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## **SURVEY OF METHODS FOR HARVEST REPORTING OF GAME SPECIES IN EUROPE**



Svenska Jägareförbundet

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## SUMMARY

This report presents a survey of methods for reporting harvest of wild mammals and birds in 22 European countries. The survey was conducted in the autumn of 2019. Most countries (16 countries, 72%) applied mandatory reporting for all game species permitted for hunting in these countries. The most common consequences of failure to report were a fine or refused permission for renewal of the license.

Reporting is voluntary for all game species in three countries (Cyprus, Greece and the United Kingdom), while Finland, France and Sweden have both voluntary and mandatory reporting, depending on species, area and/or hunting method. Harvest data are normally publicly available within three to six months after the deadline for reporting, but in some countries, this may take more than a year. The systems in different countries vary greatly in construction, but all respondents claim to be content with their choice of system for reporting.

This report is also available in Swedish as Viltforum 3/2020. Denna rapport finns också tillgänglig på svenska som Viltforum 3/2020.

## 1. INTRODUCTION

Wildlife management needs to be adaptive (Swedish Environmental Protection Agency 2015). This means that it should be continuously adjusted to meet changes in ecosystems as well as in society, and that new knowledge should be generated and applied accordingly (Danell & Bergström 2010). To maintain adaptive management, it is crucial to have access to data of sufficient quality and resolution over time and space. Harvest data are a fundamental and important component in most wildlife management programs (see for example Kindberg et al. 2011). For some game species, harvest data are also the only data available.

Conditions for hunting and harvest reporting can vary between countries. In Sweden, it is the landowner who owns the hunting rights, a condition that was introduced as early as 1789 by decree of then King Gustav III (regent 1771 – 1792), and this remains a decisive influence on the Swedish management system (Danell et al. 2016). Hunting is normally carried out in hunting teams that change little over time. It is the landowner, and/or the hunters to which the landowner leases the hunting rights, that hunts on the land. It is often the same families that hunt on the land for generations, a condition which is favourable for sustainable use of the wildlife resources and wildlife management, as the person who conducts management is the one who will be hunting the following years and benefit from positive effects. Consequently, the hunting team is a stable and natural unit for harvest reporting.

In Sweden, harvest reporting is mandatory for all game species that are hunted with a license or as part of a government approved plan. At the time of this report, hunting of moose (*Alces alces*), red deer (*Cervus elaphus*), grey seal (*Halichoerus grypus*), wolf (*Canis lupus*), brown bear (*Ursus arctos*), lynx (*Lynx lynx*) and wolverine (*Gulo gulo*) is subjected to mandatory reporting. These reporting requirements are also applied to conditional hunting mandated by authorities. Reporting is voluntary for other game species hunted during a general open hunting season, or as conditional hunting at a hunter's own initiative. There is one exception from this rule as it is mandatory to report the harvest of game species with a general open hunting season when the harvest takes place on government-owned land on reindeer-grazing mountains or above the cultivation limit (an administrative border separating primarily alpine and north-boreal land that historically was to be reserved for reindeer herding from other parts of Sweden).

For species with a general open hunting season, the Swedish Association for Hunting and Wildlife Management (SAHWM) conducts a yearly estimate of the total harvest as part of an assignment from the Swedish Government (the Hunting and Wildlife Management Assignment). The estimate is conducted within Hunting Management Precincts (HMP) and includes all land in Sweden, with the

exception for government-owned land located on reindeer grazing mountains or above the cultivation limit. As reporting is voluntary, the estimate is based on reports from the hunting teams within each HMP that chose to report their harvest and hunting area. The average harvest for each game species is calculated per unit area, based on the reported harvest, and extrapolated to the total area of the HMP total area (Bergqvist et al. 2019).

To our knowledge, there is no compilation that describe in detail how different countries work with harvest reporting. This is an interesting question for several reasons. There is a growing interest in managing populations of different game species over national borders. This is also required according to international treaties such as the Agreement on the Conservation of African – Eurasian Migratory Waterbirds (AEWA). For migratory birds, management needs to consider the entire migratory range – so called “flyway management”. For example, most of the greylag geese (*Anser anser*) that breed in Sweden spend the winter in Denmark, Germany, the Netherlands, Belgium and France, which means that geese that cause damage to crops in a certain place may be in another country during hunting season (Andersson et al. 2001). For cross-border management it is advantageous if harvest data from different countries are comparable and can be analysed together. To develop and improve harvest reporting systems such as the Swedish one, it is also interesting to assess which methods different countries have chosen for harvest reporting.

This report presents and discuss the methods used for harvest reporting of game species in different countries in Europe.

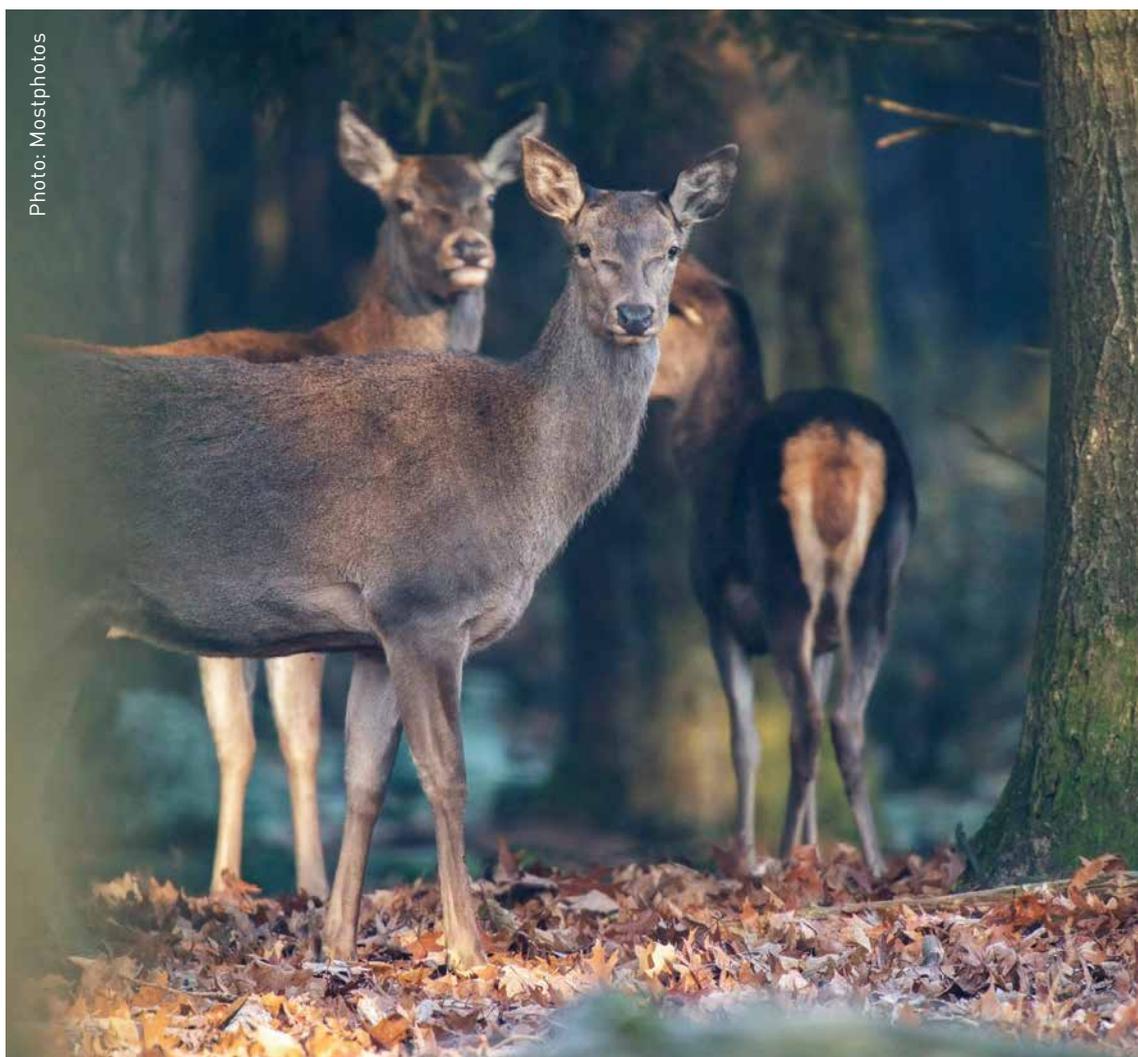


Photo: Mostphotos

## 2. MATERIALS AND METHODS

Data collection, documentation and preliminary analyses were conducted during the second half of 2019. The initial work consisted of identifying suitable contacts in different countries, often people active in or employed by hunting associations or authorities responsible for hunting issues. Contacts found on web pages, combined with personal contacts were compiled and then contacted via an e-mail that included a description of the aim of the project and a request for participation.

Contacts were sought in all European countries and Russia (which is partly located in Europe) and Cyprus (located in Asia, but part of the EU). In some countries, no contact could be found, but when a contact was established, a survey consisting of 33 questions was sent (Appendix 1). In many cases, an interview via phone or Skype was scheduled, a method that provided opportunities for follow-up questions and additions. Most interviews were recorded with the approval of the respondent. Some contacts chose to leave their answers via e-mail. All clarifications and follow-up questions were then handled via e-mail. A list of people who contributed with information about the respective countries is kept at SAHWM, but is not enclosed in this report as the General Data Protection Regulation (GDPR) limits the publication of personal information.

The questions referred to conditions in 2019 and primarily concerned the countries' system for harvest reporting, ownership of hunting rights and which game species that can be hunted. As shown in Appendix 1, questions regarding other aspects of wildlife management were also posed, but they are not accounted for in this report.

After the material had been assessed, a written summary was sent to the respondents for comments and corrections. In December 2020 all respondents were then sent the full manuscript of the report for further comments and corrections. It should be noted that the results in this report are solely based on the respondents' answers, only in a few cases has it been possible to compare their answers to other sources.

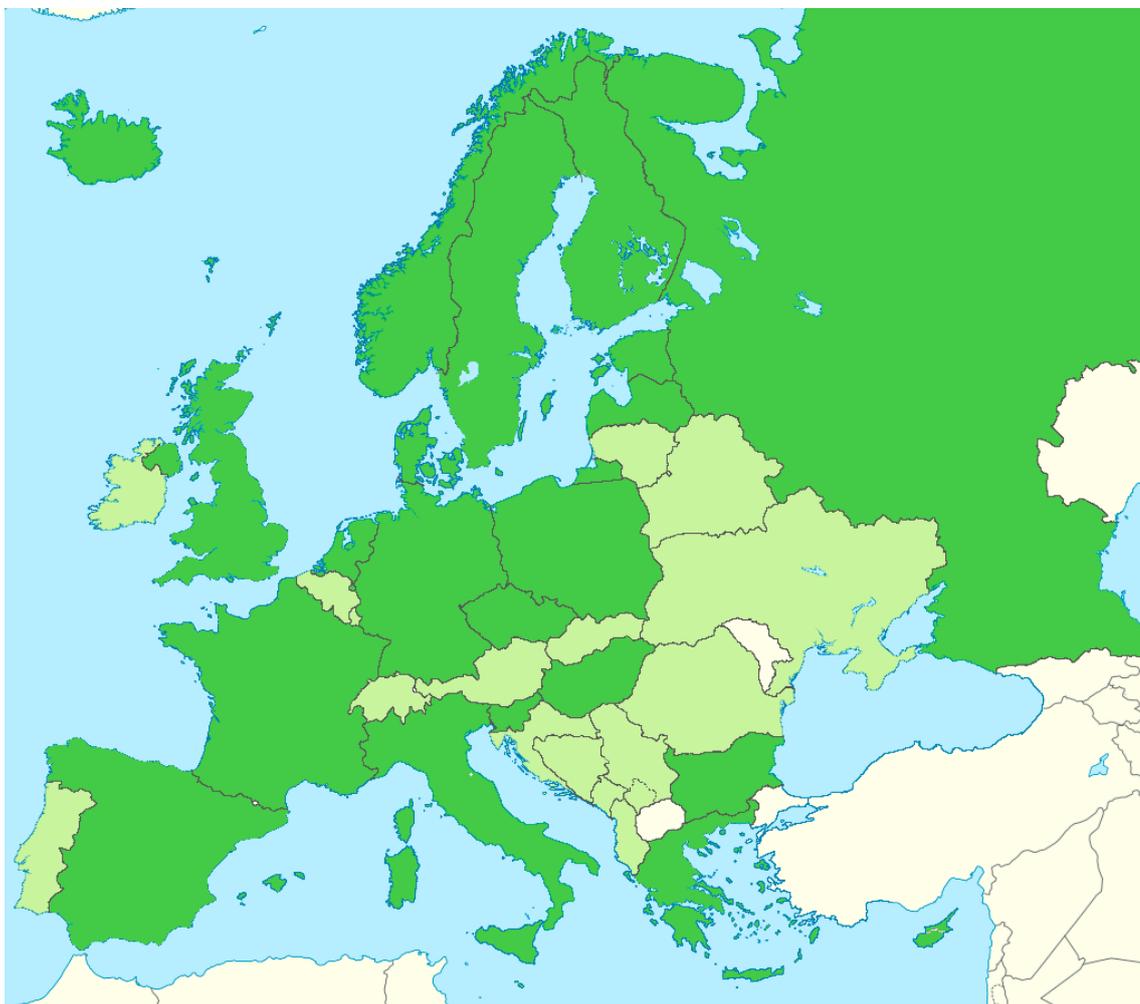
The report accounts for the main conditions that have emerged. In several cases the survey has shown that deviations from these occur, such as local and often complex rules and exceptions. We normally did not have enough information to describe such exceptions.



