aptitude for protection**, in order to set out quality indicators that will improve their selection, their training, their use and their monitoring.

- Studying **external factors**: *everything in the working **environment** of an **LGD** that could influence its effectiveness:*

➡ **Specifying the structural and circumstantial outside factors** that make LGDs' work more or less effective, in order to adjust prevention strategies.

- Studying the **behaviour of wolves** *and their response to the protection measures implemented:*

➡ **Specifying a model for depredatory wolves behaviour** and setting out possibilities for intervention on individuals in situations where flocks are under attack.

¹ That causes damage to domesticated flocks.

Activity 2014

Areas and Partners

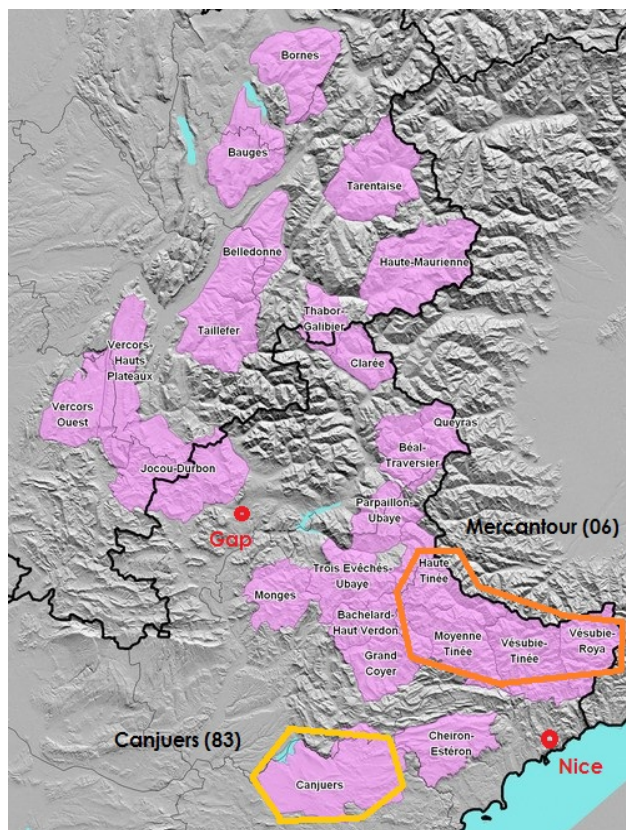


Figure 1: **Alpine permanent wolf-presence areas and CanOvis study areas**
(ONCFS Maps Resource 2012)

Region:

Provence-Alpes-Côte d'Azur (PACA)

Departments:

Alpes-Maritimes (06):

Study area: **Mercantour Range**

Partners: **DDTM² 06**

Mercantour National Park

Var (83):

Study area: **Canjuers Plateau**

Partners: **DDTM 83**

CERPAM³

Canjuers military base



Grand Plan – Canjuers



Mountain pasture of Longon – Mercantour

² Departmental Directorate for Land and Sea

³ Centre for Pastoral Studies and Activities in the Alps-Mediterranean Region

Table 1: Details of the areas studied

HAPU=high-altitude pastoral unit / PWPA=permanent wolf-presence area / MNR= minimum number (of wolves) retained /PACA = Provence-Alpes-Côte D'Azur region /DREAL = Direction régionale de l'environnement, de l'aménagement, et du logement

	Mercantour (06)	Canjuers (83)
Geographical boundaries	"Central and outlying" areas of Mercantour National Park (MNP)	Canjuers Plateau (military base and periphery)
Surface area	215,000 ha, including 46% in HAPUs	35,000 ha, including 60% in <i>parcours</i> (common pastoral land)
Landscape	Alpine (high slopes, steep-sided valleys) crystalline and sedimentary	Plateaux, small valleys, hills, karst Calcareous foothills
Climate (influences)	Mediterranean/inland/Alpine	Mediterranean/sub-Alpine
Dominant natural environments	Grassland, moor, wooded meadow, larch forest	Steppe, meadow, scrubland, forest
Wolf context (monitoring winter 13-14, ONCFS)	5 PWPAs comprising packs MNR: 15-24 wolves	2 PWPAs comprising packs MNR: 10-13 wolves
Pastoral context (trends)	Extensive sheep rearing (145,000 head) for meat, summer transhumance (originating in PACA), June-October	Extensive sheep rearing (15,000 head) for meat, sedentary and winter transhumance (originating in PACA), year-round
Monitored pastoral areas	Summer pastures and <i>parcours</i> (intermediate areas) 1,000-2,500 m	<i>Parcours</i> 800-1,200 m
Flock damage 2014 (by department to 31/10, DREAL)	675 recorded attacks 2,353 recorded victims	276 recorded attacks 804 recorded victims
Management and use	National park, French Forestry Office (ONF) / tourism	ONF, Verdon Regional Natural Park, army / hunting

The IPRA Project Team

- Jean-Marc Landry: Project leader – management, monitoring, analysis
- Jean-Luc Borelli: Deputy project leader – management, monitoring, analysis
- Gus Lyon: Engineer – analysis, new technology
- Vincent Tollon: Biostatistician – analysis

Gérard Millischer (MNP representative) wolf/flock damage expert and source of thermal imaging equipment (infrared camera) completes the team for coordination in Mercantour and field operations.



Some of the team at the morning debrief – Mercantour

© MP – IPRA – CanOvis 2014

General Information

1. Reminder of Scheduled Actions (2014-2017)

Table 2: *Details of actions by objective, 2014-2017*

Objective 1: History of pilot wolf-flock interactions
Action 1.1: Processing of historical data (HD) – 2014
Action 1.2: HD analysis – 2015
Objective 2: Monitoring of pilot wolf-flock interactions – 2014-2017
Action 2.1: Livestock guardian dog (LGD) movements
Action 2.2: Thermal camera monitoring of night-time interactions
Action 2.3: LGD vocalisation monitoring
Objective 3: Making the most of pastoral protection know-how
Action 3.1: Surveys 2014-2015
Action 3.2: Interview analysis 2015
Objective 4: Analyses and results 2014-2017
Action 4.1: Analyses and results
Objective 5: Communication 2014-2017
Action 5.1: Project promotion
Action 5.2: Publication of results and educational tools

2. Organisation of Field Operations

Monitoring operations (sessions of several consecutive days) follow on one from another over the course of the pastoral season and “current predation” on a selection of pilot sites (PUs).

These fieldwork sessions enabled:

- **LGD behaviour monitoring** (individual behaviour, relationships within the pack of dogs and behaviour in their environment; interviews with the livestock breeders who own them and the shepherds who use them).
- **GPS monitoring of LGDs and flocks** (analysis of night- and daytime animal movements).
- **Monitoring of wolf-flock-LGD interactions** (night-time viewing using infrared equipment – night-time hides close to where the flocks sleep).
- **Reading of the contextual and circumstantial parameters** (topography, weather, pastoral activity, etc.).
- **A collection of testimonies and experiences of partner livestock breeders and shepherds.**

3. Rationale for the Analysis

Close observation of pastoral systems and flock-protection plans provides information on the reality of wolf-flock-dog relationships and, in particular, enables analysis of LGD behaviour while working, and of wolves' habits and behavioural responses.

