



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

Management of the invasive Raccoon Dog (*Nyctereutes procyonoides*) in the north-European countries (MIRDINEC)



LIFE09 NAT/SE/ 000344

After-LIFE Communication Plan



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences



Miljöministeriet
Naturstyrelsen



SUOMEN
RIISTAKESKUS
FINLANDS VILTCENTRAL



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

Background and goal with the project

Invasion by non-native (alien) species (IAS) has been recognized as one of the main threats to global biodiversity. In 2008 the first national funding was approved in Sweden for a project aiming to improve our knowledge about the biology and behavior of the raccoon dog (*Nyctereutes procyonoides*) in its expansion zone, and based on this knowledge to suggest tools to manage the invasive alien species. We however soon realized that Sweden alone would not be able to stop the raccoon dog from establishing. For a highly mobile species such as the raccoon dog it is absolutely necessary with a transnational project, where neighboring countries in which the species already exists fulfill their ratified conventions from Rio and Bern and tries to stop the invasive species from spreading to other countries. We applied for, and were approved, the LIFE+ MIRDINEC project where Sweden have shared knowledge and tools with Finland and Denmark and disseminated our results to other stakeholders as well as the public to increase their awareness of Invasive alien species in general and the raccoon dog in particular.

More specifically our goals with the project were to;

- Prevent damages on biodiversity.
- Prevent the establishment of wild, free-living and viable population of raccoon dog in Sweden, Norway and Denmark.
- Limit further increase and dispersal of the target species in Finland.
- Use innovative methods to reduce and eradicate invasive species like Raccoon Dogs.
- Use tagging with GPS/VHF transmitters for effective culling.
- Use innovative methods to learn more about the social behaviour of invasive species.
- Spread the results from the efforts in the project among hunters, local communities, ornithologists and international stakeholders of invasive species.
- Improve the awareness about IAS among the public leading them to report presence of Raccoon Dogs

Project results

Our management actions have been very successful, we have;

- Demonstrated a successful international management organization and cooperation to manage a highly mobile invasive alien species.
- Slowed down the dispersal of raccoon dogs from Finland to Sweden and Norway and started reducing the population where it already exists in those countries.
- Slowed down a further dispersal in Denmark and prevented a fast population increase.
- Demonstrated that our innovative methods for culling and management of the raccoon dog also work on other species, several raccoons (*Procyon lotor*) have been culled within the project in Denmark and Sweden.
- Involved the local hunters in the management.
- Informed and educated stakeholders and the public to increase the awareness of IAS and improve incoming reports to our citizen science systems.



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

- Disseminated our actions to managers and scientists in other countries at our international conference <http://jagareforbundet.se/vilt/Mardhundsprojektet/invasive-alien-predators-conference-2013/>.

During the project we have culled or sterilized over 1 400 raccoon dogs. The population is according to our monitoring systems decreasing in all countries monitoring areas (table1, figure 1).

Table 1. Citizens observations to the project, confirmed raccoon dogs, captured or killed raccoon dogs during the project (01092010 – 31082013).

| Country | Reported observations | Confirmed animals | Captured or killed animals |
|---------------|-----------------------|-------------------|----------------------------|
| Sweden | 2272 | 364 | 319 |
| Denmark | 962 | 488 | 402 |
| Finland | N/A | N/A | 680 |
| Totall | 3234 | 852 | 1401 |

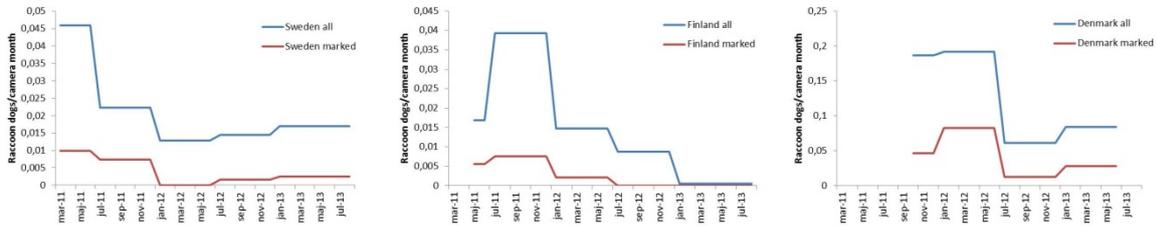


Figure 1. Population development in the Swedish, Finnish and Danish monitoring areas during the project. The change in population is shown as an index (number of raccoon dogs captured on picture per camera month over time). All animals (blue), marked animals (red). The indices cannot be used to compare density between countries.