Photo: Madeleine Lewander

### 3. RESULTS

Of a total of 38 countries that were contacted, 22 contributed with data by taking part of the survey, including Sweden (Fig. 1 and Table 1).



**Fig. 1.** Map of contributing countries. Dark green indicates countries that took part in the survey, while countries in light green were contacted but did not respond. Countries marked white were not contacted as no contact person could be located.

The proportion of hunters varied between 0.16% and 5% of the total population in each country, and in total 8.3 million hunters are affected by the systems described in this report (Table 1).

**Table 1.** Number of registered hunters, number of hunters as a percentage of the total population of each country and number of hunters per square kilometre (based on the countries' total area) for the countries included in the survey.

COUNTRY	NUMBER OF HUNTERS	SHARE OF POPULATION THAT ARE HUNTERS (%)	NUMBER OF HUNTERS PER SQ.KM.
Bulgaria	130 000	1.9	1.2
Cyprus	42 500	5.0	4.6
Czech Republic	90 300	0.8	1.1
Denmark	177 000	3.0	4.1
Estonia	15 000	1.1	0.3
Finland	300 000	5.5	0.9
France	1 100 000	1.6	1.7
Germany	385 000	0.5	1.1
Great Britain	380 000	0.6	1.5
Greece	170 000	1.6	1.3
Hungary	61 000	0.6	0.7
Iceland	12 000	3.4	0.1
Italy	600 000	1.0	2.0
Latvia	21 000	1.1	0.3
Malta	15 000	3.0	47.6
the Netherlands	27 000	0.2	0.6
Norway	141 000	2.6	0.5
Poland	123 000	0,3	0.4
Russia	3 250 000	2.5	0.2
Slovenia	20 000	1.0	1.0
Spain	850 000	1.8	1.7
Sweden	300 000	2.9	0.7
Total/average	8 270 800	1,4	0,4

In total, the 22 participating countries listed 228 game species as permitted for hunting (142 bird species, 23 ungulate species and 63 other mammal species including seals). The country average was 48 species. Russia reported the largest number of species (156), while the Netherlands reported the smallest number with only five species permitted for hunting (note however that additional species may be harvested under derogation in the Netherlands). The average number of countries where a particular game species is permitted for hunting is four. The game species that is permitted for hunting in most countries (21) is mallard (*Anas platyrhynchos*), which is hunted in all countries but Cyprus. Several wildlife species were listed as permitted for hunting in one country only. Russia has the highest number of such species, for instance sable (*Martes zibellina*) and muskox (*Ovibos moschatus*).

### 3.1 OWNERSHIP OF HUNTING RIGHTS

Hunting rights are owned by the landowner in 13 of the participating countries: the Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Iceland, Latvia, the Netherlands, Norway, Spain and Sweden. In Estonia, the rights are divided so that hunting of small game belongs to the landowner, while all other hunting is managed by the government. In the remaining countries it is the government or corresponding (state/region) that holds the hunting rights, also on private land.

There are local exceptions to these general patterns. One example is that locals have the right to hunt (e.g., grouse) on government land in North Finland in their municipality of residence. Another example, which is quite topical in Sweden when this is written, is a Supreme Court ruling regarding hunting and fishing in relation to the indigenous Sami population where the Same village of Girjas was granted this right even though the land is government-owned. It has not been possible to take such local and often complex exceptions into account in this report, which aims to describe the main conditions.

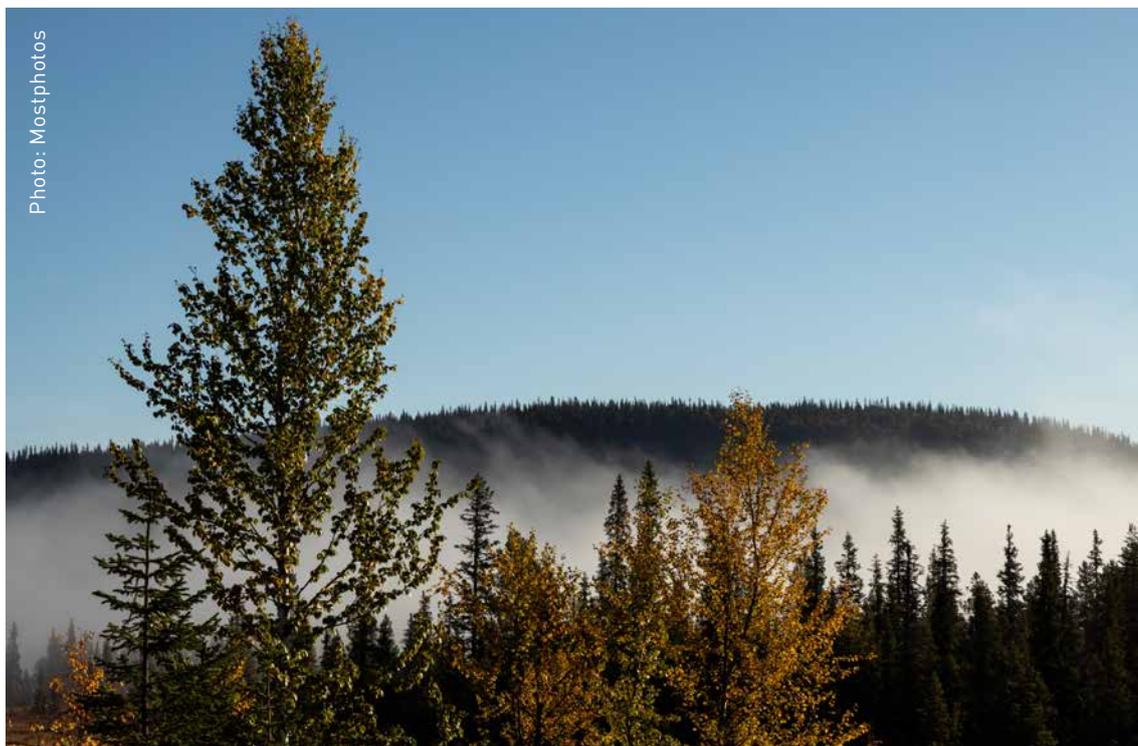
### 3.2 MANDATORY OR VOLUNTARY REPORTING

Of the 22 countries in this survey, 16 (72%) apply mandatory reporting of harvest for all game species permitted for hunting. Harvest reporting is completely voluntary in 3 countries (14%), while 3 countries (14%) apply both voluntary and mandatory reporting, depending on game species, area and/or hunting method.

#### 3.2.1 COUNTRIES WITH MANDATORY REPORTING

In countries with mandatory reporting of some or all game species it is usually the individual hunter that reports his/hers hunting bag directly to an authority at the national or regional level. One exception is Russia where it instead is the person leasing the hunting right who reports to the authorities after collecting harvest data from the individual hunters. In Sweden, it is the representative of the hunting area that is responsible for reporting harvested moose and red deer to the County Administrative Board.

The most common consequences for an individual hunter who fails to report the harvest is a fine (11 countries) and/or revoking of the hunting license (11 countries; Table 2). The Netherlands is the only country with mandatory reporting where failing to report is not subject to any sanctions.



**Table 2.** Consequences of failing to report.

COUNTRY	FINE	HUNTING LICENSE REVOKED/ NOT RENEWED	NONE
Bulgaria	X		
Czech Republic	X		
Denmark		X	
Estonia	X	X	
Finland	X	X	
France	Sanctions occur but vary between regions and species		
Germany	Sanctions occur but vary between regions		
Hungary	X	X	
Iceland	X	X	
Italy	X	X	
Latvia		X	
Malta	X		
the Netherlands			X
Norway	X		
Poland		X	
Russia	X	X	
Slovenia	X		
Spain <sup>1</sup>		X	
Sweden		X	

<sup>1</sup> In Spain where hunters report to their hunting club, the club may not receive a renewed hunting permit from the authorities, should they fail to report.

Most countries with mandatory reporting have web-based reporting systems, alternatively strive to establish such systems. In the Czech Republic, Hungary and parts of Italy it is presently only possible to report via paper forms. On Malta, reporting is done via a text message (SMS) and it is a condition for hunting that the person owns a mobile phone.

### 3.2.2 COUNTRIES WITH BOTH MANDATORY AND VOLUNTARY REPORTING

Three countries have both mandatory and voluntary reporting, Finland, France and Sweden.

In Finland, reporting is mandatory for moose, fallow deer (*Dama dama*), white-tailed deer (*Odocoileus virginianus*), wild forest reindeer (*Rangifer tarandus fennicus*), roe deer (*Capreolus capreolus*), European beaver (*Castor fiber*), grey partridge (*Perdix perdix*), Baltic ringed seal (*Pusa hispida botnica*), grey seal, wild boar (*Sus scrofa*), bean goose (*Anser fabalis*), polecat (*Mustela putorius*) and otter (*Lutra lutra*), as well as large carnivores. For these species, reporting is mandatory regardless of whether the hunting is implemented based on an open hunting season, hunting license or derogation. For other game species, reporting is voluntary (however, more species will be subject to mandatory reporting as of 2020). Reporting is also mandatory for all game species and unprotected birds listed in the paragraph 5 of the Finnish Hunting Law when a derogation from reproductive season and/or prohibited means or methods are used. At present, this concerns common raven (*Corvus corax*) in the reindeer management area, hooded crow (*Corvus cornix*), magpie (*Pica pica*), western jackdaw (*Corvus monedula*), European herring gull (*Larus argentatus*), great black-backed gull (*Larus marinus*), domestic pigeon (*Columbia livia domestica*) and fieldfare (*Turdus pilaris*).

In France, 11 different mandatory reporting systems and three voluntary systems are used in parallel, covering different game species, areas and/or hunting techniques, Table 3.

**Table 3.** Systems for harvest reporting in France. Most likely, daily reporting should not be interpreted as a demand to submit data at a daily basis, but rather that the harvest data should be specified to date.