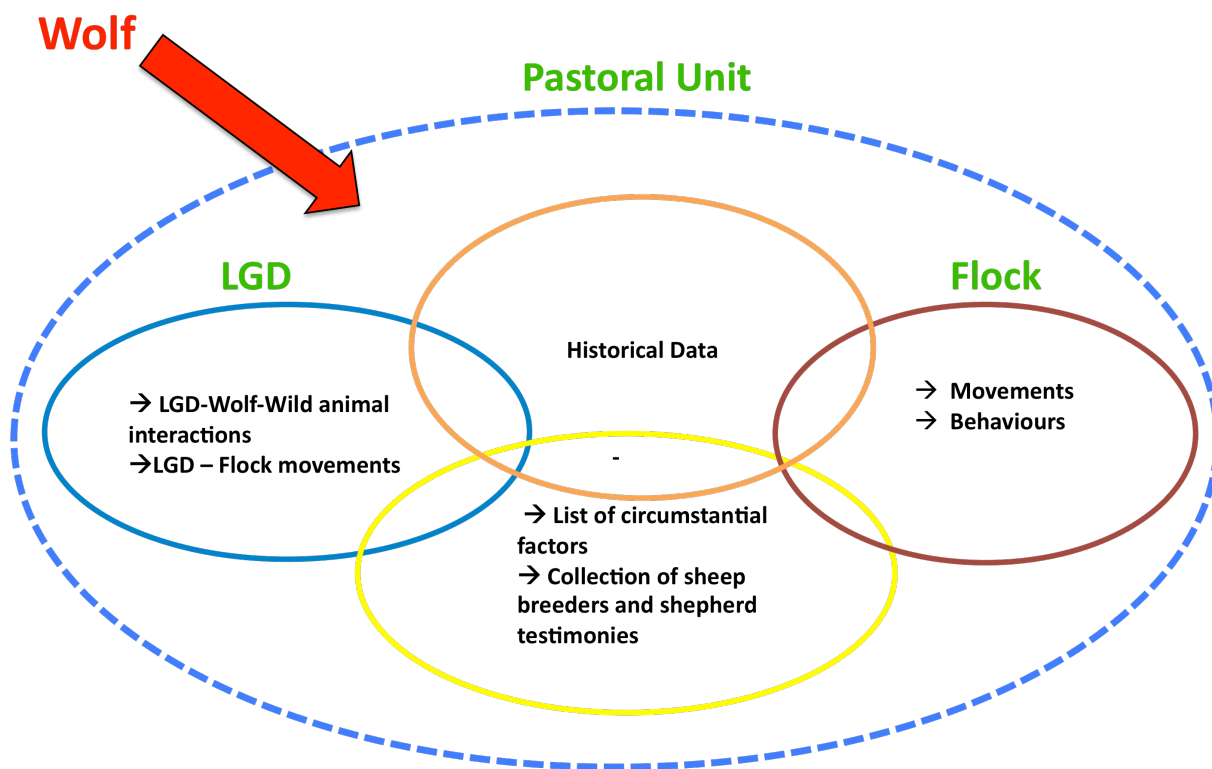


Figure 2: *Understanding the relationships and interactions on a PU*

4. Coordination and Communication

IPRA is the project's main backer, in coordination with the government bodies that are its technical partners: the MNP and CERPAM, and the DDTMs of Alpes Maritimes and Var.

Partners and local stakeholders are kept regularly updated by specific reports on each period of field observation. At the end of each year, debrief meetings are held for each of the areas being studied.

- *Scientific publications:*

Landry, J.-M., G. Millischer, J.-L. Borelli, G. Lyon. 2014. The CanOvis Project: Studying internal and external factors that may influence livestock guarding dogs' efficiency against wolf predation. *Carnivore Damage Prevention News* 10: 21-30

- *Articles in the foreign press:*

The Shepherd (US magazine dedicated to sheep rearing) / *Wolf Print* (UK magazine dedicated to wolf conservation) / *Le Temps* (Swiss daily)

- *Project presentations:*

Arc Alpin et Biodiversité (Alpine Arc and Biodiversity) conference (Gap, Hautes-Alpes) / Delegation of Norwegian livestock breeders (with CERPAM), Prefect and State representative meeting (wolf plan management regional coordination)

Website www.ipra-landry.com under construction: expected to go online early 2015.
A documentary is being prepared with Lyncée Productions.