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

LIFE + communication activities

Home pages

4 home pages;

- Swedish (<http://jagareforbundet.se/vilt/Mardhundsprojektet/>)
- Finnish (<http://jagareforbundet.se/vilt/Mardhundsprojektet/Raccon-Dog-Finnish/>)
- Danish
(<http://www.naturstyrelsen.dk/Naturbeskyttelse/Artsleksikon/Dyr/Pattedyr/Rovdyr/Maarhund/>)
- English (<http://jagareforbundet.se/vilt/Mardhundsprojektet/Raccon-Dog-English/>)

With a total of over 10 000 visits

Short courses for hunters and other stakeholders

- Sweden 11 courses reaching 120 hunters
- Denmark 10 courses reaching 260 hunters
- Finland 5 courses reaching 110 hunters

Lectures for university students

- Sweden 6 lectures reaching 100 students
- Denmark 2 lectures reaching 30 students

Education material

- Leaflets; Sweden 1000, Denmark 1500, Finland 500
(<http://jagareforbundet.se/vilt/Mardhundsprojektet/informationsmaterial/>)
- Tracking guides; Sweden 500, Denmark 500, Finland 500
(<http://jagareforbundet.se/vilt/Mardhundsprojektet/informationsmaterial/>)
- Mobile telephone application; 100 000 downloads
(<http://jagareforbundet.se/vilt/Mardhundsprojektet/informationsmaterial/>)
- Power Point presentation; one standard presentation for all countries (DVD)
- Instruction film 1 ([DVD](#))
- Project (DVD)

Fairs and exhibitions

- Sweden 8 fairs reaching thousands of hunters
- Finland 2 fairs reaching thousands of hunters
- Denmark 1 fair reaching thousands of hunters

Workshops, seminars and Conferences

We have participated in 9 international workshops, seminars or conferences apart from our own conference.

Networking with other projects

We have been networking with many other projects, among those three research projects and about 10 other LIFE project (several which visited our conference).

Newsletters



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

12 electronic newsletters <http://jagareforbundet.se/vilt/Mardhundsprojektet/Nyhetsbrev/>

Mobile notice boards

- Sweden 10
- Denmark 10
- Finland 10

Reports and publications

- Technical Mid-term report (<http://jagareforbundet.se/vilt/Mardhundsprojektet/informationsmaterial/>)
- Student reports 5 (Print)
- Conference report (<http://jagareforbundet.se/vilt/Mardhundsprojektet/invasive-alien-predators-conference-2013/conference-output/>)
- After-LIFE Conservation Plan (<http://jagareforbundet.se/vilt/Mardhundsprojektet/after-life/>)
- After-LIFE Communication Plan (<http://jagareforbundet.se/vilt/Mardhundsprojektet/after-life/>)
- Laymans report (<http://jagareforbundet.se/vilt/Mardhundsprojektet/after-life/>)

Media activities

In table 2 some of our media activities are summarized, but see also the media analysis below.

Table 2. Media activities in the LIFE+ MIRDINEC project

| | Press releases | Articles in national newspapers | Articles in local newspapers | Specialised magazines | Internet articles | Tv | Radio |
|----------------|----------------|---------------------------------|------------------------------|-----------------------|-------------------|----------|----------|
| Sweden | 10 | 4 | 10 | 4 | 13 | 6 | 5 |
| Finland | 5 | | 10 | 3 | 7 | 3 | 2 |
| Denmark | 5 | | 8 | 1 | 4 | 4 | 2 |
| Total | 20 | 4 | 28 | 8 | 24 | 13 | 9 |
| Planned | 10 | 3 | 10 | 3 | 3 | 5 | 5 |

Communication and dissemination analysis

A major reason to our success is due to our education efforts directed towards local stakeholders, especially hunters, but also towards university students as well as lower level students, other stakeholders and private companies. While actions directed towards e.g. local hunters will give a direct effect in the form of more animals culled, actions directed at small school children and university students will give an effect in the longer term since those persons are to take over nature management in our countries. Equally important is our progressive work with knowledge- and result dissemination about the raccoon dog and its status as an invasive alien species in media. In a media analysis in Swedish media searching for unique articles in web based media (<http://www.meltwater.com>) the raccoon dog project has attracted media's attention 458 times



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

during the project time, that is in almost 13 unique articles per month on average over the three year period (figure 2).