SYSTEM	SPECIES INCLUDED	FREQUENCY OF REPORTING	REPORTED BY
<b>Mandatory systems</b>			
Limited harvest of woodcock	Eurasian woodcock ( <i>Scolopax rusticola</i> )	Daily	Individual hunters via booklet
Harvest of huntable wetland birds from registered installations for night hunting	Huntable wetland birds	Daily	Owners of such installations (huts) via booklet
Harvest of huntable ungulates	Red deer, sika deer ( <i>Cervus nippon</i> ), wild boar, Alpine chamois ( <i>Rupicapra rupicapra</i> ), Southern chamois ( <i>Rupicapra pyrenaica</i> ), mouflon ( <i>Movis orientalis musimon</i> ), roe deer, fallow deer	Season	Hunters federations via questionnaire
Hunting bag data of the shorebirds on the Public Maritime Domain	Shorebirds, Canada goose ( <i>Branta canadensis</i> )	Season	Individual hunters report to club via booklet
Harvest of small mountain game species	Black grouse ( <i>Lyrurus tetrrix</i> ), western capercallie ( <i>Tetrao urogallos</i> ), rock ptarmigan ( <i>Lagopus muta</i> ), rock partridge ( <i>Alectoris graeca</i> ), grey partridge ( <i>Perdix perdix</i> ), mountain hare ( <i>Lepus timidus</i> ), marmot ( <i>Marmota sp.</i> )	Season	Individual hunters via booklet
Harvest of thrushes hunted with snare "Tendelles"	Redwing ( <i>Turdus illacus</i> ), Eurasian black-bird ( <i>Turdus merula</i> ), song thrush ( <i>Turdus philomelos</i> ), fieldfare, mistle thrush ( <i>Turdus viscivorus</i> )	Season	Hunting team via booklet
Harvest of Northern Lapwing hunted with snare "Tenderie"	Northern lapwing ( <i>Vanellus vanellus</i> )	Season	Team, hunters via booklet

Harvest of thrushes hunted with snare "Tenderie"	Redwing, Eurasian blackbird, song thrush, fieldfare, mistle thrush	Season	Team, hunters via booklet
Harvest of thrushes hunted with glue stick "Gluaux"	Redwing, Eurasian blackbird, song thrush, fieldfare, mistle thrush	Season	Individual hunters via booklet
Harvest of Eurasian skylark hunted with trap net "pantes"	Eurasian skylark ( <i>Alauda arvensis</i> )	Season	Team, hunters via booklet
Trapping	Raven rook ( <i>Corvus frugilegus</i> ), carrion crow ( <i>Corvus corone</i> ), magpie, jay ( <i>Garrulus glandarius</i> ), starling ( <i>Sturnus vulgaris</i> ), weasel ( <i>Mustela nivalis</i> ), marten ( <i>Martes foina</i> ), pine marten ( <i>Martes martes</i> ), polecat ( <i>Mustela putorius</i> ), fox ( <i>Vulpes sp.</i> )	Season	Trappers via booklet

### Voluntary systems

Shooting hunting bag – national survey	All huntable species	Every 10 to 15 years	60.000 individual hunters sampled, questionnaire via booklet or online
National survey: status of small lowland sedentary game	Common pheasant ( <i>Phasianus colchicus</i> ), red-legged partridge ( <i>Alectoris rufa</i> ), grey partridge, hare ( <i>Lepus sp.</i> ), rabbit ( <i>Oryctolagus sp.</i> )	One shot	Not stated
Universal hunting bag book	All huntable species	Daily	Individual hunters via booklet or online

In Sweden, reporting is mandatory for game species that are hunted with a license or as part of a government approved plan. Presently this includes moose, red deer, grey seal, wolf, brown bear, lynx and wolverine. Mandatory reporting, regardless of game species, also applies to conditional hunting mandated by authorities or on government-owned land above the cultivation limit or on reindeer grazing mountains. Reporting is voluntary for other game species, i.e., species with an open hunting season.

### 3.2.3 COUNTRIES WITH VOLUNTARY REPORTING

Cyprus, Great Britain and Greece apply voluntary reporting for all game species. In Finland and Sweden reporting is voluntary for certain game species, whereas France has three separate voluntary systems (see Table 3).

On Cyprus, about 1% of all hunters are interviewed each year via phone, and the average reply rate is 90%. An average harvest per hunter is calculated for each game species, and the total harvest is estimated based on the ratio of participating hunters to all hunters.

Two different systems are used for harvest reporting in Great Britain. The National Gamebag Census (NGC) is run by the private organisation Game and Wildlife Conservation Trust (GWCT). Each year surveys are sent to landowners (up to 900 hunting grounds per year) and the response rate exceeds 85%. The landowner reports the total harvest of all huntable game species on their land. Data are used as an index over time, i.e. no estimate of the total harvest is conducted.

The other survey in Great Britain is not carried out on a regular basis, but so far it has been implemented on two occasions, in 2004 and 2012. The survey is conducted by a consulting firm (PACEC) on behalf of three British shooting organisations and, apart from harvest numbers, it includes questions on feeding of game and the financial value of hunting and shooting. Harvest is reported by species for some game species, but most often for groups of species, for instance ducks as a group. Surveys are sent out to different organisations, for example landowners or clay pigeon shooters, who in turn distribute it to their members. As some people are members of more than one group it is not possible to calculate the exact response rate, but in total 16 234 replies were received in the 2012 survey. Harvest is summed up into total amounts in the different groups based on the answers, the total number of people in the group and an estimator (“non-involvement deflator”) that is used to account for the fact that respondents that have not answered the survey on average harvest less game per season than those who have reported their harvest.

In Greece, all hunters are assigned a hunting diary via their Hunting Club when the hunting license is being renewed, and the diary is submitted at the end of the hunting year. The number of diaries submitted is regarded as representative and sufficient to draw safe conclusions (the number or proportion of hunters that return their diary has not been obtained). The total amount of harvested game within each Hunting Club is estimated based on the reported harvest and the ratio of the number of hunters that have reported their harvest and the total number of hunters in the Hunting Club, after which the harvest is summarised for all Hunting Clubs.

Harvest reporting in Finland is voluntary apart from the species and situations mentioned in chapter 3.2.2. An annual survey is conducted where the participating hunters are selected randomly from a central register, stratified per region. The survey is conducted by the National Resources Institute Finland (LUKE) and is sent out to a total of 5 400 hunters or around 300 per region. The response rate was approximately 50% for the survey in 2018. The total harvest in each district is calculated based on the reported harvest and the ratio of the hunters that reported their harvest and the total number of registered hunters in the region.

Of the three voluntary systems used in France, the survey “Shooting Hunting Bag – National Survey” has the larger scope, Table 3. The survey was last conducted in 2013/14 and the response rate was 17%. Out of the hunters that have received the first survey but not answered, a new selection is made and contacted. This is repeated on one further occasion. The total harvest is then estimated based on the reported harvest, the number of responding hunters compared to the total number of hunters and an estimation like the one for the PACEC survey, but specified for each selection that is made.

Reporting of harvest in Sweden is voluntary except for the species and situations mentioned in chapter 3.2.2. The total harvest for species with voluntary reporting is estimated by SAHWM within the framework of a government initiative called The Hunting and Wildlife Management Assignment (Svenska Jägareförbundet 2013). The system for harvest estimation is area-based and tied to the organisation’s local Hunting Management Precincts (HMP, Sweden is divided into a total of 307 HMP for the hunting year 2018/19). Within each HMP, individual hunting teams can, on a voluntary basis, report their total

harvest and the area of their hunting grounds, after which an average harvest per unit area is calculated and scaled up in relation to the HMP total area. Presently, a new method for harvest calculation, based on Bayesian inference, is being developed (Lindström & Bergqvist 2020). In total 7 482 hunting teams, with a median area of 670 hectares, reported their harvest for the hunting year 2018/19. This corresponds to 29% of all huntable land in the country. The average reporting rate for the past 32 years is approximately 30%.

All countries with completely or partly voluntary reporting have web-based systems for reporting, except for some regions on Cyprus (phone survey of hunters) and in Greece (hunting diary in paper format).

### 3.3 ACCESS TO HARVEST DATA

Public access to harvest data varies but most countries publish statistics of some kind, Table 4. Data are normally publicly accessible within three to six months, but four countries (Estonia, Great Britain, Italy and the Netherlands) state that it takes a year or more before data becomes available. In some cases, it takes even longer, for example in Italy where a report is published every five years.

**Table 4.** Timeframe for the hunters' reporting, time until data area available and how data are presented.

COUNTRY	WHEN DO HUNTERS NEED TO REPORT?	WHEN IS THERE A REPORT AVAILABLE?	HOW IS DATA PRESENTED?
Bulgaria	Every month to their hunters' association that in their turn report to the forest board	When data have been entered into the web system	Varies, hunters' associations only have access to data from their members
Cyprus	Once a year via phone interview	Approx. two months after the survey	Freely available on web site
Czech Republic	Once a year	Approx. nine months after reporting	Summarised public report, regionally specific data not publicly available
Denmark	Once a year	After approx. two months	Freely available on web site
Estonia	Once a year	After approx. one year	Freely available on web site
Finland	Quota-based management hunt of brown bear in the reindeer management area: immediately Large carnivores: next working day Grey seal: third working day Moose: within 7 days from the last harvested animal in the license or from the end of the hunting season Most species with mandatory reporting: within 7 days In multiannual derogations (birds): within 7 days from the shift of the year Other species: once a year in a survey	Approx. six months after reporting	Freely available on web site
France	See Table 3.	Normally after 6 – 12 months	Most of the systematic data are only available to the government and hunters' associations

Germany	Once a year	Approx. six months after reporting	Summarised report freely available on web site
Great Britain	Once a year	After approx. one year	Analytical report that describes development of some species, differs for different years, freely accessible on web site
Greece	Once a year	After approx. three months	Data only available for Ministry of the Environment and Energy
Hungary	Once a year	After approx. six months	Summarised report freely available on web site
Iceland	Once a year	After approx. six months	Freely available on web site
Italy	Once a year	A report is published every five years	Freely available
Latvia	Large carnivores: the next working day after the hunt Other species with limited hunting: a month after the hunt Other species: one month after the end of the open season	Approx. three months after reporting	Freely available on web site
Malta	Directly after the hunt	Shortly after final reporting	Freely available on web site
the Netherlands	Once a year	Varies between provinces, but minimum one year	The provinces can see their part of the statistics, the national hunters' association has access to the total statistics, yearly summaries also published
Norway	Once a year	A couple of months after last reporting date	Freely available on web site
Poland	Once a year	Not specified	Report once a year, free access on web site
Russia	Twice a year	3 – 11 months after final report	Summarised reports available on web site, though not every year
Slovenia	The tenth day of the month after the hunt at the latest	Not specified	Summarised report once every year, available to the public, each hunter can also access more regionalised information
Spain	Once a year to the region	Varies between regions	Report after approx. one year, accessible on web site
Sweden	Moose: within two weeks after the animal is felled Large carnivores: same day Other game: as soon as possible at the end of the hunting year	Moose and large carnivores: immediately after reporting Other game: approx. three months after the end of the hunting year	Freely available on web sites

### 3.4 VIEWS ON THE NATIONAL SYSTEM

All countries were asked to provide a summary assessment of their system and also to specify its advantages and/or disadvantages, including need for development, Table 5. The respondents generally felt that their systems for harvest reporting works satisfactorily.

**Table 5.** The respondents' own perception of the country's system: advantages and/or disadvantages, including development needs.