Monitoring Operations 2014

1. Location of sites (pastoral units)

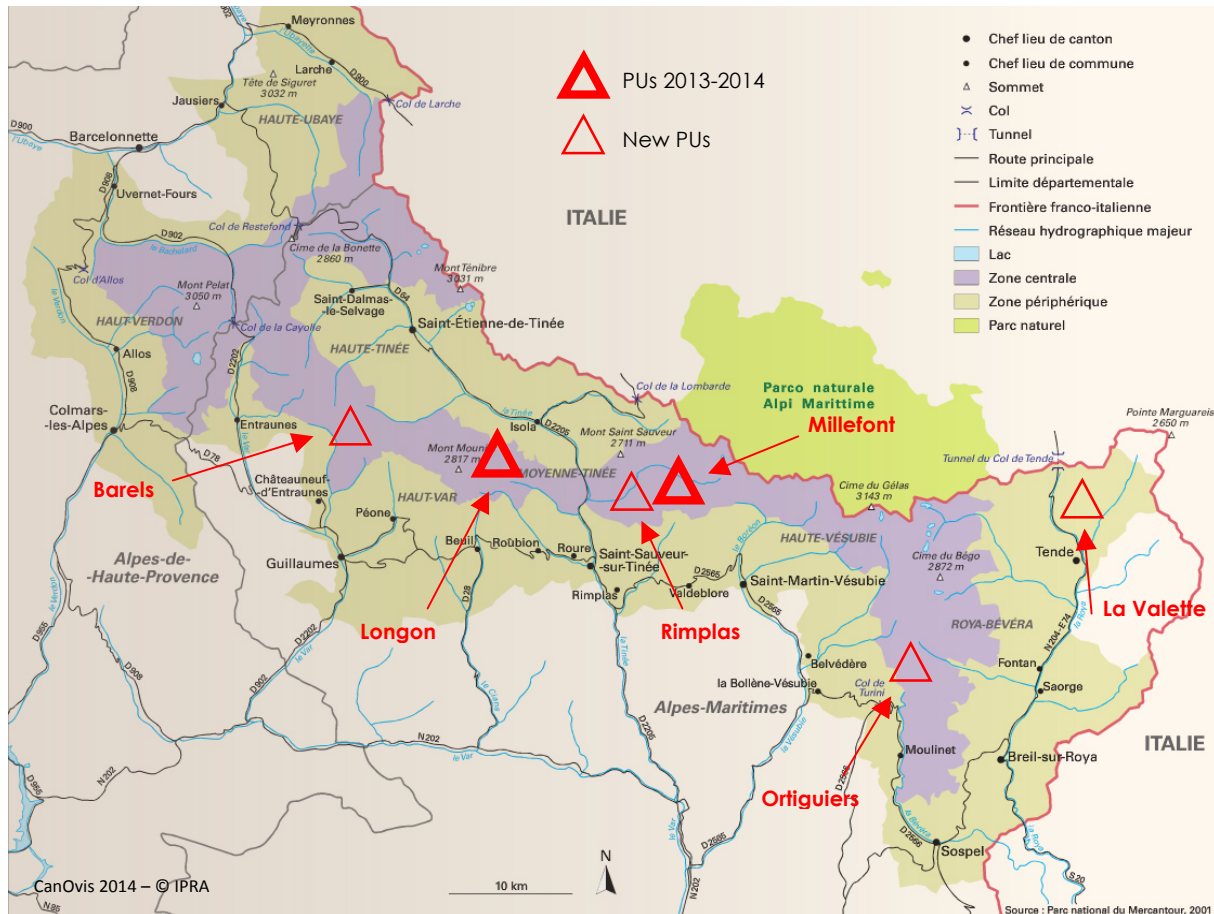


Figure 3: Monitoring sites in Mercantour

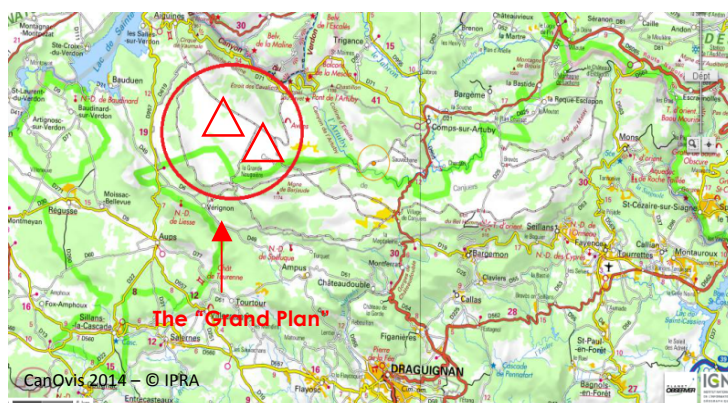
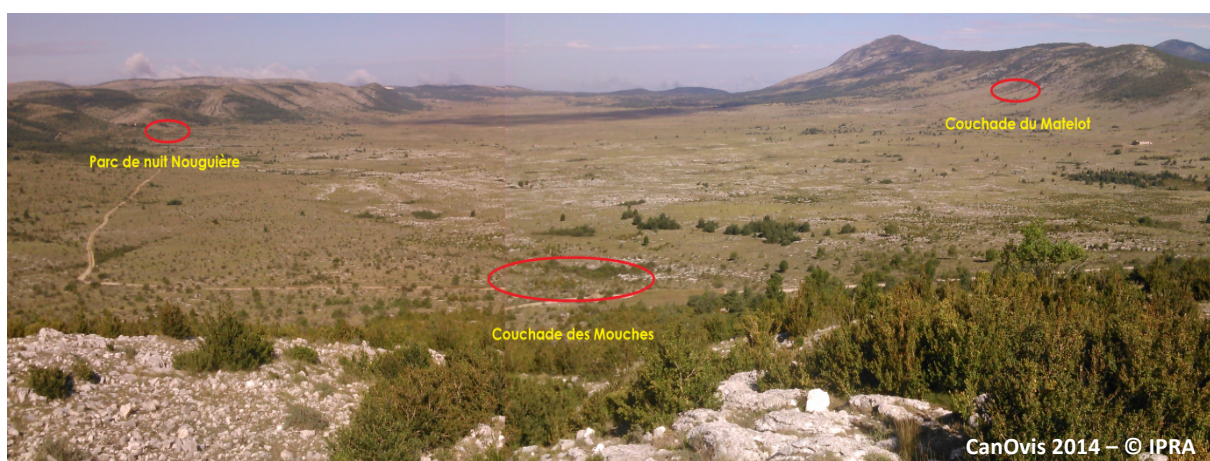


Figure 4: Monitoring sites in Canjuers (military base)



Sunrise at the observation point – Mercantour



Plateau monitoring site – Canjuers

2. Pastoral and Monitoring Context

Following consultation with the involved livestock breeders and partners, five PUs were chosen as pilot sites for the 2014 season. To ensure the sample is representative, one of the selected PUs has no LGDs, while another was chosen because it normally suffers little damage.

Additional nights of surveying enabled the testing of three new sites.

Table 3: *Description of the sites and summary of the monitoring conducted*

PU	Millefont Mid- Tinée (06)	Longon Mid- Tinée (06)	Barels Up. Var (06)	Amandiers Plat. (83)	Cluaye Plat. (83)
Flock numbers	1,500	2000+500	800	2,000	1,800
Transhumance	Long-distance	Long-distance	Local	Local	Local
Watched by	Breeder+shepherd	Breeder+shepherd	Breeder+shepherd	Breeder daily visits	Breeder/shepherd. daily visits
Altitudes	2,000-2,550 m	1,900-2,300 m	1,500-2,000 m	800-1,200 m	800-1,200 m
Environments	Grassland	Grassland, larch forest	Meadow, larch forest	Moor and forest	Moor and forest
Equipment	2 huts	3 huts + Sorting pen	1 hut + Sorting pen		1 caravan + Sorting pen
Means of protection	5 LGDs – circular or semicircular night pens	14 LGDs circular or semicircular night pens	Night pens, fladry, eco-volunteers	10 LGDs Free bedding site	8 LGDs Free bedding site (Night penning, depending on context)
Wolf info	Tinée-Vésubie PWPA MNR 13-14 = 4	Mid-Tinée PWPA MNR 13-14 = 6-7	Upp. Tinée PWPA, Var. MNR 13-14 = 5	Ste Croix Canj. PWPA MNR 13-14 = 6-7	Ste Croix Canj. PWPA MNR 13-14 = 6-7
Damage 2014	Attacks: 3 Victims: 4	Attacks: 7 Victims: 11	Attacks: 0 Victims: 0	Attacks: NA Victims: NA	Attacks: NA Victims: NA
CanOvis monitoring	Jul.-Aug.-Oct.	Aug.-Sep.	September	Jul.-Aug.-Oct.	Jul.-Aug.-Oct.
GPS	No	7 nights 5 days	No	6 nights 4 days	7 nights 5 days
Night-time hide	5 nights	16 nights	4 nights	4 nights	16 nights
Wolf sequences	11	8	0	2	26

3. Monitoring in 2014 in a Few Figures



- 5 PUs monitored (3 Mercantour, 2 Canjuers)
- 4 permanent wolf-presence areas
- 49 nights observation (29 Mercantour, 20 Canjuers)
- 20 nights GPS monitoring (7 Mercantour, 13 Canjuers)
- 14 days GPS monitoring (5 Mercantour, 9 Canjuers)

• **47 wolf sequences** (19 Mercantour, 28 Canjuers)



A “*wolf sequence*” is defined as an event involving one or several wolves interacting with the observed pastoral system (approaching the flock, attack, pursuit by LGDs, eating carrion, etc.).

In addition to these sequences, there are wolf observations outside a monitoring context, for further 10 or so hours of night-time “wolf” videos in total for the 2014 season.

Assessment 2014

Carrying Out the Project

Armed with the experience gained during the test season of 2013, we were able to organise the project under favourable conditions in 2014, gathering new data that are fairly significant, quantitatively and qualitatively, despite the scant resources available to us.

This season, we have confirmed the good relations established with our partners, in the field and institutional. The project is exciting ever-increasing interest and we struggled to carry out some proposals for monitoring on new PUs or did not honour them because of a lack of availability of the team.

Nevertheless, new sites were incorporated for monitoring in Mercantour and the Canjuers side of the project was successfully implemented as envisaged, thanks to the determined contributions of our local partners: DDTM 83, CERPAM and the military base.

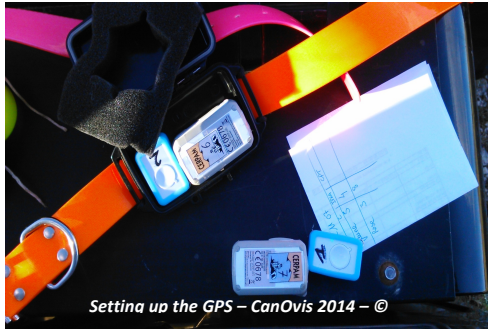
This meant that, from late June to mid-October, monitoring sessions alternated between Mercantour and Canjuers, with weather conditions that were not all that mild during this particularly cool and damp season (including in Canjuers). However, this did not really impact the smooth running of operations that, as in 2013, proved profitable in terms of raw data and of promising avenues of work.



Lamb born in the night encounters an LGD for the first time – Canjuers

Data and Preliminary Processing

1. GPS Monitoring



Operation conducted on some LGDs and some sheep or goats of the flocks monitored during the day and/or night.

Working alongside CERPAM, different models were tested (Géopointer and Geovie). We regularly encountered difficulties relating to device battery life, and to data recording and transfer.

Nonetheless, the data gathered provided accurate information on the movements of equipped animals (routes, durations, speeds, elevation changes, chronology, etc.) and enabled correlation of dogs' activity with that of flocks, under normal circumstances, but also in interaction with wolves (as well as with night-time observations and with predation taking place during monitoring).