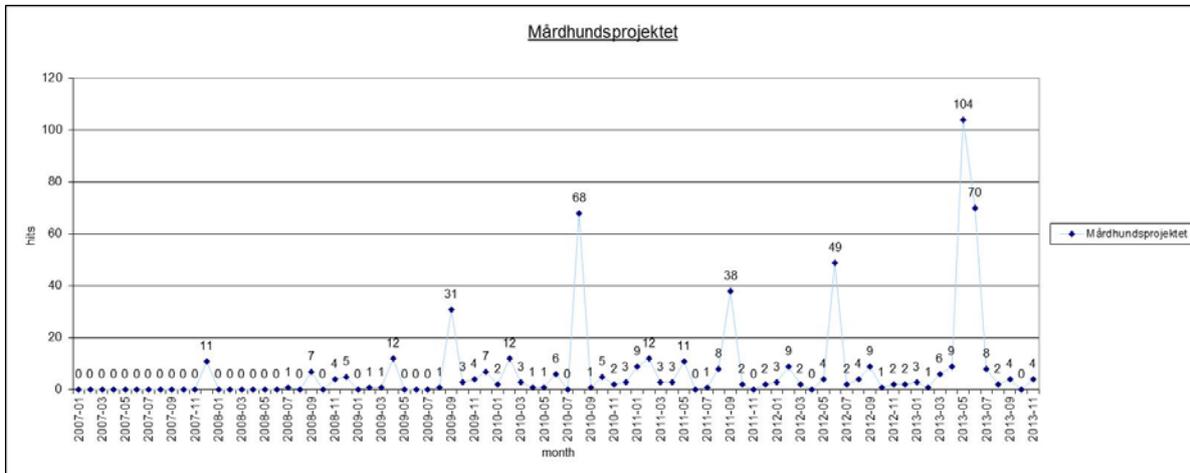


Figure 2. Media analysis in Swedish media searching for “mårdhundsprojekt*” (raccoon dog project) in unique articles in web based media before and during the LIFE+ MIRDINEC project .

It is easy to spot major events in the data, for example the start of the project in 2010-09, and our LIFE+ projects end conference in 2013-06 (the first Swedish project started in 2008-09). It has not been easy though to get the media to mention the LIFE+ funding or involvement; even though we have always insisted that LIFE+ has to be mentioned in every interview. Although, LIFE has been mentioned in 73 unique articles during the project, mainly in connection with the project start (figure 3). Media have apparently preferred to mention EU instead (190 articles), probably since the term EU is more known and understandable for the public (figure 4).

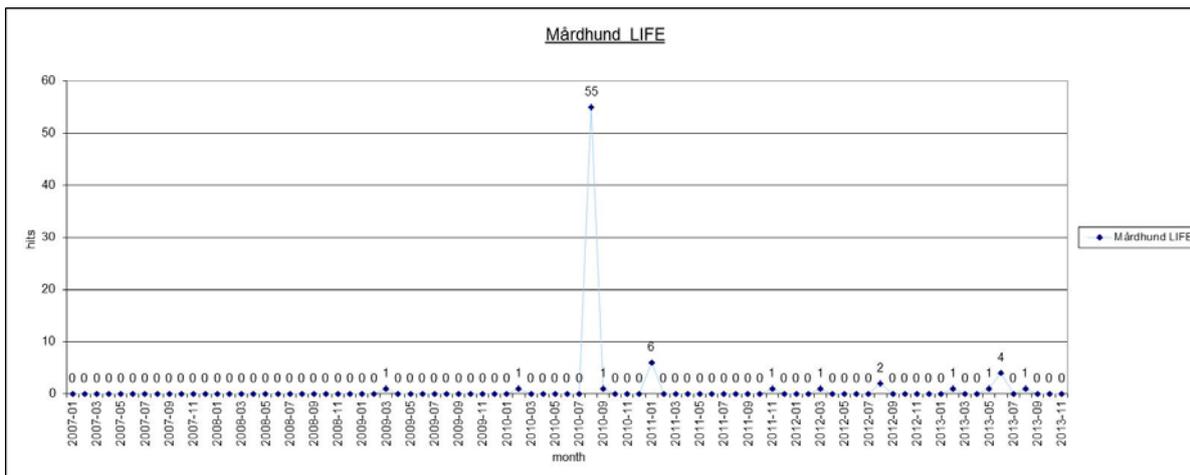


Figure 3. Media analysis in Swedish media searching for “mårdhund and LIFE*” (raccoon dog and LIFE) in unique articles in web based media before and during the LIFE+ MIRDINEC project .