COUNTRY	REPORTING	COUNTRIES PERCEPTION OF THEIR SYSTEM
Bulgaria	Mandatory	Well-functioning system, wishes to be able to report more information about the harvested animals
Cyprus	Voluntary	The system is easy to handle Advantages: <ul style="list-style-type: none"> <li>• Direct contact with hunters at the yearly survey</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>• The reports of participating hunters is not always representative of all hunters</li> </ul>
Czech Republic	Mandatory	A well-functioning system, online reporting is planned
Denmark	Mandatory	Well-functioning system, launch of mobile app is planned Advantages: <ul style="list-style-type: none"> <li>• High level of reporting (96 %)</li> <li>• Deviating data are checked immediately with reporting hunters</li> </ul>
Estonia	Mandatory	Well-functioning system Advantages: <ul style="list-style-type: none"> <li>• Hunters more or less follow given instructions</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>• Inadequate reporting of migratory birds which are sometimes mistakenly reported as domestic species</li> </ul>
Finland	Voluntary and mandatory	Very well-functioning system that has also been improved noticeably by the introduction of the application Oma riista Advantages: <ul style="list-style-type: none"> <li>• Reporting only mandatory for species that need active management, not others. Good, as this implies a focus on "the right species"</li> <li>• High quality of obtained data</li> </ul>
France	Voluntary and mandatory	Depends on the system, cannot be answered
Germany	Mandatory	A well-functioning system Disadvantages: <ul style="list-style-type: none"> <li>• Hunters tend to report exactly the quota they have been assigned, which indicates consciously faulty reporting</li> </ul>
Great Britain	Voluntary	Very good system Advantages: <ul style="list-style-type: none"> <li>• Completely independent from government involvement which increases the trust from the hunters</li> <li>• Possibility to control the levels of trend assessments</li> <li>• Area-based system (like NGC) provides more continuity in reporting</li> </ul>
Greece	Voluntary	Well-functioning system Advantages: <ul style="list-style-type: none"> <li>• Good coverage in the information gathered</li> <li>• Well adapted system to ensure that the statistics of both larger and smaller hunting teams are correct</li> </ul>
Hungary	Mandatory	Stable system with long time series comparable over time. The possibility of digital reporting is planned

Iceland	Mandatory	Well-functioning system, mobile application planned Advantages: <ul style="list-style-type: none"> <li>• Provides reliable data</li> <li>• Yearly control against the information in the survey that was conducted in 2000 has ensured the accuracy of the data</li> </ul>
Italy	Mandatory	Good system in theory, but improvements are needed in practice
Latvia	Mandatory	User-friendly and effective system. There is a wish to be able to report more/ other data around hunting and harvested animals. The launch of a mobile application is planned
Malta	Mandatory	Well-functioning system, cannot see any weaknesses
the Netherlands	Mandatory	Well-functioning system Advantages: <ul style="list-style-type: none"> <li>• Mandatory reporting brings more reliable statistics</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>• Statistics collected by external company which results in vulnerability, for example in the event of a bankruptcy</li> </ul>
Norway	Mandatory	Well-functioning system. Development is planned that will make it possible to submit hunting results immediately after a hunt, something that is expected to result in increased quality Advantages: <ul style="list-style-type: none"> <li>• 90 % reporting level</li> </ul>
Poland	Mandatory	Comprehensive system that covers all areas, electronic reporting is planned Disadvantages: <ul style="list-style-type: none"> <li>• Unreliable data for less important species</li> </ul>
Russia	Mandatory	Good and unified system with large quantities of data Disadvantages: <ul style="list-style-type: none"> <li>• A risk that data on living animals (population assessments) are not reliable as this is the base for coming hunting quota, can lead to consciously faulty reporting</li> </ul>
Slovenia	Mandatory	Good overall, mobile application is planned Disadvantages: <ul style="list-style-type: none"> <li>• Risk that data are not reliable as hunters must reach a harvest quota to avoid being fined which can lead to deliberately incorrect reporting</li> </ul>
Spain	Mandatory	Overall a good system, covers the entire country Disadvantages: <ul style="list-style-type: none"> <li>• Mandatory reporting which can negatively affect the reliability of the data</li> </ul>
Sweden	Voluntary and mandatory	A robust and well-functioning system for voluntary reporting that has been used for a long time, a mobile application is available since 2019 Advantages: <ul style="list-style-type: none"> <li>• Generates data at different geographic levels, for local and regional management but also national data</li> <li>• Only hunters that are motivated to report use the system which lowers the risk of consciously faulty reporting</li> <li>• Reporting is not done to an authority which lowers the risk of consciously faulty reporting, a risk that arise in Sweden because data reported to authorities are classified as public information although the data could be perceived as sensitive information by a reporting individual hunting team</li> <li>• New method for estimation is under development that is less sensitive to low reporting levels and provides estimate of uncertainty</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>• Sensitive to deviating data when reporting levels are low</li> <li>• Does not give any measure of uncertainty</li> </ul>

## 4. DISCUSSION

This survey comprises 22 European countries, including Russia and Cyprus. With a few exceptions, countries where no contact could be established were located in the Eastern parts of Europe, see Fig. 1. Consequently, conditions in Eastern Europe may not be described fully in this respect.

For most countries, data were gathered via telephone interview or on Skype, while some respondents instead chose to send their answers via e-mail. Even when respondents were interviewed, there were in some cases a need to ask follow-up questions. In some cases, incomplete information remains. For example, we do not know the level of reporting connected with the return of hunting diaries and the proportion of hunters reporting to the autonomous regions in Greece and Spain. Potential reasons for this may be that this information is not available, or that the respondents did not have the possibility to complete the survey. However, it should be emphasized that, overall, we received complete and detailed accounts from the respondents.

The main objective of this study was to give an overall description of the main systems in use for harvest reporting in Europe. In addition, there may be specific systems for, e.g., certain local areas or game species, which in most cases have not been taken into account.

In about half of the surveyed countries, the hunting rights belong to the landowner. Countries where the state owns the hunting rights are, with some exceptions, more common in Eastern Europe. Because countries in Eastern Europe are underrepresented in our survey, this report may be biased towards countries where the landowner owns the hunting rights. We detected no statistically significant differences, for instance whether reporting was voluntary or mandatory, depending on ownership of hunting rights.

All surveyed countries have at least one system for harvest reporting. The construction and function of the systems vary to a great degree, sometimes even regionally within a country. In countries where the state owns the hunting rights, lease of the hunting rights is normally handled between state authorities and the individual hunter. In these cases, it is consequently natural that individual hunters report their harvest, often when the license or permit is renewed, and that reporting therefore is mandatory.

In systems with mandatory reporting, the reported harvest is expected to correspond to the total harvest. There may, however, be considerable sources of error, for example if hunters for different reasons are not motivated to report their actual harvest. Potential reasons for this can be a mistrust in the system or against handing over data to authorities, as mentioned by Great Britain and Sweden. Another source of error was mentioned by Germany and Slovenia, two countries where hunters are assigned a harvest quota that they are expected to meet, and where the hunter can be fined if the quota is not reached. Here, the reported harvest tends to correspond exactly to the quota, which may indicate that the assigned quota is reported regardless of actual harvest. Another possible source of error may be that not all hunters report their harvest even though reporting is mandatory. However, this error should be small if the reporting rate is high. In Norway the response rate is approximately 90% for small game, and this is viewed as adequate to give a fair representation of the harvest.

With voluntary reporting, data cannot be expected to represent the total harvest unless the data are processed (enumerated). Such processing is also done in most cases. In the case where individual hunters report, the enumeration is based on the quota between reporting hunters and the total number of hunters. However, a "straightforward" enumeration may lead to an overestimation of the total harvest as, in general non-reporting hunters can be expected to have a lower harvest than hunters that do report their harvest (Aebischer 2019, Aubry & Guillemain 2019). This can be handled by a follow-up survey on harvest to a selection of the hunters that did not respond to the original survey. Such approaches are used for example in the PACEC-survey in Great Britain and in the French survey "Shooting hunting bag – National Survey".

Regardless of whether data are intended for flyway management of migrating birds or adaptive management of other game species at the local-to-regional scale, it is key that harvest data are made available in reasonable time as they form the basis for evaluation and new management decisions. Most countries state that data are available within six months while some countries report a year or more.

Long processing times are likely to reduce the value of the harvest data as an instrument for effective and adaptive management.

The system used for harvest reporting in Sweden differs from the systems used in many other countries, but there are also similarities. Sweden and Finland have both chosen systems with mandatory reporting of some game species and voluntary reporting of others. In Finland, this is perceived as an advantage as it puts the focus on “the right species”, i.e. species these with greater demands for active management. In Sweden, Great Britain and the Netherlands independent organisations (not an authority) gathers harvest data, something Great Britain reports inspires greater trust with the hunters compared to a system where the government carries out the data collection. In Sweden, as in many other countries, information reported to an authority immediately becomes publicly available, something that may make hunters or hunting teams less prone to report their harvest. This is avoided when data are given to an independent organisation. However, the Netherlands, where a private company handles the data collection, report that this potentially can make the system vulnerable in case this independent entity should suffer bankruptcy.

Sweden differs from the other countries surveyed also because harvest is reported per hunting team instead of per individual hunter, and that the extrapolation from the reported hunting bag to an estimated total harvest is calculated based on acreage of each reporting hunting team. It is the hunting areas that report also in the British NGC survey, but no enumeration to estimate the total harvest is conducted. The Swedish system has the possible advantage that a hunting team usually consists of a mix of hunters, some with high harvest rates and others with low harvest rates (or no harvest at all). Hence, reporting the harvest for the total team may counteract the problem mentioned earlier where reporting hunters generally harvest more than non-reporting hunters.

Another potential benefit of the Swedish system, especially for local/regional management, is that the reported harvest is connected to a geographical area that is constant over time (it is known to which HMP each hunting team belongs), whereas an individual hunter, at least in Sweden, may hunt in different parts of the country.

We conclude that the system for harvest reporting differs between countries, and the structure of the chosen system likely depends on local conditions and history. In this report, it has not been possible to determine which system is the most effective in terms of statistics and management. However, all respondents are content with the system(s) of their country, even though there is room for improvement. An often-mentioned example of a potential improvement from countries that currently do not have a digital reporting system is to introduce such applications.



Photo: Madeleine Lewander

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## BULGARIA

The land area of Bulgaria is 110 370 km<sup>2</sup> (38% woodland, 15% pasture, 36% arable land). It has approximately 130 000 hunters, which corresponds to about 1.9% of the 7 million inhabitants.

To hunt in Bulgaria, one is required to pass a hunting exam consisting of a theoretical and a practical part. The hunter also has to be approved by the local hunting club. A hunter must be a member of a hunters' association and can only be a member of one association at a time. The hunters' association provides the hunter with a membership card. This card and a hunting license must be renewed every year. Finally, a hunting permit is required that specifies the game species that can be hunted, and what type of hunting this entails.

In Bulgaria, all game is state-owned and close to 80% of hunting grounds are managed by the local hunters' association, while 15% of the hunting grounds are state-owned and managed by government-employed hunters. Members of a hunters' association can hunt on the associations' land, but also hunt as a guest on the land of other associations.

Bulgarian hunters state that their main reason for hunting is the passion for hunting as well as tradition. In total, 43 species are allowed for hunting, 26 bird species, 6 ungulate species and 11 other mammal species. The game species that are harvested in the largest numbers are quail (360 000 – 800 000 individuals per year), European turtle dove (150 000), common wood pigeon (60 000) and mallard (50 000). Release of game for hunting is allowed for pheasant, grey partridge, red-legged partridge and mallard.

It is mandatory for Bulgarian hunters to report their harvest for all huntable game species on a yearly basis. The hunter reports to his/her hunters' association, who in turn report to the Bulgarian forest board via their web-based platform. When data have been reported they are immediately accessible to the relevant stakeholders. Access to data varies depending on organisation. For example, experts at the national hunters' association, Union of Hunters and Anglers in Bulgaria (UHAB) have access to data that concerns their members only. The harvest statistics is used to determine hunting quotas for the coming hunting season, with the exception for migrating birds. In addition to harvest numbers, it is also mandatory to report the sex of big game. In accordance with guidelines from the International Council for Game and Wildlife (CIC), information about trophies is also reported. However, this information is available only at a regional level and not included on the web-based platform. The system for hunting statistics is financed solely by the Bulgarian government.

The system is considered effective, but there is a need to extend it to allow reporting of more additional information about the harvested animals.



## CYPRUS

The land area of Cyprus is 9 251 km<sup>2</sup> (21% woodlands, 13% pasture, 35% arable land). In total, there are approximately 40 000 – 45 000 active hunters, which corresponds to about 5% of the 876 000 inhabitants. The national hunters' association, The Cyprus Hunting Federation and Wildlife Conservation (ΚΟΚ & ΔΑΖ), has approximately 8 000 members.

To hunt in Cyprus, one is required to pass a hunting exam and hold a license for a hunting weapon. In addition to the exam and weapon license, hunters must pay a yearly fee to renew their hunting permit. The state holds all hunting rights and all hunters are permitted to hunt in most parts of the country.

In Cyprus, recreation is the main reason for hunting. In total, 13 wild species are allowed for hunting, 12 bird species and one mammal species. The species that are harvested in the greatest numbers are thrush, partridge and wood pigeon. Release of game for hunting purposes is permitted for chukar partridge (*Alectoris chukar*) and hare.