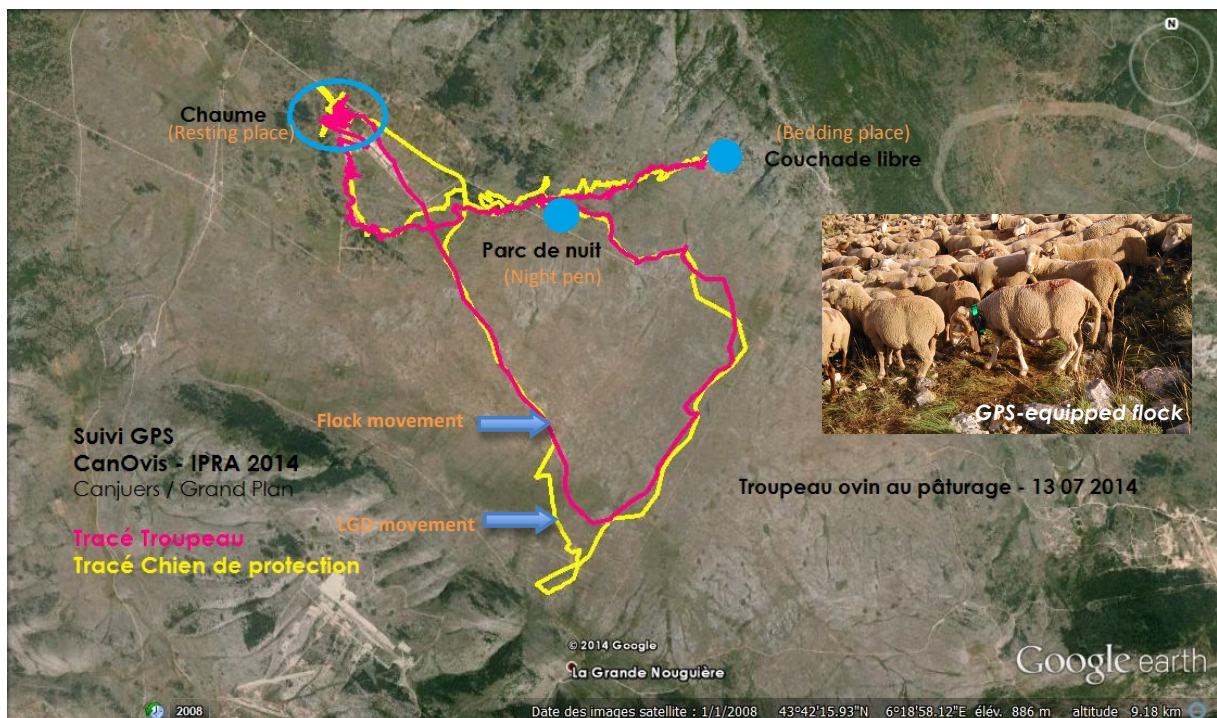


Figure 5: **Correlation of LGD and flock movements**
Monitoring from bedding place (7:00) to night pen (22:00)

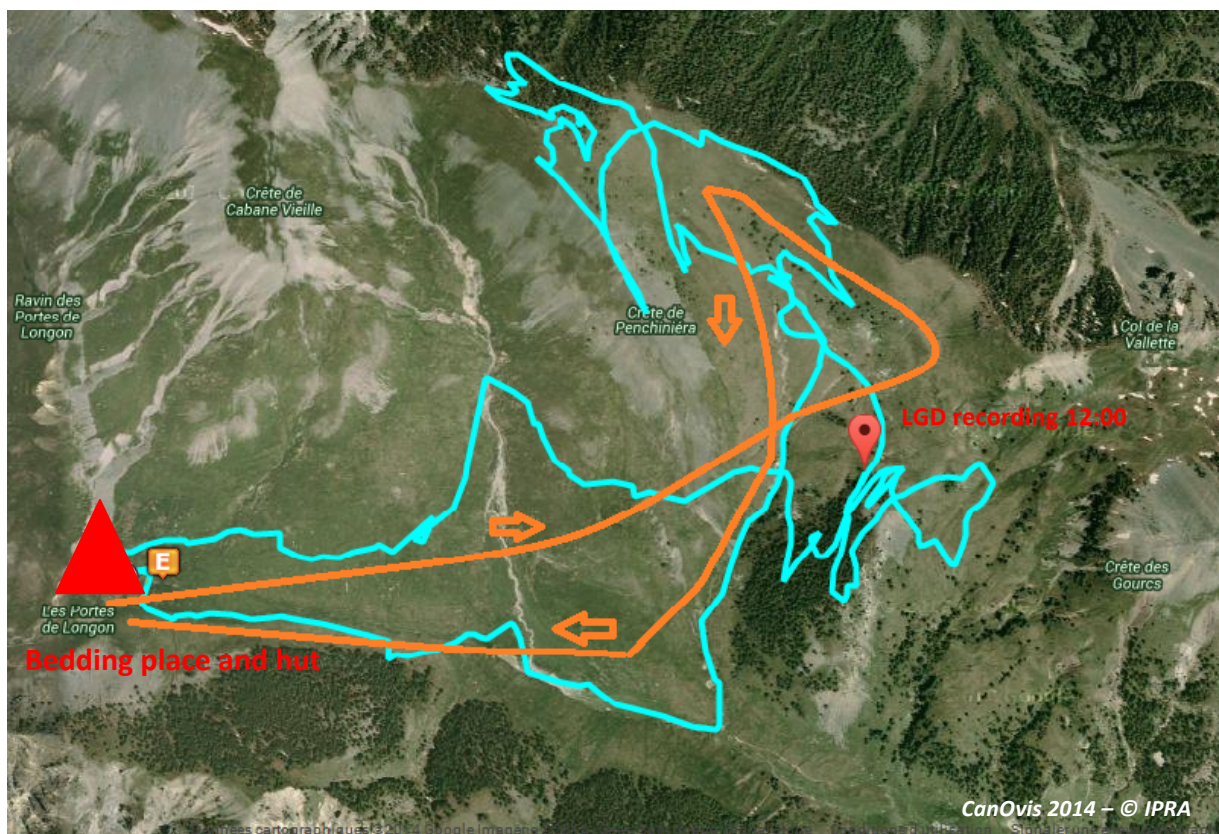


Figure 6: **Wandering of flock (orange) superimposed over LGD GPS route (blue)**
 14.8 km / + 700 m elevation change – Longon PU – day of 17/09/14 – monitored 8:30 to 20:30

2. Night-Time Observations

Thanks to thermal imaging equipment, night-time hides have enabled the gathering of data on the activities of LGDs and flocks (particularly when sleeping unenclosed), and on the relationship between this system and the environment (wild animals, predators, weather changes, various disturbances, etc.).

Night-time monitoring 2013-2014

90 nights in hides

59 sequences involving wolves

(interactions with the pastoral system, interspecies encounters, chases, movements, etc.)

27 interactions between LGDs and wild animals

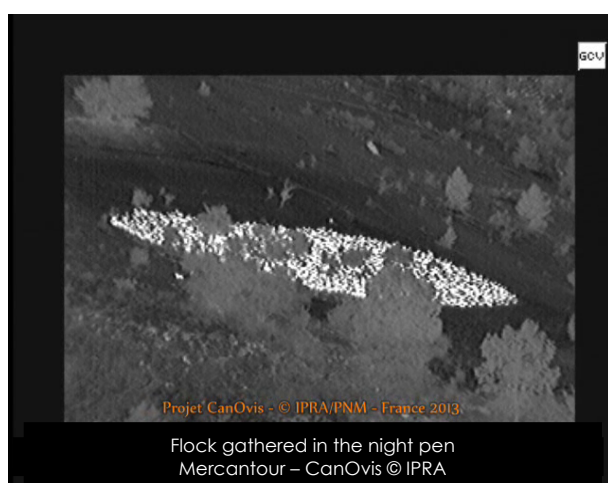
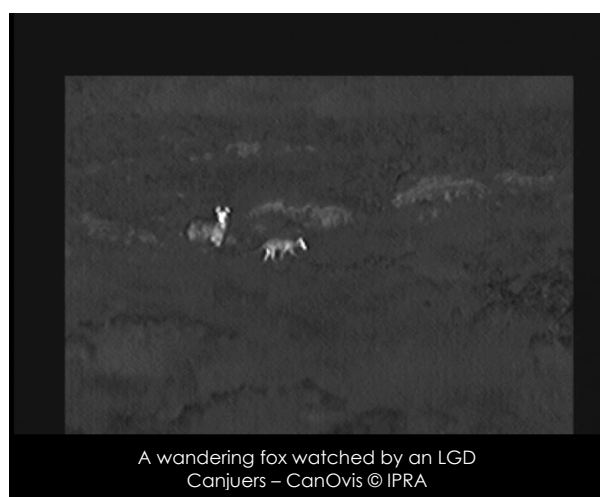
living around the flocks (chamois, wild boars, hares, etc.)