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

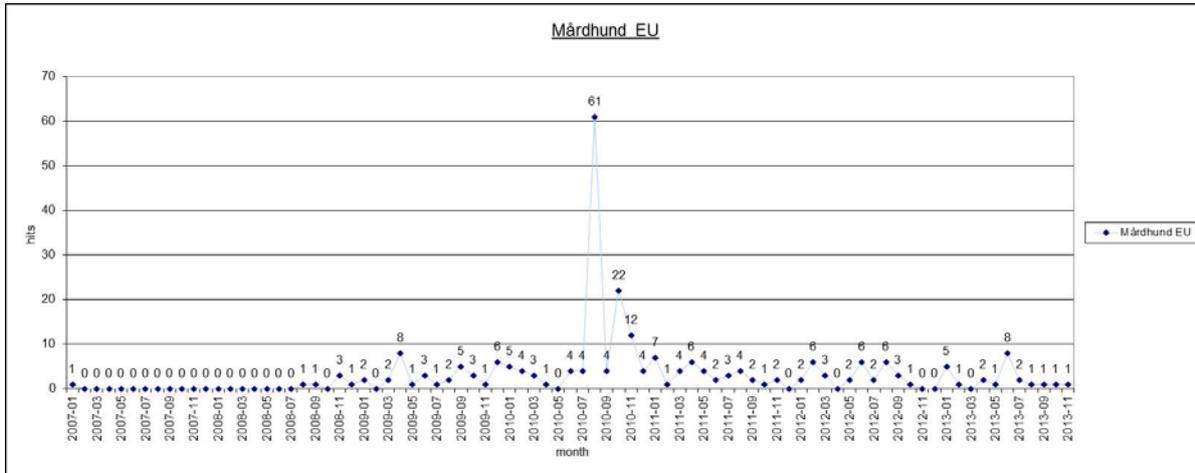


Figure 4. Media analysis in Swedish media searching for “mårdhund and EU*” (raccoon dog and EU) in unique articles in web based media before and during the LIFE+ MIRDINEC project .

It has been impossible to find and download all articles and radio/television interviews where the project has received attention. In annex 1 of this report however, we have extracted the sources of the 55 articles mentioning raccoon dog and LIFE in the text, published in Swedish media at the LIFE+ project start (figure 3). Thus, our LIFE+ media activities outlined in table 2 above are to be seen as examples of our total media activities.

Even though we have not made any similar media analyses in Denmark and Finland, we know by experience that the interest for the project in their media have been large as well, and have had the same trends around major events.

The media involvement in the project has been important for the success of our work, because with the media attention the public’s awareness and eagerness to help increases. As soon as we have released new results or asked for help in media we get a lot of new tips to our citizen science system from the public (figure 5).

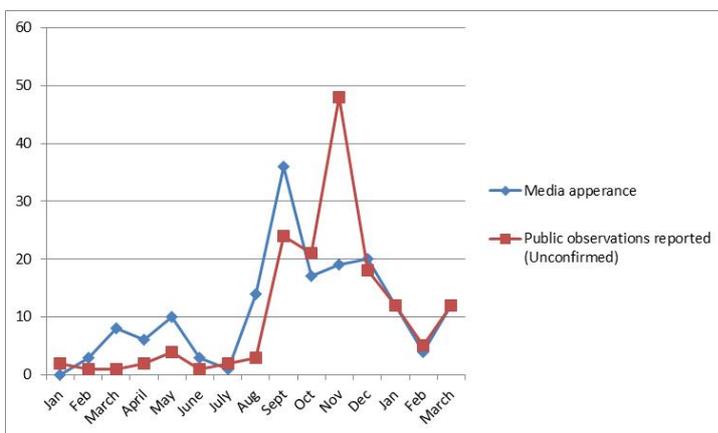


Figure 5. Example of how the public observations follow media attention of the raccoon dog. At all project media occasions the reporting system and contact information to the project is mentioned specifically.