In Cyprus, it is voluntary for hunters to report their harvest numbers. A yearly survey is performed as part of the country's management. Hunters are contacted via phone and interviewed about their hunting habits and harvest numbers. Approximately 1% of all hunters in Cyprus are asked about their harvest every year, and the total harvest is extrapolated.

The system to collect hunting statistics is financed and handled by the National Game and Fauna Service, that is partly connected to the Cypriot government. Approximately two months after the survey is completed, a summarised report is published on the organisations' website. The survey has been conducted for 20 consecutive years.

The reporting system is considered as easy to handle, partly because of the direct contact with the hunters during the annual statistical survey. A possible weakness in the system is that reported data cannot be considered as completely representative for all hunters.



## CZECH REPUBLIC

The land area of the Czech Republic is 78 870 km<sup>2</sup> (35% woodlands, 20% pasture, 37% arable land). In total, there are 90 300 hunters, i.e. holders of a hunting license, corresponding to 0.8% of the about 10,6 million inhabitants. The proportion of active hunters among those holding a hunting license is not known. The national hunters' organisation, Českomoravská myslivecká jednota (ČMMJ), has around 60 000 members.

To hunt in the Czech Republic, one is required to pass a hunting exam and have a weapons license, an insurance that covers hunting accidents, and a local hunting permit. The examination consists of both practical and theoretical parts, ending with an oral exam. The content of the exam is the same independent of what species the hunter intends to hunt. The hunting exam is valid for life while the weapons license needs to be renewed every five or ten years, depending on the health of the hunter. The local hunting permit is issued by the owner of the hunting rights and is often valid for a specific area and species, also specifying the sex and age group allowed for hunting.

Hunting rights is owned by the landowner, who also have the right to decide who can hunt on the property. The minimum area required to hunt is 500 hectares, and landowners can combine their properties to reach a sufficiently large area. It is common that landowners lease the hunting right to other hunters or hunting clubs, which then also become responsible for damage control related to game on the property.

In the Czech Republic, management and pest control are the main reasons for hunting. In total, 36 species are allowed for hunting, 18 bird species, 9 ungulate species and 9 other mammal species. The species that were harvested in the largest numbers during 2017/18 were pheasant (458 000 individuals), mallard (238 000), wild boar (137 000) and roe deer (102 000). Release of game for hunting is allowed for pheasant, hare and mallard. When releases are subsidised by the Czech government, hunting on that land is prohibited the following five years. If the release instead is financed by the landowner, hunting is possible immediately after the release. Harvest of released game is included in the hunting bag statistics.

Harvest reporting is mandatory for all game species. Hunters report their harvest data to the person responsible for the hunting region, who in turn send the data per regular mail to the municipality that the region belongs to. If a hunter has been hunting in several municipalities, the hunter is to report the harvest separately to each region. All hunting bags are specified by species, with a few exceptions where species are grouped together, for example geese. All data are collected and summarised by the Ministry of Agriculture and approximately nine months after the deadline for reporting, a summarised report for the entire country is published. Harvest data specified by region is not available to the general public.

The Czech Republic has had the same reporting system for harvest statistics since 2001. A hunter who do not report his/her data risks a fine. In addition to bag numbers, sex and age group must be specified when reporting harvested roe deer and wild boar. When reporting pheasants, bag numbers and sex must be reported.

The hunting bag system is financed by the Czech government.

The system is considered to be effective. Planned future developments include an online reporting system for hunters. There is also a wish to make data available on a regional level.



## DENMARK

The land area of Denmark is 42 920 km<sup>2</sup> (11% woodlands, 11% pasture, 63% arable land). Of the approximately 5.6 million inhabitants, about 3% (177 000) are registered as active hunters. In addition, there are 40 000 registered hunters which are not regarded as active. Of the active hunters, nearly 90 000 are members of the national hunting association, Danmarks Jægerforbund.

To hunt in Denmark, one is required to have a valid hunting license and pay a yearly hunting fee. The examination for the license consists of both theoretical and practical tests. The practical part, that includes weapons handling and knowledge, differs depending on the type of weapon, and the weapon types permitted are specified on the hunting license. The license is valid 10 years from the time of the exam, or from the last time the annual fee was paid, and the license was activated. A hunter must report the harvest of the past season in order to pay the fee and activate the license. It is only the first time a hunter activates his/her license that this can be done without previous harvest reporting. This has been the case since 2015.

The hunting right is owned by the landowners, who has the right to hunt on the property if it is larger than one hectare. Landowners with adjoining properties can combine their land to reach a sufficiently large area. In order to lease the hunting rights, a minimum of five hectares is required.

Danish hunters state the recreational value as the main reason for hunting, but meat and trophies are added as reasons to hunt deer. In total, 54 species are allowed for hunting, 37 bird species, 6 ungulate species and 11 other mammal species. The species that were harvested in the greatest numbers in 2017/18 were pheasant (635 000 individuals), mallard (414 000), wood pigeon (167 000) and roe deer (99 000). Release of game for hunting purposes is permitted for mallard, pheasant and partridge.

Harvest reporting is mandatory for all game species. Each hunter reports his/her harvest on a yearly basis, separately for each municipality where he/she has hunted. The reporting is performed on the webpage of the Danish Environmental Protection Agency, and a digital personal ID is used to log in. The data are forwarded to Aarhus University for analysis and published on the University's webpage after approximately two months. Since 2007, the hunter can also report sex, age and month of hunt for red deer and roe deer. Since 2012, this information can be reported for all huntable mammal species. Since the hunting year 2017/18 it is mandatory to report sex of red deer. In addition to this, hunters can also send in wings from harvested ducks, geese, coots, woodcocks and common snipe. The wings are determined to species, sex and age, and a temporal distribution is produced. The National Centre for Environment and Energy at Aarhus University (DCE) has been running this project since 1982. The system for harvest statistics is financed by the Danish government.

The system is considered effective and the reporting rate is estimated at 96%. Reports with deviating values are checked by direct contact with the reporting hunter. Planned development includes the launch of a mobile application that can be used for direct reporting of harvested animals.



## ESTONIA

The land area of Estonia is 45 230 km<sup>2</sup> (56% woodlands, 16% pasture, 15% arable land). In total, there are 15 000 registered hunters, which corresponds to about 1.1% of the 1.3 million inhabitants. The national hunters' association, Eesti Jahimeeste Selts (EJS), has approximately 11 000 members.

To hunt in Estonia, one is required to pass a hunting exam consisting of a theoretical and a practical part. A hunter must also pay an annual tax. If the tax is not paid, the license becomes dormant and is activated with the next payment. In addition, the license needs to be stamped every ten years to remain valid.

The hunting right for small game belongs to the landowner, who also has the right to decide who is allowed to hunt small game on the property. When a hunter is given permission to hunt, the decision is formalized in an agreement, at no cost for the hunter. Hunting is not allowed within 200 meters from a settlement, imposing a limitation regarding how a landowner can exercise the right to hunt on the property. The hunting right for big game, including roe deer, is owned by the government and big game can only be hunted by hunting clubs.

Estonian hunters state damage control and management as their main reasons for hunting. The country has a large forest industry, which means that there is a financial interest in reducing damage from wild animals to the forest. In total, 46 species are allowed for hunting, 27 bird species, 4 ungulate species and 15 other mammal species. The species that are harvested in largest numbers are roe deer (15 000 individuals yearly), wild boar (7 000), moose (7 000), and beaver (7 000). It is not permitted to release game for hunting.

Harvest reporting is mandatory for all huntable species. All hunters report their harvest per county to The Ministry of the Environment, using e-mail. Data are then forwarded to an institute that compiles the data and publishes a summarised report. The report is published about one year after the end of the hunting season and contains harvest data and a prognosis for the hunting quotas for the following year. The prognosis can then be adjusted by the country's hunting council, consisting of both government employees and local landowners. For hunting of big game and large carnivores, the hunter gets a license valid for one individual with sex and age specified, which results in automatic reporting of sex and age for these species. For reporting of small game hunting only the number of individuals is required. The system for hunting statistics is financed by the Estonian authorities.

The reporting system is considered as effective, with most hunters following the given directives. However, the reporting of migratory birds is somewhat imperfect as these sometimes are mistakenly reported as domestic species instead of the actual species. For this reason, and with the aim of more correct reporting in the future, the hunters' association has initiated a major education effort directed towards hunters.



## FINLAND

The land area of Finland is 303 900 km<sup>2</sup> (75% woodland, 8% agriculture land). There are approximately 300 000 registered hunters (i.e., those paying the yearly game management fee), corresponding to 5.5% of the total population of about 5.5 million inhabitants. About two thirds of the registered hunters are expected to be active during a year. The country's only hunting organisation, Finnish Hunters' Association (Metsästäjälitto), has approximately 161 000 members.

To hunt in Finland, a right to own and maintain firearms (weapons license) is required. A hunter can also borrow a weapon and hunt under the surveillance of the owner of the weapon. Each hunter also needs a Finnish hunting card, which requires a passed hunter's examination and the payment of a yearly game management fee. If this fee is not paid for five years, a renewed passing of the hunting examination is required. To hunt moose, white-tailed deer, fallow deer, wild forest reindeer, roe deer, wild boar or brown bear, a passed shooting test is required which varies depending on which species that is to be hunted. Shooting tests are also required for hunting of red deer and sika deer, however these species are not currently present in the Finnish fauna, with an exception of few observations on single animals crossing boarder from Sweden (red deer) and Russia (maral, *Cervus elaphus maral*). Shooting tests needs to be renewed every three years. Finally, the hunter needs a hunting permit granted under the right to hunt or issued by the landowner or holder of hunting rights.

The hunting rights is owned by the landowners, who can use it themselves or lease it out to a hunting club. However, locals have the right to hunt (e.g., grouse) on government land in North Finland in the municipality of residence. Hunting of species like moose and white-tailed deer requires a hunting license from the Finnish Wildlife Agency. Brown bear and European lynx are hunted mainly on the basis of management, but derogations on damage basis can also be issued. Both types of licenses are exemptions (derogations) from full protection, and implementation of these licenses has been described in the Habitats Directive and Finnish Hunting Law. Obtaining a license for white-tail deer or other deer species requires a hunting area measuring at least 500 hectares, and moose hunting requires at least 1 000 hectares. Neighbouring landowners can combine their lands to reach a sufficient large area. Hunting clubs can also combine their land with adjacent government-owned land to obtain a sufficient area.

Finnish hunters state recreation as the main reason for hunting. In total, 69 species are allowed for hunting, 39 bird species, 10 ungulate species and 20 other mammal species. The species that are harvested in the largest numbers are wood pigeon (264 000 individuals 2018), raccoon dog (180 000), mallard (158 000), black grouse (88 000), mountain hare (86 000) and European teal/garganey (80 000). However, it is the hunting of moose and white-tailed deer that has the greatest financial value. Every year, approximately 50 000 to 60 000 of these two species are harvested, generating an estimated value of about 60 million euro. The hunt for roe deer (more than 10 000 each year) also generates high values for the hunters.

Hunting of species like capercallie, black grouse, hazel grouse and ptarmigan is very popular and have a great recreational value. Hunting of bear and lynx is conducted under strictly regulated conditions as part of the management of these species. This hunting also has a considerable value and is one reason that the populations of these species are among the largest in Europe. Release of game for hunting purposes are allowed for reared pheasants, partridge and mallards.

Harvest statistics are available from the 1990's. Harvest reporting is voluntary for all game species apart from those which need to be reported to an authority. When this is written, reporting is required for moose, fallow deer, white-tailed deer, wild forest reindeer, roe deer, European beaver, grey partridge, Baltic ringed seal, grey seal, wild boar, bean goose, polecat, large carnivores and otter, regardless if the hunting is implemented based on open hunting season, hunting license or derogation. More species will be included for mandatory reporting from 2020. However, also reporting of all game species and unprotected birds listed in the § 5 of the Finnish Hunting Law is mandatory if a derogation from reproductive season

and/or prohibited means or methods is issued (based on Habitats and Birds Directives). Reporting should in most cases be submitted within seven days after the animal being shot. When hunting for brown bear in areas with reindeer husbandry reporting is required immediately, otherwise the first working day after the animal is shot.