Selection of Recorded Scenes (2013-2014)

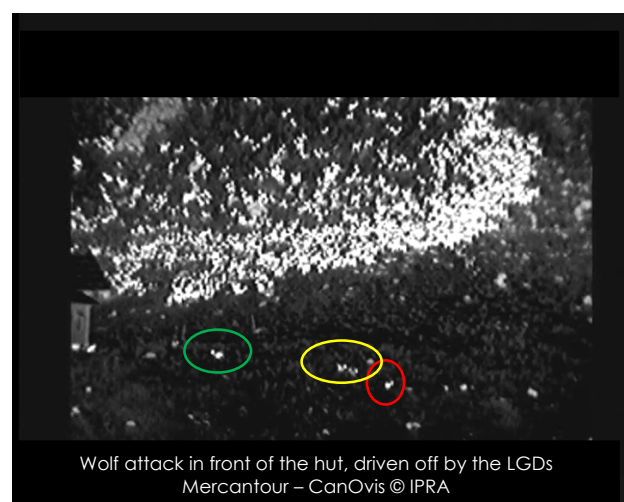
Flock life



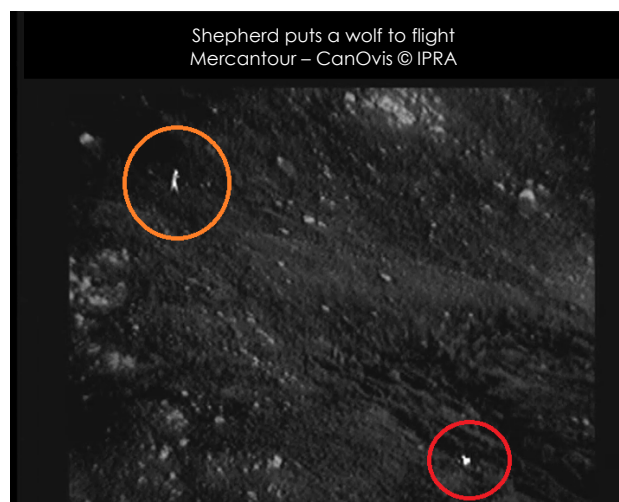
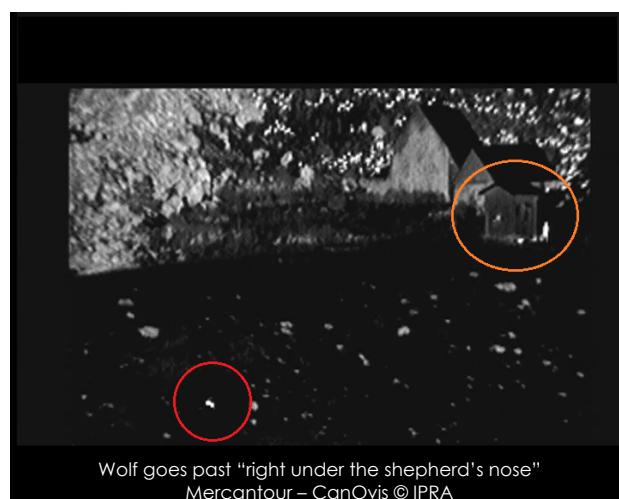
LGD-wild animal interactions



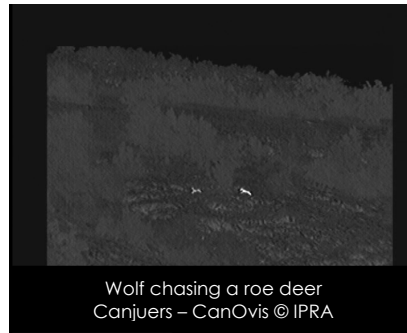
LGD-wolf interactions



Human-wolf interactions



Wolf behaviour



3. Data Processing

This information is added to a database especially created for this purpose (using the FileMaker Pro program), based around PUs and mixing historical data, structural data and data gathered as part of the project.

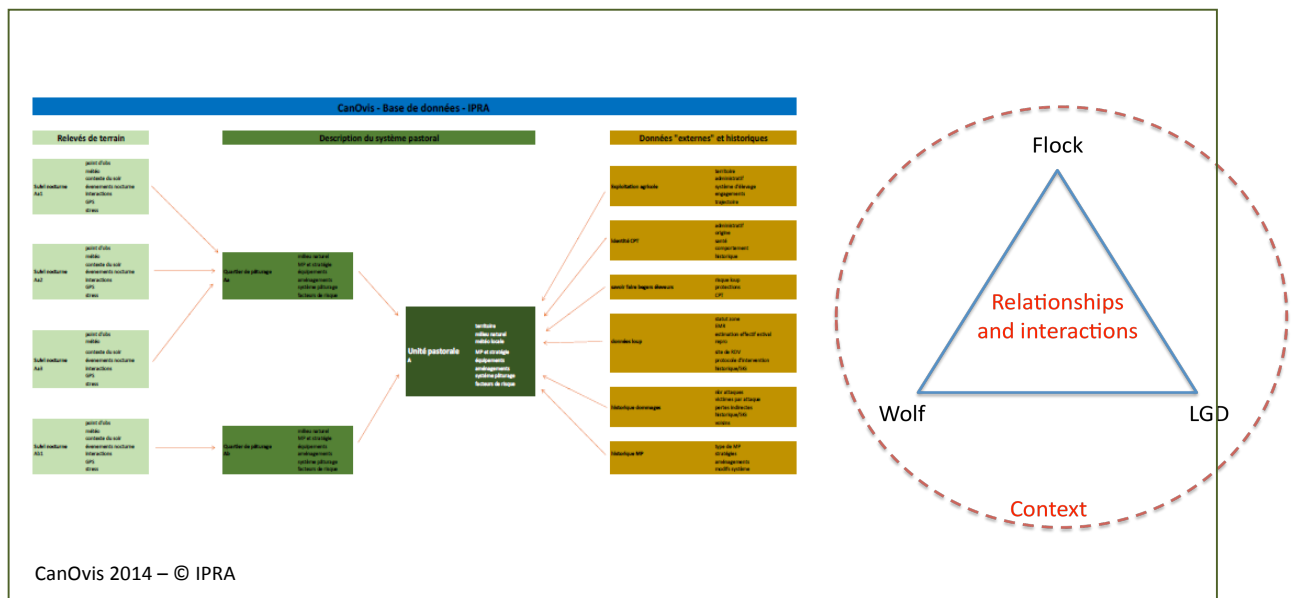


Figure 7: **Organisation of the CanOvis database**

The finalised version of this database will also represent a tool for analysis and assisting in decision making (vulnerability evaluation, LGD monitoring, protection-strategy adjustment, etc.), aimed at livestock breeders and administrators.

Preliminary Results

The information gathered in 2013-2014 enables us to make some initial observations, which are gradually identifying the avenues of work to be explored.

Some results are set out below, in a non-exhaustive way, classified by which is the central figure interacting with another player:

1. On wolves

- **Wolves “occupy the territory”:** Wolves pass through observation areas regularly and not necessarily out of interest in flocks.
- **Some wolves are persistent:** on the other hand, individuals (one or two wolves together) focus on a flock for hours on end (waiting, observations, attempts... not necessarily with any result – see figure 12, p. 21).
- **Some wolves seem inexperienced:** most of these persistent wolves seem daring but ineffective.
- **Always one single wolf (maybe two) during the “unsuccessful” attacks that were observed.**
- **Wolves and LGDs can have “peaceful” relations:** whereby each seems to recognise the other's limitations and they tolerate each other.

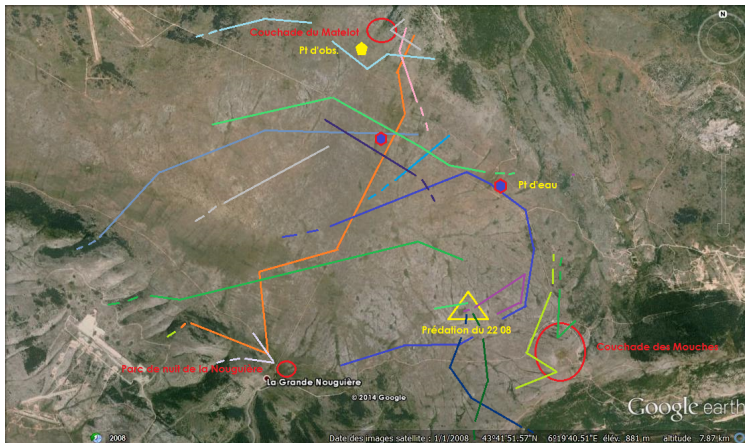


Figure 8:

**Summary of wolf observations
by night of monitoring (one to four
specimens)**

Session of 17-24 August 2014, Canjuers

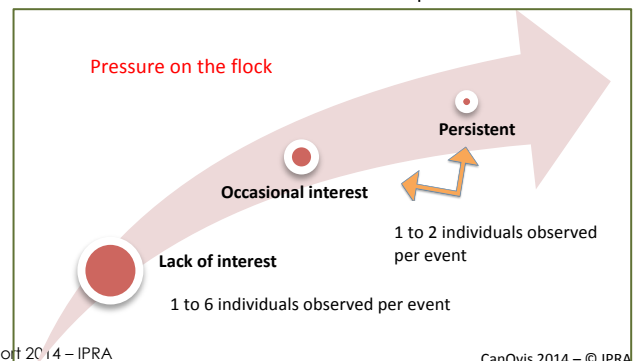
Work to be confirmed:

- Clarifying whether all the pack members demonstrate the same frequency of attacks on the flock.
- Clarifying whether close contact with livestock guardian dogs or “persistent” pressure from one or two wolves on flocks could be mainly the work of young individuals.
- Clarifying whether the frequency of attacks is the same during the whole observation season (knowing that damage reflects only successful attacks, but not the predation pressure on a flock).