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

It is therefore of major importance for the project to keep the media interest at a high level, and to make extra efforts when the citizen reports are few to get people to report their sightings of possible raccoon dogs to the project. It is however often difficult to identify an animal, especially for a layman and even within the project it is impossible to be sure sometimes, so the citizen science system has to be used with some care and managed professionally. The project never confirms observations that we are not 100% sure about and that have not been thoroughly controlled by our professional managers. The risk with confirming observations that are not 100% safe is that we then would already have raccoon dog over all of Scandinavia, that is, animals that are believed to be raccoon dog but that in fact are something different. This in turn would be a serious threat against the work with trying to stop the raccoon dog since the authorities might then take the decision that the battle is a lost cause and stop the funding. We know by previous experience that most observations of likely raccoon dogs are in fact other species (figure 6 and 7).

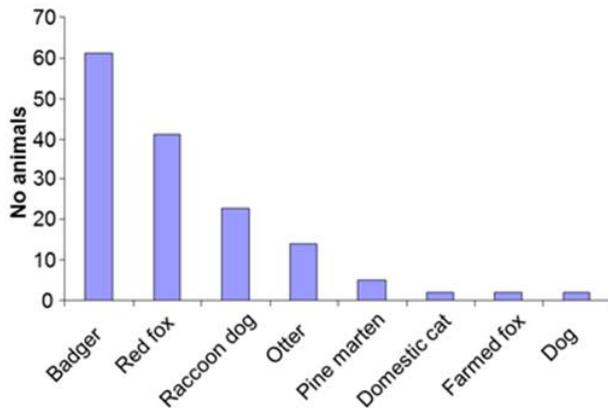


Figure 6. Distribution of species out of 150 public observations of “raccoon dogs” in Sweden after control by the project (data from the Swedish raccoon dog project 2008-2010).

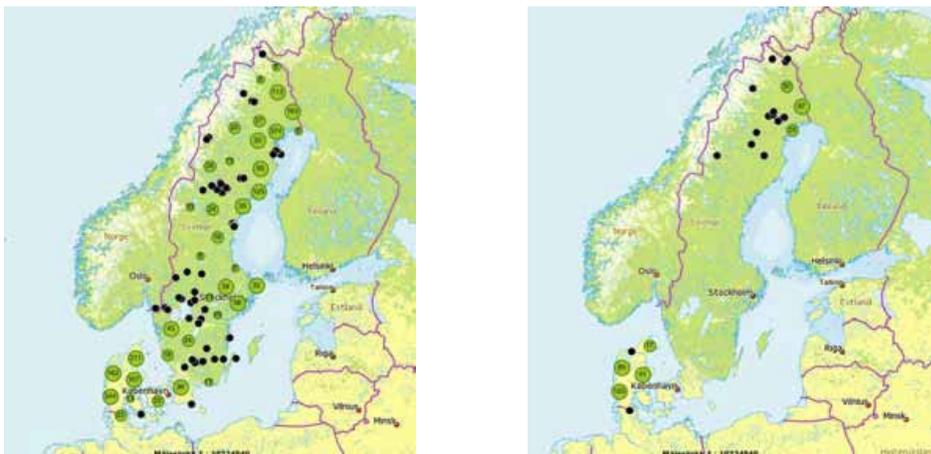


Figure 7. Citizens “raccoon dog” observations reported to the project and those that the project could confirm as actually being raccoon dog.



After-LIFE Communication Plan

LIFE09 NAT/SE/ 000344 MIRDINEC

Due to our progressive communication (education and dissemination) strategy we have involved the public and the hunters in our work, and by doing so we have reached very good results. About 70-75% of the animals captured in the project in Sweden and Denmark has been a result of observations (observed animals that were captured, new captures in places of old observations, animals killed during private hunting or trapping, road kills) and 25-30% has been found by our Judas animals.

In Finland they do not practice the citizen science system, they have instead involved the local hunters a lot more than in the other countries and they have stood for 85-90% of all raccoon dogs found and culled in the management area. About 10-15 % has been found by Judas animals. The fewer animals found by Judas animals in Finland was expected, since the density of raccoon dogs is higher in Finland and Judas animals are getting increasingly efficient the lower the population is. When there are lots of animals it is easy to find and hunt them, but when there are few animals it is very difficult. Con-specifics will however still find each other very efficiently, so the proportion captured by Judas animals will increase the lower the density get.