Harvested game is usually reported via the e-service Oma riista. However, some hunters report via e-mail or traditional mail. Oma riista is presently used by 160 000 hunters and the number is increasing by approximately 10 000 every year. It is usually each individual hunter or the one who owns the issued license (applicant) that submits the report.

Apart from the mandatory reporting, the Natural Resources Institute Finland (LUKE) also performs a yearly statistical survey. By sending out a minimum of 5 400 questionnaires (300 forms per district, evenly distributed over the wildlife management districts) statistics are requested about small game hunting from randomly selected hunters (stratified by district). All harvest data that comes in via the different collection methods are then handled and compiled by LUKE, and about six months after the reporting, statistics are published online.

The systems for hunting statistics are financed by the Finnish government via the work conducted in LUKE, partly via the yearly state game management fee that all hunters pay and partly via payments for harvested moose and white-tailed deer (Finnish Wildlife Agency).

The system is considered as effective and has also improved significantly with the introduction of the digital Oma riista-service. It is viewed as positive that the reporting is only mandatory for game species with a high demand for active management. However, it should be pointed out that game species without demand for mandatory reporting, such as grouse species, are also objects of management through adjustment of hunting seasons.



## FRANCE

The land area of France is 633 190 km<sup>2</sup> (28% woodlands, 16% pasture, 29% arable land). In total, there is approximately 1.1 million hunters in France, which corresponds to about 1.6% of the 67 million inhabitants. All hunters need to be members of the national hunter's association, Fédération Nationale des Chasseurs et de Fédérations (FDC), and also in a local club, Associations Communales de Chasse Agréées (ACCA).

To hunt in France, one is required to pass a hunting exam consisting of both practical and theoretical parts. The full examination should be done on one single occasion. The hunting license should be renewed annually. A yearly hunting fee must also be paid.

The hunting right is owned by the landowner who also has the right to decide if hunting should be allowed on the property. The landowner can use the hunting right or lease it out to other hunters. Locally, big game hunting may be subjected to minimum acreage restrictions.

French hunters state that the main reasons for hunting are to experience nature, and to obtain meat and trophies. For big game, reducing damage is another underlying reason. In total, 93 species are allowed for hunting, 67 bird species, 8 ungulate species and 18 other mammal species. The species that are harvested in greatest numbers are wood pigeon (4.9 million individual per year), pheasant (3 million), song thrush (1.4 million) and wild rabbit (1.4 million). Release of game for hunting is allowed for pheasant, mallard and red-legged partridge.

Reporting of hunting in France is divided into 14 different reporting systems that focus on different species, geographic areas and hunting methods. Reporting frequency also differs between systems. There are three systems for voluntary reporting, and two of them cover all huntable species. One, "Shooting hunting bag – national survey" is conducted every 10 – 15 years and request hunting statistics from 60 000 hunters in total, who can submit their harvest report digitally or via traditional post. The response rate was 17% in the latest survey in 2013/14. The other voluntary system that covers all game species is conducted yearly. Participating hunters report their daily harvest, via computer or traditional mail.

Other reporting systems are specified to groups of species (e.g. lowland small game, mountain dwelling small game, wetland birds or ungulates) or specific hunting methods (e.g. trapping with so called "Tendelles", "Tenderies", "Gluaux" or "Pantes"). All these reporting systems have mandatory reporting and the data are compiled yearly, some daily and other on seasonal basis. Reporting is done via traditional mail or online.

In general, it takes approximately 6 – 12 months from data collection until a summarised final report is published. After that, for most reporting systems, data are only accessible for the government and for the hunters' association and their members. Beyond the reporting of harvest numbers, a new system was recently introduced where hunters are required to submit wings of harvested turtle doves and curlew.

The different statistical systems in France are financed by the annual fee that all hunters pay.



## GERMANY

The land area of Germany is 357 380 km<sup>2</sup> (31% woodland, 18% pasture, 38% arable land). There are approximately 385 000 registered hunters, corresponding to 0.5% of the about 83 million inhabitants. About 245 000 hunters are members of the German Hunters Association, Deutscher Jagdverband (DJV).

To hunt in Germany, one is required to pass a hunting exam. It consists of a theoretical part, including wildlife management and species recognition, and a practical part with a shooting exam. The design of the tests differs among regions. The hunting license which is obtained when the examination is passed must be renewed every year or every three years, the latter at a reduced cost. There may be a yearly fee, but this also varies among regions. Hunters must also have a hunting insurance.

The landowner owns the hunting rights if the property is at least 75 hectares. Neighbouring landowners can combine their properties to reach the minimum acreage requirement. A landowner can lease the hunting rights to other hunters. The hunting rights are then assigned to the highest bidder or the hunter that seems best qualified to fill the assigned harvest quota. A hunter may also apply to hunt on government land and is then assigned a specific harvest quota.

Every five years, DJV surveys the reasons for hunting among their members. In the latest survey, recreation was stated as the main reason, and local game management as the second. In third place, women hunters listed working with dogs while male hunters stated meat. In total, 33 species are allowed for hunting, 12 bird species, 8 ungulate species and 13 other mammal species. The species that are harvested in the largest numbers are roe deer (1.2 million individuals annually), wild boar (more than 800 000), pigeons (430 000) and red fox (more than 400 000). Release of game for hunting is possible but requires a permit, and the approval process is long and complicated. Hence, rear and release of game species is relatively rare.

Harvest reporting is mandatory for all game species. For ungulates (including wild boar), it is also mandatory to report additional information if the hunt has taken place on state land, and the intention is to sell the meat, namely sex, health status (healthy/sick) and weight of the animal, as well as what type of hunt was carried out, where the bullet/bullets hit, who shot the animal and the chain of events during the harvest. This additional information is not required if the meat will be used by the hunter him/her-self. The hunter who pays for the hunting is responsible for the submission of the harvest data. The hunter reports to the hunting department of the constituent state in which the harvest has taken place. DJV then collects all data from the different states and approximately six months after the deadline for reporting, a summarised report is published on their webpage. The statistics are presented as a summary for the entire country and specified per region and species (with the exception for pigeons and Anatidae, which are grouped).

The DJV system for hunting statistics is financed by the yearly fees that hunters pay. As the fee varies among regions, the financial situation can vary accordingly.

Germany has applied mandatory reporting since the early 1940's. The system is considered as effective, although with some uncertainty regarding the quality of the data. There is a pattern where hunters tend to report exactly the quota they have been assigned, which may indicate deliberately incorrect reporting. However, the importance of collecting bag data is stressed, as the statistics are necessary in order to determine harvest quotas for the coming hunting season.



## GREAT BRITAIN

The land area of Great Britain is 248 540 km<sup>2</sup> (10% woodlands, 29% pasture, 27% arable land). The number of active hunters has been estimated through surveys to approximately 380 000, corresponding to 0.6% of the about 67 million inhabitants. There are several hunters' associations in the country, and the largest, The British Association for Shooting & Conservation (BASC), has approximately 155 000 members. Research concerning game and wildlife management is conducted mainly by a private organisation, The Game and Wildlife Conservation Trust (GWCT), which also own most of the hunting data available in Great Britain.

To hunt in Great Britain, one is required to have the landowner's permission, as well as a weapons license. This license is issued by the police to applicants who fulfil criteria regarding the need of the weapon, that the person can be trusted with safe handling of the weapon, as well as safe storage of the weapon. There is no exam regarding hunting skills.

The hunting right is owned by the landowner, who has the right to decide who can hunt on the property. The different constituent countries of the United Kingdom (England, Wales, Scotland and Northern Ireland) have somewhat different open seasons. As no other geographical restrictions apply, hunters can hunt in all constituent countries. Most of the land in the United Kingdom is privately owned, and a hunter is thus required to obtain the approval of the landowner to hunt.

British hunters state that their main reason for hunting is the recreational value and pest control. In total, 56 species are allowed for hunting, 40 bird species, 7 ungulate species and 9 other mammal species. The species that are harvested in largest numbers are pheasant (15 million individuals yearly), red-legged partridge (4.6 million), common wood pigeon (1.9 million) and mallard (940 000). Release of game for hunting is allowed for pheasant, mallard and red-legged partridge. For all game species mentioned above except pigeon, the large harvest is related to rear and release. Since 2005 all pre-release flocks consisting of more than 50 pheasants or partridges must be registered in the GB Poultry Register. This regulation was introduced to facilitate the containment of Avian Influenza and other poultry diseases.

Harvest reporting is voluntary in the United Kingdom. BASC collects some data directly from individual hunters, but the GWCT is the main organisation collecting and publishing bag statistics. The GWCT has collected annual harvest data from approximately 800 organised shoots and shooting estates across the United Kingdom since 1961, via its National Gamebag Census (NGC). Data are collected by questionnaire, covering all quarry and pest species, with a response rate of about 85%. Each year a report is published as a newsletter to participants describing up-to-date harvest trends for 4-5 quarry species. Trends are usually reported for the entire United Kingdom, with a few exceptions where analyses for each part of the country have been performed. There are no nationally set quotas. Any quotas are instead determined by the shoot managers, based on the abundance of wild and released quarry species on their land. The GWCT's NGC aims to obtain information on age and sex in addition to the harvest data. This information is however often not available as it is not reported by the hunters to the landowners.

Data collection under GWCT's NGC receives no financial support from the state. GWCT finances the scheme through core funds and consider the collection of harvest data as an important undertaking. There has been sporadic cooperation between the GWCT and the state earlier, where the purpose was to quantify the potential of the NGC as a bag monitoring scheme and as a means of monitoring mammal trends, but this is not currently active and the web pages for the NGC mammals have not been updated since 2010.

GWCT considers the current data collection system to be well-functioning. Shooters may distrust the government, whereas GWCT is trusted by shooters and shoot providers. Being independent of government is therefore likely to improve the reliability of the data provided. When testing the strength of the trend analyses, it has been shown that they are of high statistical power. It is also considered a good thing to gather summarised statistics at the level of shoots and shooting estates, instead of gathering data from individual shooters, as it avoids double counting by individuals especially on driven shoots.



## GREECE

The land area of Greece is 131 957 km<sup>2</sup> (28% woodlands, 16% pasture, 23% arable land). There are approximately 170 000 active hunters, which corresponds to 1.6% of the about 1.1 million inhabitants. The Hellenic Hunters Confederation (K.Σ.E) is the largest Hunting Association in the country and consists of seven Federations and 254 local Hunting Clubs.

To hunt in Greece, one is required to pass a hunting exam. Hunters must also have a hunting license (that can be local, regional or national), a hunting permit and a weapons license. One cannot have a criminal record. The hunting license is renewed every year.

The government owns the hunting rights and all hunters are permitted to hunt regardless of who owns the land. Harvested game belongs to the person one who has lawfully carried out the harvest. Landowners may however enforce a ban on hunting on their land if the area is fenced.

Greek hunters state that the main reason for hunting are wildlife management, experiencing nature, recreation and meat. In total, 36 species are allowed for hunting, 31 bird species, one ungulate species and 4 other mammal species. The game species that are harvested in the largest numbers are thrush, European hare and quail. Release of game for hunting is permitted for European hare, rock partridge, chukar partridge and pheasant.

Harvest reporting is voluntary. K.Σ.E's project Artemis I supplies the local Hunting Clubs with annual questionnaires, that are distributed to the hunters in connection with the yearly renewal of hunting licenses before the hunting season begins. Hunters can use the questionnaire as a hunting diary, where data are registered after each hunt. The data are compiled by the Faculty of Forestry and Natural Environment at the Aristotle University of Thessaloniki, University of Thessaly, and National and Kapodistrian University of Athens. A final report is presented to the Ministry of Environment and Energy. Based on the harvest statistics, the Ministry decides the length of the following hunting season as well as hunting quotas for different game species. The statistics are available for the Ministry only, not to the general public. The harvest statistics are also used for national reporting under Article 12, Directive 2009/147/EC.

The system for harvest statistics in Greece is funded by the yearly fee for hunting licenses that all hunters pay.

The reporting system is considered effective. The information provided via questionnaires is considered sufficient and the system is well suited to provide statistics also for smaller spatial units.