Figure 9:

**Attitude of the wolf/wolves as a flock
approaches**

Trends in the 2013-2014 observations



2. On flocks



- **The livestock are relatively tolerant of LGD movements**, but some restless stages amongst the LGDs cause significant disturbances (panic, movement, etc.).
- **The approach or very close proximity of wolves generally does not cause livestock to panic.**
- When sleeping unenclosed, if attacked, the flock may move in bunches and create a **“flocking” effect** (like a shoal of fish), which disturbs the predator and gives

the LGD time to intervene. This means sleeping unenclosed is not necessarily a vulnerability factor.

- Adding fences (even non-electric) could be effective on open sleeping spots by limiting key access points to the flock while reinforcing the work of LGDs.
- After a disturbance, **calm generally returns quickly.**
- In a 24 h cycle, **some periods proved more vulnerable** (grazing, scattered animals, flock split up, easy access to the sleeping spot, etc.).

Work to be confirmed:

- Clarifying the significance and relevance of non penned bedding place, when the situation permits it.
- Clarifying wolf behaviour when faced with fences (electric or otherwise).
- Identifying periods of vulnerability during a flock's activity.

3. On guardian dogs



- **LGDs are not necessarily on guard all night** – they sleep at night too!
- **LGDs are relatively tolerant towards the surrounding wild animals.** Very few incidences of chasing observed.
- **Whether dogs are excited or calm does not necessarily correlate with the presence of wolves in the surroundings.**
- **Dogs’ “marking” and barking have little or no effect** on wolf frequentation.
- **The dogs are sensitive to sudden**

movements of the flock (and unusual ringing noises); LGDs only seem to demonstrate agonistic (“aggressive”) behaviour towards wolves in the event of trouble/attack on the flock and, to a lesser extent, on a carcass (defence of resources). They are more “tolerant” to the presence and movement of wolves when there is no disturbance (even close to the flock).

- **LGDs return to calm relatively quickly after a variety of attacks or trouble.**
- **Some pursuits can be sustained:** up to 2 km where the LGDs “will not give up”, with tracking work equivalent to a hunting dog, while other pursuits are abandoned after a few dozen metres (simply putting them to flight).
- **LGDs may interrupt wolves’ predation behaviour, but they do not teach the wolves not to come back** to the protected flock (see Landry, 2013). This means that dogs may be similar to a **“disruptive-stimulus tools”**.
- **The presence of one or several females in heat in the flock and surroundings seems to make protection less effective** (reduced vigilance, males injured by fighting amongst

themselves and dogs wandering off from their home flock, sometimes far from the flock).

Work to be confirmed:

- Clarifying the reasons for LGD-wolf confrontations: *risks and outcome of a confrontation*, “*Resource Holding Potential*” theory (see fig.13, p.23).
- Understanding the reasons for non-agonistic LGD-wolf relationships (“peaceful” interactions).
- Clarifying the importance of the LGD group's social structure, of its occupation of territory, of its age hierarchy, of the occurrence of females in heat, etc.
- Identifying the factors offering most deterrent: individual nature, constitution of the group of dogs, territoriality, aggressiveness, etc.
- Identifying LGD-selection criteria.

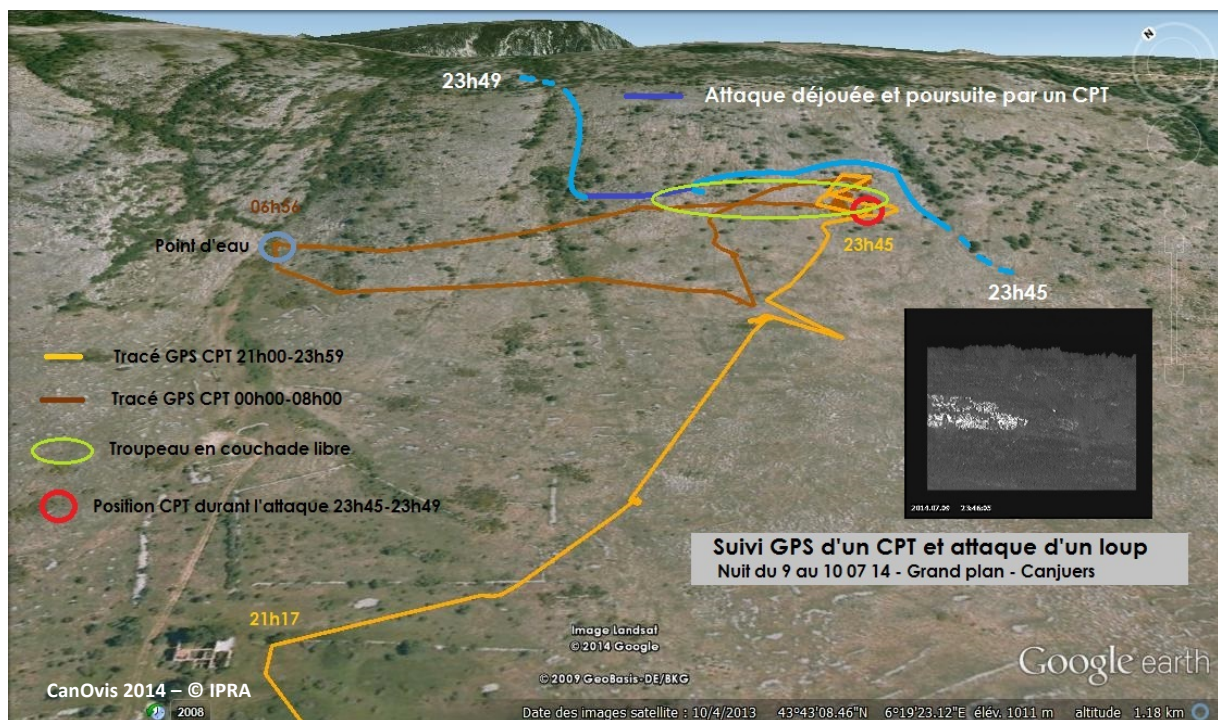
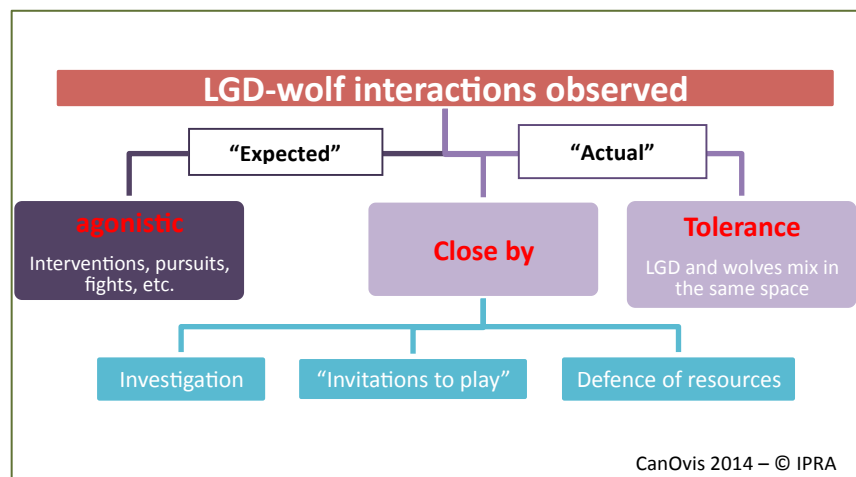
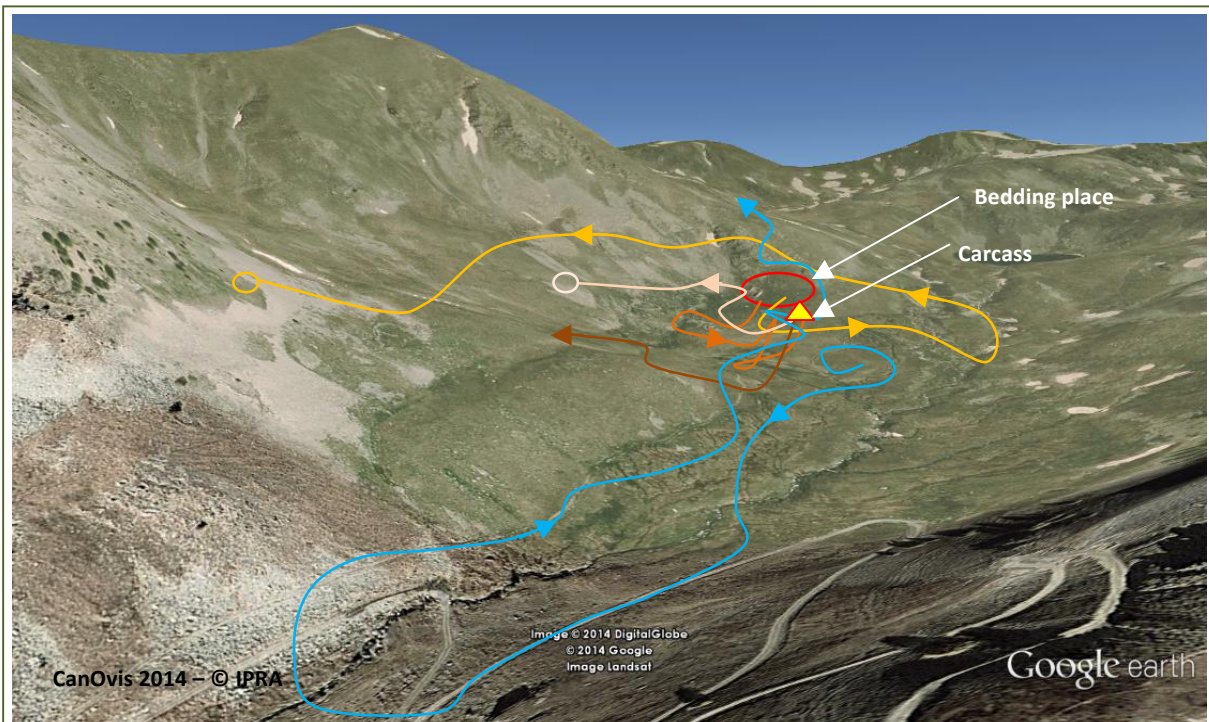