Since we did not have MMS functions on our EWS cameras (it took several days before we became aware of new animals) it is difficult to tell if an animal captured in the camera area was the one we had earlier seen on the EWS picture. In total we have however captured 46 animals on picture in the Swedish EWS, 35 in Finland, and 29 in Denmark during the project. After-LIFE we have started replacing the old cameras with MMS cameras for more efficient captures of new animals confirmed by the EWS systems. The field personnel estimate that 50% of the 41 raccoon dogs that have now captured with help of the MMS cameras (flexible cameras set at tips) would never had been captured before.

When it comes to the actual trapping about 75-80% of the captures in all countries have dogs involved and 20-25% is captured in traps.

After LIFE conservation

Our population model suggest that the population will be kept at a constant size during the first five years after applying our management actions and thereafter it will start decreasing (figure 8a and 9a). So far this prediction seems close to the real outcome according to our results. However, if no effort had been done to limit the population there would have been well over 650 individuals after five years according to the model (figure 8b).



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

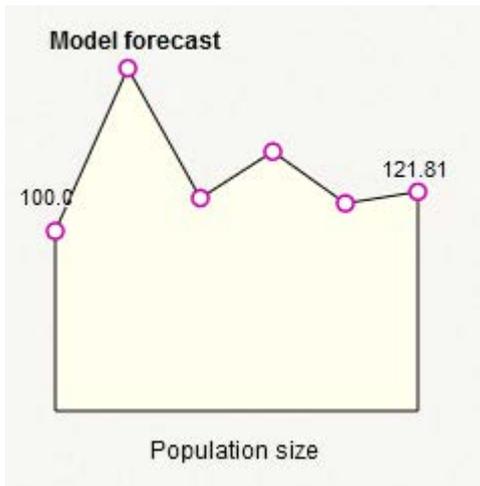


Figure 8a. Population development during five years including our efforts in culling and sterilisation.

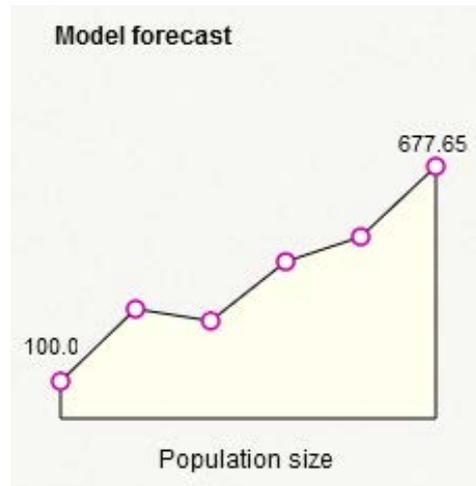


Figure 8b. Population development during five years without our efforts in culling and sterilisation.

Continuing the management with the same intensity, given that the input data reflects the reality reasonably well, would mean that the population start decreasing after about five years, and within 10-20 years only a few raccoon dogs will remain (figure 9a). On the contrary, stopping the management would mean that we would have at least 2500 raccoon dogs in Sweden in ten years' time and over 10 000 in 15 years' time, i.e. the population would increase exponential as it has done in Finland and other countries invaded by the raccoon dog (figure 9b). In Finland they shot 800 raccoon dogs in 1980, when the hunting statistics started. In year 2000 they shot 85 000 individuals and in year 2011 they shot close to 180 000 raccoon dogs.

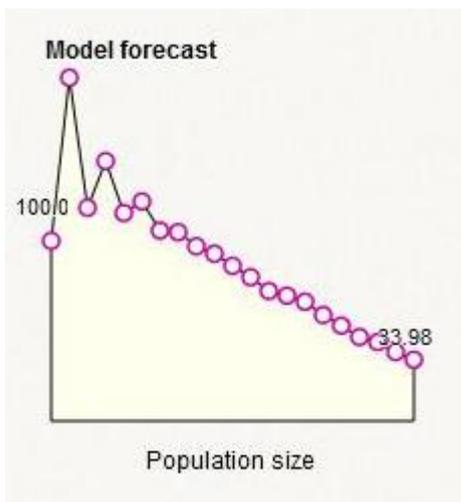


Figure 9a. Population development during 20 years including our efforts in culling and sterilisation.