## HUNGARY

The land area of Hungary is 93 030 km<sup>2</sup> (21% woodlands, 8% pastures and grassland, 46% arable land). There are approximately 61 000 registered hunters, corresponding to 0.6% of the about 9.8 million inhabitants. All hunters are mandatory members of the Hungarian Hunters' Chamber (Országos Magyar Vadászkamara), a public body officially representing the hunters. The Hungarian Hunters' National Association (Országos Magyar Vadászati Védegylet) is the oldest hunting organization, representing the hunting clubs.

To hunt in Hungary, one is required to pass a hunting exam which has both practical and theoretical parts. After the exam has been passed, a firearm license must be retrieved, as well as a hunting license. The hunter must also not have a criminal record for, at least, ten consecutive years prior to the date of the application. The hunting licence must be renewed every year, through an annual fee, while the weapon licence is valid for life. The Hunters' Chamber is responsible for issuing the hunting licenses through its 19 county offices. Membership in a hunting club is not compulsory but, to be able to hunt in an area, a hunter must either be a member of the local hunting club or have an approval from the management unit.

The hunting right belongs to the landowner if the area is at least 3 000 hectares. Landowners of adjoining properties can combine the land to reach the required size. Hungary is divided into 1 446 game management unit (hunting areas), which, in turn, are distributed over 52 game management regions. Regional game management plans were developed 20 years ago and form the basis for the local management plans of the game management units.

Hungarian hunters state that the most common reason to hunt big game are trophies and meat, while meat is the foremost reason to hunt small game. Population control is the most common reason to hunt predators. In total, 31 species are allowed for hunting, 16 bird species, 6 ungulate species and 9 other mammal species. The game species that are harvested in the largest numbers are pheasant (422 000 individuals yearly), wild boar (149 000), roe deer (119 000) and European hare (82 000). In addition to the wild populations hand-reared pheasants and mallards are released. Released game is included in the hunting statistics.

Harvest reporting is mandatory and is regarded as a part of wildlife management. The Hungarian game management units report the yearly harvest for all huntable species. The units also report the spring population size for five species of big game and 3 species of small game and submit a proposal for an annual game management (harvest) plan. The harvest reports are submitted via email to the county hunting inspectors, which is a part of the agricultural administration. All harvest data are then gathered in a National Game Management Database where the statistics are summarised per county. The database is administrated by the Szent István University (Gödöllő), on assignment by the Hungarian government. Approximately 4-6 months after the deadline for data reporting, a summary report is published that presents long-term and short-term harvest trends and an analysis with information on hunting quotas and wildlife monitoring for the upcoming hunting season. The report is published as a booklet but is also available at the database webpage. Hungary has used this system for harvest reporting since around 1970, and the data have been used to support wildlife management decisions since 1991. Game management units' risks being fined if they do not fulfil the requirements, i.e. if they do not report their harvest and submit the population report and management plan. If the fine is paid, the management unit is allowed to continue to hunt in the area, but risks losing the hunting rights if the reporting continues to be inadequate. If a game management unit does not have an adopted yearly management plan for a given hunting area, all hunting in that area is strictly forbidden. In addition to harvest, hunters are obliged to report data for trophy scoring regarding the antlers of red deer, roe deer and fallow deer and the horns of mouflon. Tusks from wild boars are to be reported if they are larger than 16 cm.

The harvest reporting system is financed by the Hungarian government.

The harvest system is considered to be a stable system, with long time-series of detailed data. There are plans to introduce a digital reporting solution, which could provide statistics in real-time, instead of a yearly summary report.



## ICELAND

The land area of Iceland is 103 000 km<sup>2</sup> (50% bare soil, 1% woodlands, 3% pasture). In total, there are 26 000 registered hunters. In a year when a registered hunter will be active, he/she needs an active hunting license. Of the registered hunters approximately 12 000 renew their hunting licenses each year, corresponding to 3.4% of the about 357 000 inhabitants. In total 2 150 hunters are members of the national hunting association, SKOTVÍS.

To hunt in Iceland, one is required to pass a theoretical test, after which a hunting license is obtained. There are no formal practical tests, but a hunter must demonstrate safe weapons handling at a shooting range before hunting. Hunters must also pay an annual hunting fee to renew the hunting license.

The hunting rights on private land is owned by the landowner, who has the right to decide who can hunt on the property. On government-owned land, which are vast areas on Iceland, all holders of a hunting license are allowed to hunt.

Icelandic hunters state that their foremost reason for hunting is meat. Exceptions are reindeer hunting where trophies are an additional incentive, as well as hunting for fox, mink and sea gull which often is carried out as predator control. In total, 31 species are allowed for hunting, 28 bird species, one ungulate species and 2 other mammal species. The game species that are harvested in the largest numbers are rock ptarmigan (55 000 individuals yearly), greylag goose (40 000), Atlantic puffin (25 000), and pink-footed goose (9 000).

Harvest reporting is mandatory for all game species. Each individual hunter generally reports his/her harvest on the website of the Environmental Agency of Iceland. An exception is hunting of Atlantic puffin on the Icelandic islands, where each hunting team instead reports their harvest. Iceland is divided into six hunting regions where all hunters are permitted to hunt, and the harvest report should specify in which region the hunting was carried out. All data are gathered in an authority-owned database. Each hunter can access his/her own statistics in the database but is anonymous to the authorities. Most harvest reports for a particular year are submitted at the beginning of the subsequent year, and compiled data are publicly available after approximately one year on the websites of the National Statistical Institute and the Environmental Agency of Iceland.

A hunter cannot renew the hunting license without reporting his/her harvest, and a late submission results in a higher fee for the next permit. Hunters must report the number of harvested animals for each game species in each region, as well as the number of hunting days per species. For grouse species, also information about sex and age are required.

To assess the reliability of the reporting, a questionnaire was designed with the help of psychologists 2000. A double-blind test was used, meaning that both the questioner and the respondent were anonymous. In the survey, 10% of the hunters were contacted and the results have been used as a control for subsequent years reporting.

Administration of hunting on Iceland, as well as some research, is financed by the annual hunting fees.

The reporting system is considered to be effective and generate reliable data. Future plans for development include a mobile application where hunters can report additional data, e.g., by submitting a picture of a wing, in order to increase the information about harvested animals.



## ITALY

The land area of Italy is 302 070 km<sup>2</sup> (30% woodlands, 16% pasture, 36% arable land). There are approximately 600 000 registered hunters, corresponding to 1% of the about 60.3 million inhabitants. The national hunting association, Federazione Italiana della Caccia (FIDC) has approximately 250 000 members.

To hunt in Italy, one is required to be at least 18 years old and to have passed a hunting exam which includes both practical and theoretical parts. The theoretical tests require knowledge of laws, ecology, agriculture, firearms and first aid. The basic hunting exam does not include practical shooting tests. However additional tests, including shooting tests, are required for hunting of big game such as roe deer, deer and wild boar. A yearly fee must be paid for a license, which consists of both national and local tax. In order to hunt in the public hunting system (that can comprise both public and private land), one must be a member of a hunting division which entails a yearly membership. The size of the fee depends on what species is to be hunted, where hunting of migratory birds is least expensive. In order to keep the license if one is inactive as a hunter for some time, the taxes must still be paid but the membership fee is paused.

The hunting rights belong to the State and Regions. A landowner who does not want to allow hunting on his/her property must fence it and cannot hunt on the land himself/herself. A hunter has the right to be a member of the hunting department in his/her district and, if places are available, the hunter can also be a member of other departments (depending on a density index of hunters per area). The twenty regions of the country have influence on decisions regarding open seasons, harvest quotas and other rules. For instance, it is possible to allow some hunting on migratory bird species also for hunters who are not members of hunting departments. It is also possible for new hunters to become members of a department where his/her father or relatives are members. Decisions on open hunting seasons and quotas must follow the National Law, and suggestions are made each year by the National Institute for Environmental Protection and Research (ISPRA). However, regions can overturn these recommendations if it can be motivated.

Italian hunters state that their main reasons for hunting are the nature experience, leisure and meat. In total, 44 species are allowed for hunting, 33 bird species, 6 ungulate species and 5 other mammal species. The species that are harvested in the largest numbers are song thrush (some millions per year), blackbird (some millions, but fewer than thrush), wood pigeon (1.5 million), and redwing (1 million). Release of game for hunting is allowed for pheasant, grey partridge, hare and rabbit. Harvest of released game is not included when harvest statistics are calculated.

Harvest reporting is mandatory for all game species and is conducted once a year. Historically, hunting was free, but this made the administration more difficult and led to excessive hunting pressure on certain game species. Hunting was regarded as unsustainable and new laws were implemented in 1992, according to which it became mandatory to have a membership in the hunting division of the area in which one hunts. Hunters report their harvest by submitting their hunters' licenses to their region, with specified information about district, dates of hunts, and if hunting was carried out on private or public land. Presently, some regions are developing systems which allow electronic reporting. In order to increase the accuracy of reporting, hunters are required to fill out their hunting license immediately an animal is killed. Previously, hunters were required to fill out the license only at the end of each hunting day. If harvest data are not reported on time, the hunter risks losing his/hers hunting rights and is also subjected to a fine.

The data that hunters submit to the regions are compiled by ISPRA in a national database. In addition to the compiled reports that are published by authorities every five years, FIDC compiles and calculates the harvest for an average hunting season on a yearly basis. By requesting statistics from the respective regions, FIDC make statistics available to their members on a yearly or bi-yearly basis. Italy has had a

mandatory reporting system for quite some time, but the previous data collection was inadequate. After a political power shift, Italy has collected data in a more organised way since 2010. As big game species are hunted by license, hunters are only permitted to hunt a specific type of individual, where sex and age are specified and should be reported. Through this procedure, additional information is gathered for these species.

The statistics that the regions compile and publish is financed by the Italian authorities. FIDC finances its compilations, with some financial support from the government.

The reporting system is considered effective in theory, but there is some need for practical improvements. There are uncertainties regarding the data, and work is being done to educate hunters in order to improve reporting.



## LATVIA

The land area of Latvia is 64 570 km<sup>2</sup> (51% woodlands, 25% pasture, 17% arable land). There are approximately 21 000 registered hunters, corresponding to 1.1% of the 1.9 million inhabitants. The large hunting organisations in the country, where Latvijas Mednieku Savienība (LMS) is the largest, have in total about 9 000 members.

To hunt in Latvia, one is required to pass a hunting exam, and to have a seasonal permit and a firearms license (if one plans to hunt with a firearm). The hunting exam is valid for life, while the seasonal permit must be renewed each hunting season.

The hunting rights are owned by the landowner, who has the right to decide who is allowed to hunt on his/her property.

Latvian hunters state that their main reasons for hunting are meat and trophies, but hunting is also carried out for management purposes or to limit damage caused by game. In total, 51 species are allowed for hunting, 27 bird species, 7 ungulate species and 17 other mammal species. The game species that are harvested in the largest numbers are beaver (29 000 individuals yearly), roe deer (27 000), red deer (18 000) and mallard (18 000). Release of red deer is allowed to improve the genetic variation of the free-ranging population. As the numbers of released individuals are low, they are not taken into consideration in the yearly assessments of the harvest statistics.

Harvest reporting is mandatory for all game species. For species with a limited hunting quota (moose, red deer, roe deer, wild boar, capercaillie and black grouse) reporting must be done no later than one month after the animal is harvested, while large carnivores (wolf and lynx) must be reported the next working day after the hunt. Harvest of species with limited hunting should be reported to the regional unit of the State Forest Service. Other game species, which have no specified harvest quotas, should be reported no later than a month after the hunting season is closed. The State Forest Service reports the data to a central database, after which the central statistics office analyses the data and presents a summarised report. In addition to the number of harvested animals it is mandatory for hunters to include information on sex and age category for ungulates and birds with limited hunting quota. For large carnivores, it is mandatory to report weight and exact positioning determined by GPS.

The system for hunting statistics is financed solely by the Latvian authorities.

The reporting system is viewed as user friendly and well-working, but a development of more reporting options is wanted. This includes additional information on harvested animals such as weight and antlers, but also information regarding animals observed and other conditions during the hunt. The launching of a mobile application is planned for reporting purposes.