Figure 10: **Wolf attack** (blue line) **and GPS fitted LGD behaviour** (yellow line)
The GPS-fitted LGD does not intervene during the attack, while another briefly pursues the wolf

Figure 11:
Classifications of LGD-wolf interactions observed (2013-2014)



**Box 1: Night of pressure on the high-mountain pasture – Chronology of “wolf events”
(location of the interactions and movements)**



Context: August area – flock gathered in front of the shepherd's hut (semicircular pen)
1 shepherd – 5 LGDs – 1 lamb had been killed the previous day, its carcass had stayed at the bottom of the sleeping spot / Millefont PU – Mercantour – August 2014

Course of events:

- **21:46:** thwarted attack and pursuit (one wolf – three LGDs – one ewe wounded)
- **23:30:** pursuit and confrontation (one wolf – one LGD)
- 23:45: wolf and LGD return to the sleeping spot
- 23:50: the wolf approaches the carcass under the sleeping spot – driven off – LGD-wolf “duels”
- 23:58: the wolf returns to the carcass being watched by the LGDs
- 00:08: an LGD is still keeping the wolf attracted by the carcass at arm's length
- **00:24:** the wolf gives up!
- 00:27: another attack on the flock driven off by one LGD
- 00:42: the wolf has managed to return to the carcass under the sleeping spot
- 00:49: the breeder approaches in 4x4 (from the obs. point)
- 00:53: the breeder intervenes on foot
- **01:00:** the wolf, having withdrawn, observes the breeder and then leaves
- **02:10:** two wolves playing and wandering around in the pasture
- 02:28: the two wolves head back towards the flock
- 02:33: the two wolves are under the sleeping spot
- 02:36: disturbed by the restlessness of the guardian dogs, the two wolves skirt around the flock
- 02:38: they pass by the sleeping spot with interest for the last time, without disturbance
- 02:48: the wolves leave the pasture for good... for tonight!

Assessment: At least five hours of wolf presence: two attacks driven off, one ewe injured, long sequences of interaction between dogs and wolf over the coveted carcass, breeder scares wolf off once.

What happened next: Early the following night, a wolf would make several approaches, without success, butting up against the fences added to the half-moon pen, without attracting the attention of the LGDs.

Prospects 2015-2017

In these varied and complementary situations, the first two seasons of monitoring have enabled us, **by accessing the night-time world**, to document a large number of particularly situations that are interesting and, indeed, not predicted by the current state of knowledge on the subject.



Preliminary analysis of these new data and exchanges with all our partners are already enabling us to call into question some of the certainties about how the wolf-flock-LGD trinity operates, and gradually to build **a new way of looking at herd protection and the behaviour (depredatory or not) of wolves**.

Areas of Research

One of the strengths of this project is the ability to juxtapose several types of data at the pastoral unit level (see fig. 2, p.8). The PU (and its subdivision the “grazing area”) are the sample that seems most relevant for understanding the various factors determining vulnerability and for playing with the effectiveness of the protection systems in place.



On the basis of the work already done and methods implemented in France (vulnerability diagnosis, search for factors determining vulnerability, wolf monitoring, etc.), and cross-referencing with historical data, and the expertise of the breeders and shepherds, **the vulnerability and protection of a flock will be thought out on the basis of key periods and events linked to the pace of the flock and the activity of the LGDs**. All of this correlated with the biology of wolves (dispersal, reproduction, upbringing of young, depredatory behaviours, etc.).

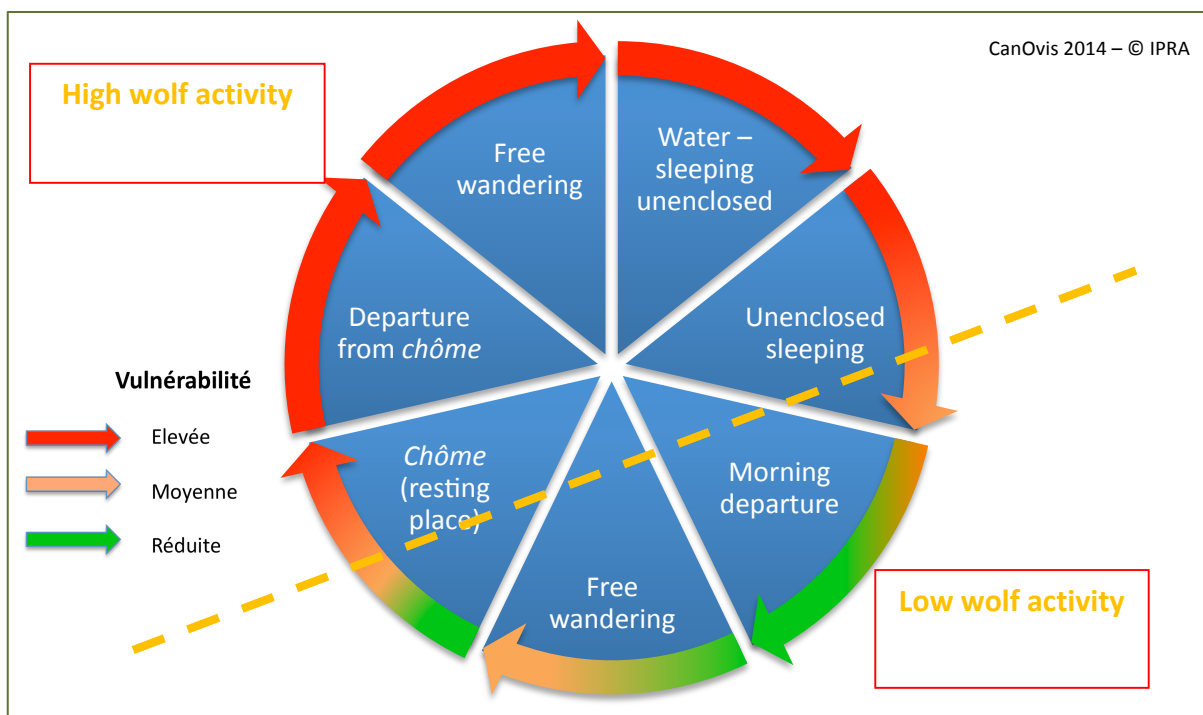


Figure 12: **Basic vulnerability model over 24 h**
The case of a lâcher-dirigé (guided-wandering) flock that is sleeping unenclosed

By applying this basic pattern to them, it is possible to evaluate the importance of the various vulnerability factors by periods, to make adjustments in protection terms, and to measure the impact of the modifications proposed to the workings of the pastoral system studied.