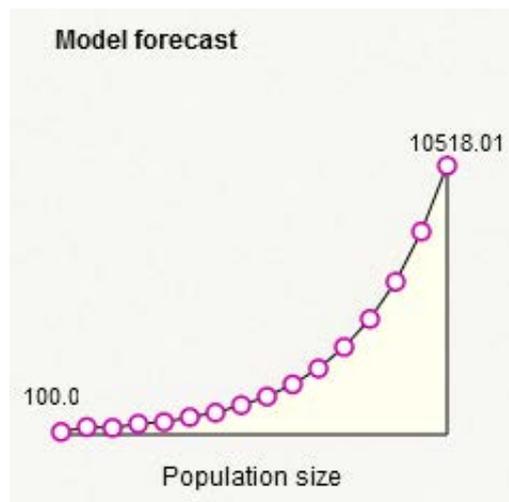


Figure 9b. Population development during 15 years without our efforts in culling and sterilisation.



After-LIFE Communication Plan LIFE09 NAT/SE/ 000344 MIRDINEC

Management will continue After-LIFE according to respective national management plan produced during the LIFE project (www.mardhund.se). There are a lot of common parts. All countries will continue using the tools developed and demonstrated during the LIFE project, i.e. monitoring with game cameras, culling and capturing with traps and dogs, Judas animals to find new animals, citizen science system in Sweden and Denmark and continue using the common database. Our cooperative transnational management has been very successful. Each country is now self-standing, but in close cooperation with the other countries. Visit our home page and read our After-LIFE Conservation Plan for more detailed information (<http://jagareforbundet.se/vilt/Mardhundsprojektet/after-life/>)

After LIFE funding

To become effective it is important with long term funding connected to management projects. We have been working on the future funding for many years and are now hopefully close to a long term funding solution in the Nordic countries. It has, on Swedish initiative, been written and signed a state secretary intent between the Swedish, and Norwegian ministries of environment and the Finnish ministry of agriculture and forestry, stating that the countries want to develop their cooperation to stop the raccoon dog from spreading between countries. They argue that it is a common and prioritized question to take action to prevent raccoon dog establishment and to stop its dispersal within and between countries. They further argue that it is a common prioritized question to secure funding to be able to take those actions. This intent has just been signed <http://www.government.se/sb/d/17990/a/228107> but no decisions regarding the funding have yet been taken in the time of writing. There is also currently a lot of political attention on the raccoon dog in the Swedish parliament and the Nordic council (the official inter-parliament body in the Nordic countries). However, even though promising, the LIFE MIRDINEC project can give no guaranties that we will have a long term funding solution or when such a solution will be realized at the time of writing.

On a shorter term basis however, the funding for the coming year(s) is already secured for Sweden, Denmark and Norway (which is now a full partner of the transnational cooperation) and a solution is hopefully close also in Finland. Please see our After-LIFE conservation Plan for further details on the After-LIFE conservation and funding (<http://jagareforbundet.se/vilt/Mardhundsprojektet/after-life/>).



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

After-LIFE communication strategy

We have during the LIFE project become increasingly aware of the importance of disseminating knowledge and results from the project and education of local stakeholders as well as students of all ages. These activities increase the awareness about IAS in general and the raccoon dog in particular, and lead to;

1. More reports of possible raccoon dogs from the public and higher quality of the reports reported to the project
2. Awareness about IAS, higher focus on raccoon dog hunting and knowledge about how to hunt them among local hunters
3. Awareness and interest of IAS among future generation's nature managers.

We will continue disseminating our results from the LIFE+ MIRDINEC project to the public through media and continue educating hunters as well as students.

We will also communicate our results and cooperate with both local governments as well as national authorities. On the international level we plan to disseminate knowledge about our transnational project cooperation and results achieved, at international IAS management meetings as well as scientific conferences.



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

After-LIFE communication / dissemination activities and associated costs

Following activities will be upheld as long as there is funding for raccoon dog management (see our After-LIFE conservation report www.mardhund.se).

| <i>Continue with;</i> | <i>Cost per year</i> |
|---|-----------------------------|
| Web pages | |
| • Sweden (Swedish Association for Hunting and Wildlife Management) | € 1000 |
| • Denmark (Danish Nature Agency) | € 1000 |
| • Finland (Swedish Association for Hunting and Wildlife Management) | € 0 |
| Media appearances | |
| • Sweden (Swedish Association for Hunting and Wildlife Management) | € 1000 |
| • Denmark (Danish Nature Agency) | € 1000 |
| • Finland (Finnish Wildlife Agency) | € 1000 |
| Short courses for stakeholders | |
| • Sweden (Swedish Association for Hunting and Wildlife Management) | € 5000 |
| • Denmark (Danish Nature Agency) | € 1000 |
| • Finland (Finnish Wildlife Agency) | € 2000 |
| Teaching activities | |
| • Sweden (Swedish Association for Hunting and Wildlife Management) | € 2000 |
| • Sweden (Swedish University of Agricultural Sciences) | € 2000 |
| <i>New activities;</i> | |
| Facebook | |
| • Sweden (Swedish Association for Hunting and Wildlife Management) | € 1000 |
| Scientific articles | |
| • Sweden (Swedish University of Agricultural Sciences) | € 2000 |



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

Project details

LIFE09 NAT/SE/ 000344

Management of the invasive Raccoon Dog (*Nyctereutes procyonoides*) in the north-European countries (MIRDINEC)

Duration of the Project:

01-09-2010 – 31-08-2013

Total budget of the project:

€ 5 318 278

Of which € 2 659 139 is provided by the European Commission LIFE+ fund

Of which the major part € 2 659 139 is provided by the European Commission LIFE+ fund and € 2 331 000 by the Swedish Environmental Protection Agency. The rest is provided by the beneficiaries and external financiers.

Coordinating Beneficiary:

Swedish Association for Hunting and Wildlife Management

Associated Beneficiaries:

Swedish University of Agricultural Sciences (SLU)

Swedish Environmental Protection Agency

Finnish Wildlife Agency

Danish Nature Agency

External cooperation:

National Veterinary Institute (Sweden)

Swedish Institute for Communicable Disease Control (Sweden)

Norwegian Environment Agency (former Directorate for Nature Management) (Norway)

County Administrative Boards of Västerbotten, Norrbotten and Skåne (Sweden)

Danish Hunters Association (Denmark)

Federation of Associations for Hunting and Conservation of the EU (FACE, Belgium).

Co-financiers other than beneficiaries:

LIFE+

Norwegian Environment Agency (former Directorate for Nature Management) (Norway)

Photos:

LIFE09 NAT/SE/ 000344 (MIRDINEC) project



After-LIFE Communication Plan
LIFE09 NAT/SE/ 000344 MIRDINEC

Appendix 1. Source of articles containing search words "mårdhund and LIFE*" published in association with the press release of the new LIFE project the month before the project start.

| Source name | 2010-08 |
|-------------------------------------|---------|
| Aftonbladet | 1 |
| Allehanda | 1 |
| Arbetsbladet | 1 |
| ATL Lantbrukets Affärstidning | 1 |
| Barometern Oskarshamns-Tidningen | 1 |
| Blekinge Läns Tidning | 1 |
| Bohusläningen | 1 |
| Borås Tidning | 1 |
| Corren.se | 1 |
| Dagen | 1 |
| Dalarnas Tidningar | 1 |
| DN.se | 1 |
| Ekuriren.se | 1 |
| Gefle Dagblad | 1 |
| Gotlands Tidningar - Helagotland.se | 1 |
| Göteborgs-Posten | 1 |
| Hallands Nyheter | 1 |
| Helagotland.se | 1 |
| Helsingborgs Dagblad | 1 |
| Hällekis-Kuriren | 1 |
| Höglandsnytt | 1 |
| Jakt & Jägare | 1 |
| Laholms Tidning | 1 |
| Lantbruk och Skogsland | 1 |
| Länstidningen | 1 |
| Metro | 1 |
| Miljöaktuellt - IDG.se | 1 |
| Mobil - Svt.se | 2 |
| Naturvårdsverket | 1 |
| Norra Skåne.se | 1 |
| Norrbottnens Kuriren | 1 |
| Norrköpings Tidningar | 1 |
| Norrländska Socialdemokraten | 1 |
| Piteå-Tidningen | 1 |
| Presskontakt.se | 1 |
| Sameradion - Sveriges Radio | 1 |
| Sameradion - Sveriges Radio | 1 |
| Skånska Dagbladet | 1 |
| Skånskan.se | 1 |
| Smålandsposten | 1 |
| Sundsvalls Tidning | 1 |
| Svenska Dagbladet | 1 |
| Sveriges Lantbruksuniversitet | 1 |
| SVT Smålandsnytt | 1 |
| SVT Västnytt | 1 |
| Svt.se | 2 |
| Södermanlands Nyheter | 1 |
| Tidningarnas Telegrambyrå | 1 |
| Ttela.se | 1 |
| Uppsala Nya Tidning | 1 |
| Vestmanlands Läns Tidning | 1 |
| Västerbottnens-Kuriren | 1 |
| Västerviks Tidningen | 1 |
| Sum | 55 |