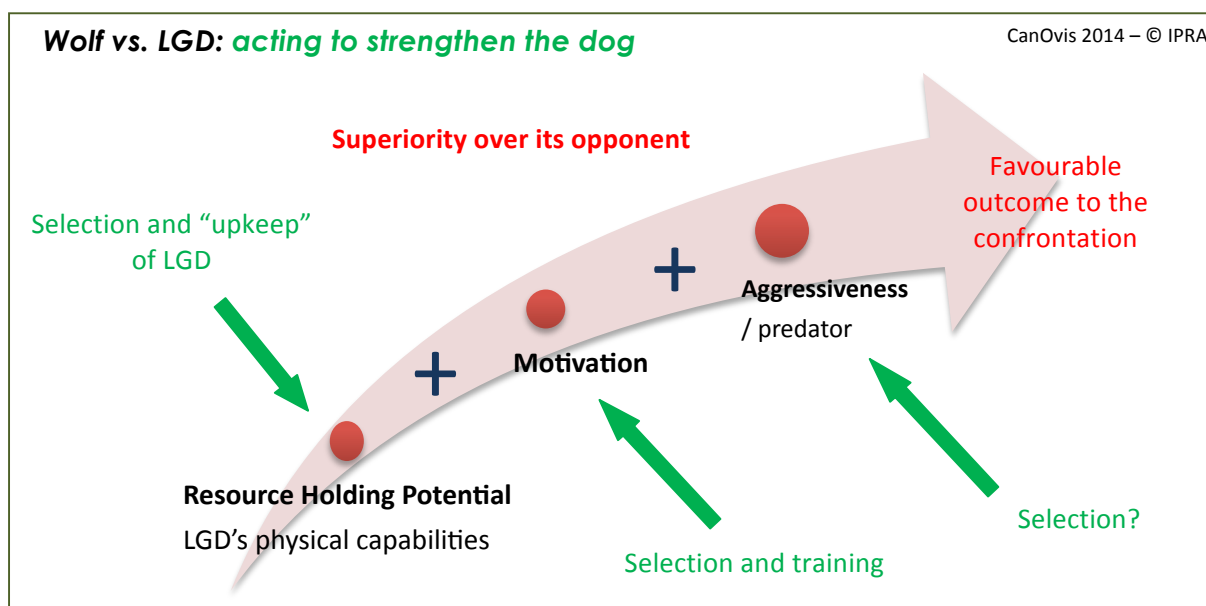


Figure 13: **LGD-wolf relations: reflection on the long-term deterrent effect of LGDs**

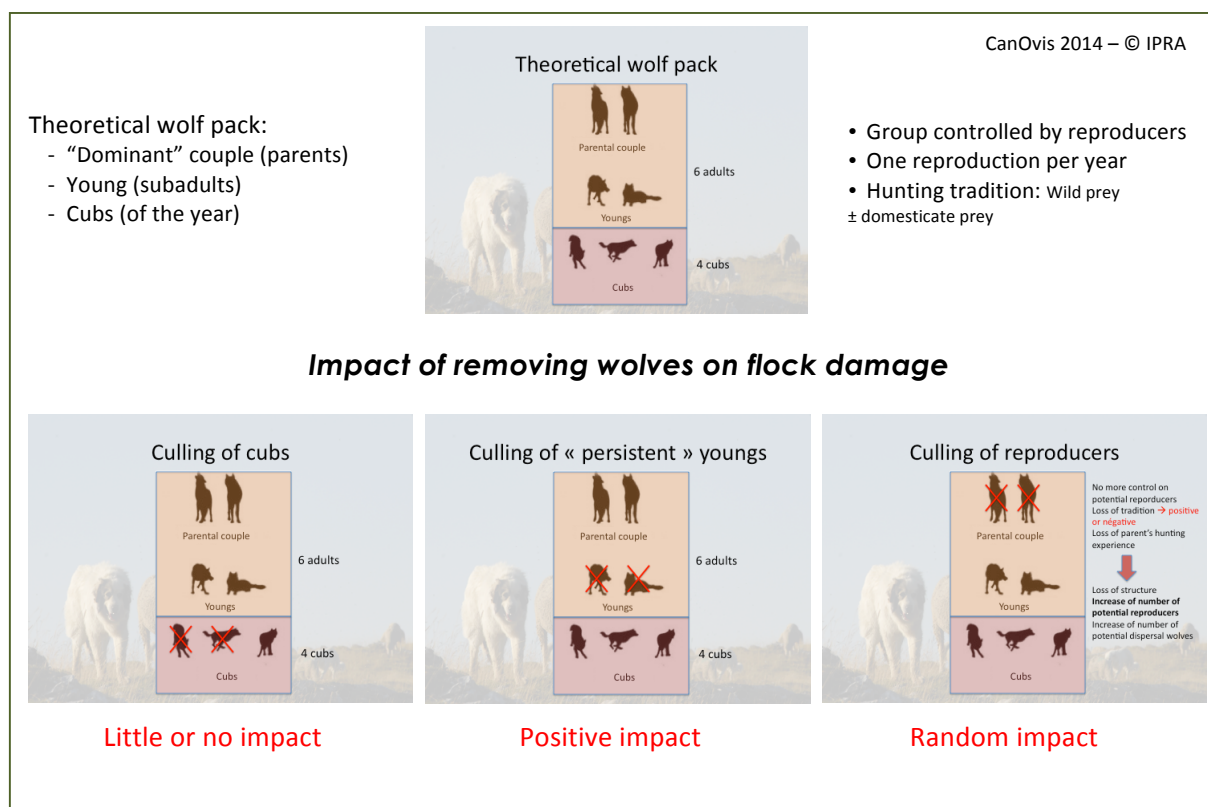


Figure 14: Protection by wolf removal: reflection on the impact of random and targeted shootings
 Check the hypothesis of a significant pressure due to young wolves learning (see p.18) and eliminate preferentially for more effective protection through removals

Plans for 2015

As per the goals set in late 2013,⁴ the 2015 season will be split between gathering data and putting our initial findings and analyses to the test.

It will therefore be appropriate to continue work on the historical PUs, while developing new partnerships to enrich the evidence we gather. This monitoring will enable us to expand our knowledge of wolves in pastoral areas, of LGDs' protective actions and, in a wider sense, of the efficiency of the protection systems concerned.

In parallel, recommendations and adaptations resulting from the preliminary analyses will be applied to some PUs. The initial effects will be measured and, where applicable, corrections and adjustments will be made in a continuous exchange between reflection, dialogue and action.

⁴ See *Rapport d'activité 2013 et perspectives 2014-2017* (Activity Report 2013 and Prospects for 2014-2017) – CanOvis

Within the limits of the available resources, the objective will also be to enhance daytime monitoring (LGD + flock) to take account of changes in daytime predation, particularly in the Mercantour area, but also in the specific case of the Canjuers military base.

We will also try to develop our know-how in more forested environments, in order to take a complementary look at these areas, which are more vulnerable by definition.



End of a night of observation – Canjuers

Arrival at the high-mountain pasture – Mercantour

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