## MALTA

The land area of Malta is 320 km<sup>2</sup> (1% woodland, 51% pasture, 0,6% arable land). In total, there are 15 000 registered hunters (of which 4 000 are “trappers”), corresponding to 3% of the 493 500 inhabitants. It is mandatory to be a member of an established hunters’ association, and 10 000 of the registered hunters are members of the largest hunting association, Federazzjoni Kaccaturi Nassaba Konservazzjonisti (FKNK).

In addition to the membership in a hunting organisation, one is required to pass hunting a hunting exam in order to hunt in Malta. The examination is designed by the The Wild Birds Regulation Unit (WBRU) and consists of both theoretical and practical parts. In addition to the examination, a gun license and a hunting insurance is required. Furthermore, each hunter must own a mobile phone.

The state owns the hunting rights in Malta, and all citizens have the right to hunt everywhere, excluding the immediate vicinity of buildings and main roads.

Maltese hunters state that their main reason for hunting is meat. On Malta, it is only permitted to hunt migratory birds and wild rabbit. In total, 36 species are allowed for hunting, 35 bird species and one mammal species. The species that were harvested in the largest numbers during 2018 were song thrush (3 600 individuals), starling (1 300), quail (700) and Eurasian skylark (600). There is no release of game for hunting.

Harvest reporting is mandatory for all game species. Starting in 2006, harvest is reported via SMS. Reporting should in general be done directly after the hunt. The exception is hunting that constitute a deviation from the EU Birds Directive, in which case the hunter is required to report via SMS immediately after the animal is killed. Shortly after harvest reporting is finished, a summarised report of hunting statistics is published on the website of WBRU. The report lists the number of harvested animals, specified to species and total per month, and geographic information regarding the harvest.

The system for hunting statistics is handled and financed by the Maltese authorities. The system is well functioning and well-liked.



## THE NETHERLANDS

The land area of the Netherlands is 41 540 km<sup>2</sup> (8% woodland, 42% pasture, 19% arable land). In total, 27 000 individuals hold a hunting license, corresponding to 0.16% of the 17.2 million inhabitants, but the exact number of active hunters is unknown. The national hunting association, Koninklijke Nederlandse Jagersvereniging, has around 20 000 members.

To hunt in the Netherlands, one is required to pass a hunting exam, as well as to have an insurance and a permission from the landowner. The hunting license must be renewed every year by the police, who checks the hunters' criminal record. Landowners can apply for a permit that only allows pest control.

The hunting rights are owned by the landowner, but the property must be at least 40 hectares for hunting to be permitted. As a rule, it is possible to lease hunting rights from a landowner or the state, and the normal period of lease is 6 – 12 years. The country is divided into 300 Game Management Units (GMU), and in order to lease hunting rights one must be a member of the local GMU where the land is located. It is, however, allowed to hunt as a guest without a membership in the GMU.

The Netherlands has vast cultivation areas, and pest control is regarded important to reduce the risk of damage to harvests. Thus, Dutch hunters state that one of their main reasons for hunting is pest control. In addition, meat is also stated as an important incentive for hunting. In the Netherlands, there are national open hunting seasons for five game species only: European hare, pheasant, rabbit, wood pigeon and mallard. However, the main part of hunting is carried out for management purposes, which means that in addition to game species with an open season, animals are killed as a result of pest control. The species that are harvested in the largest numbers are greylag goose, wood pigeon, European hare and mallard. It is not allowed to release game species for hunting.

Harvest reporting is mandatory for all game species. The Dutch system was decentralised about ten years ago and, presently, the 12 provinces handle the collection of all hunting data. Each individual hunter reports his/her harvest to the relevant province, which in turn reports compiled data on a yearly basis. The reporting is done via a website handled by an external company that has developed the software. All but one of the provinces are connected to the database. All connected provinces can access their data, while the National Hunters' Association has access to data for all participating provinces. During the period 1980 – 2009, data collection was handled manually, and a summarised yearly harvest report was compiled. After the change to digital handling, no harvest reports were published for a ten-year period. Starting in 2019, the National Hunters' Association again publishes annual harvest reports. Harvest reporting has been mandatory since 2017, but there are no legal consequences for those who fail to report. For hunting of fallow deer, red deer, roe deer and wild boar, hunters are assigned a license for a specific type of animal, for instance a male, something that entails automatic reporting of sex for these species. Hunters can also report the weight for these species on a voluntary basis. The time from reporting to the publishing of data is at least one year, but this differs between provinces.

The system is financed by each province, which pays the external company to obtain a license for the software. The National Hunters' Association also buy one license. It should, however, be noted that the fee comprises several other services, for example permits for derogation.

The reporting system is considered effective, although it is regarded as vulnerable in case the external company should go bankrupt. The transition from voluntary to mandatory reporting is considered to have increased the reliability of data.



## NORWAY

The land area of Norway is 385 200 km<sup>2</sup> (35% woodland, 3% pasture, 2% arable land). In total, there are 509 000 registered hunters, but only 202 000 of them have hunting licenses. Of the registered hunters with a hunting license, 141 000 are regarded as active, corresponding to 2.6% of the 5.3 million inhabitants. Norway's national hunters' association, Norges Jeger- og Fiskerforbund, has about 113 000 members.

To hunt in Norway, one is required to pass a hunting exam consisting of practical and theoretical tests. For hunting of big game and large carnivores, additional practical tests are required. In addition, all hunters must pay a yearly fee.

The hunting right is owned by the landowner, who has the right to decide who can hunt on their property.

Norwegian hunters state that the main reasons for hunting are recreation and meat. In total, 53 species are allowed for hunting, 33 bird species, 7 ungulate species and 13 other mammal species. The game species that were harvested in the largest numbers in 2017/18 were willow ptarmigan (120 000 individuals), rock ptarmigan (60 000), red deer (43 000) and common wood pigeon (34 900). Norway allows no release of game for hunting.

Harvest reporting is mandatory for all game species. Small game and wild boar are reported after the hunting season, by individual hunters and per municipality, using the website Altinn. Big game is reported by the leader of the hunt. Deer species are reported to Hjorteviltregistret. When a large carnivore is harvested, it is reported to the County Administrative Board. Harvest numbers are compiled by Statistics Norway (Statistisk sentralbyrå) that publishes a report at its webpage a couple of months after the cut-off date for reporting. Hunting data have been collected in Norway since the 1950's. At the beginning, the data were collected from 4% of the hunters. The data collection technique changed into the present one in the 1990's, when reporting became mandatory for all hunters. Apart from harvest data, it is also possible to report age and sex for wild boar and big game.

The yearly fees, which are paid by all hunters, are invested in a fund which contributes to the financing of the Norwegian hunting data system and is overseen by the national hunting association. Approximately 2.3 million NOK were used for the administration and summaries of the hunting data in 2018.

The reporting system is considered effective. The reporting rate is about 90% and this is regarded as adequate to provide reliable harvest data. Planned developments will allow hunters to report directly after a hunt instead of after the hunting season, something that will improve the quality of data.



## POLAND

The land area of Poland is 312 680 km<sup>2</sup> (33% woodland, 15% pasture, 44% arable land). There are approximately 123 000 active hunters, corresponding to 0.3% of the 38 million inhabitants. A membership in the national hunters' association, Polski Związek Łowiecki (PZŁ) is mandatory for Polish hunters.

In addition to a membership in PZŁ, one is required to pass a hunting exam to hunt in Poland, and have a hunting permit that specifies species, area and hunting period.

The hunting rights and all living wild animals are owned by the Polish authorities. A landowner can apply for a hunting ban on his/her property, but this must be approved by the local authorities. If a hunting ban is approved, the landowner must manage and pay for any damage caused by wild game. Hunting Clubs often lease the hunting rights from the local municipality, and are then responsible for any such costs. All harvested animals belong to the Hunting Club where the hunter is a member. A Club can choose to sell the harvested animals to members in the Club or give them away for free. Big game is often sold to companies that in turn sell the meat to stores or restaurants.

Polish hunters state that the main reasons for hunting are game management and, to some extent, trophies. In total, 32 species are allowed for hunting, 13 bird species, 7 ungulate species and 12 other mammal species. The game species that were harvested in the largest numbers in 2017/18 were wild boar (342 000 individuals) and roe deer (215 000). Release of game for hunting is allowed for pheasant, grey partridge, European hare and to some extent for fallow deer, wild rabbit and mallard.

Harvest reporting is mandatory for all game species. Hunters can register their harvest electronically, but it is more common that they send their data to the Hunting Club via regular mail. Data that are collected by the Hunting Clubs are checked and approved by the local forest service (State Forest Service). All data are then reported to PZŁ regional unit. The Polish statistics central bureau compiles all the data and publish a yearly summarised report. Apart from the number of harvested animals, hunters need to report sex and age for ungulates. For trophy hunting it is also possible to voluntarily register weight, trophy weight and type.

The hunting reporting system is financed by PZŁ.

The reporting system is considered extensive, covering the country's entire hunting grounds. There are however some concerns regarding data for species that are considered less important from a management point of view, where there is a perceived risk for incomplete reporting. There is a plan to introduce electronic reporting in the near future, something that will make it easier and faster to compile the data.



## RUSSIA

The land area of Russia is 17 125 190 km<sup>2</sup> (46% woodland, 22% arable land). It is estimated that there are approximately 3 – 3,5 million hunters, corresponding to 2,5% of the 142 million inhabitants. It is not mandatory to be member of a hunting association in order to hunt, but it can be beneficial for the hunter as all members can hunt on the association's land. There are several large hunting associations, where the largest is the national hunting association, Rosohotrybolovsouz, with 1,6 million members. Another large association is the military hunting association which has around 300 000 members.

To hunt in Russia, one is required to have a hunting ticket. This is like a hunter's passport that is issued by government agencies and valid for life. In addition, the hunter must have a hunting permit specifying territory, season and the species to be hunted. Hunting permits are issued by the owner of the hunting rights for the land. Presently no passed exam is required. However, the hunter is obliged to know the requirements of the hunting, although this knowledge is not verified in practice. There are plans to introduce an exam in the near future.

The Russian government owns all hunting rights. Associations and private entrepreneurs can lease the hunting rights from the government. A contract is then established in which the responsibilities of the parties are specified. After this, whoever owns the hunting rights can, in turn, lease it to other hunters. Owners of woodlands or arable land need to establish contracts with the government to hunt on their land. All land where the hunting rights are not leased out is so called public land, where all individuals can hunt at will.

Russian hunters state that their main reasons for hunting are meat, fur and recreation. In total, 156 species are allowed for hunting, 88 bird species, 16 ungulate species and 52 other mammal species. The game species that are harvested in the largest numbers are sable (250 000 individuals annually), European hare (235 000), red squirrel (193 000) and fox (185 000, not specified to species). Release of game for hunting purposes occurs.

Harvest reporting is mandatory for all game species. The associations and private entrepreneurs that lease hunting rights from the government are required to collect data of the harvest, survey wildlife species, work against animal cruelty and keep an eye on the borders of the area in question. If the legal entity does not report the data, they risk a fine. If the reports remain inadequate, they risk termination of the established contract. Hunters that lease hunting rights from associations or entrepreneurs are required to report their harvest to the entity from which they are leasing. Anyone who fails to do so, might lose the hunting right the following season. Reporting is required for all species, even though some species are grouped, such as foxes. The regional authorities send summarised data for the region to the Department for Natural Resources and Ecology, where a special unit handles all hunting statistics. About 3 – 11 months after the regions' final reporting, all data are summarised. Official hunting statistics are available in books and online, but not published every year. The latest report contains statistics from 2013. However, the later statistics can be acquired on demand from the regional authorities. In addition to harvest numbers, hunters are required to report sex and age of all species that are specified in the hunting permit, as well as reproductive status and fertility for ungulates.

All systems for harvest reporting are financed by the Russian authorities.

The reporting system is considered effective and summarises large amounts of data from the entire country in a coherent way. However, there is a perceived risk of inaccuracies in the reported data. It is difficult to control harvest numbers, as it is, more or less, a "word of honour" from the hunter. There may also be illegal hunting, and this would not be accounted for in the statistics. As the next years quota is based on the number of living animals reported, this may lead to incorrect reports from the landowners. Another area for potential improvement is the time interval between official reports, as there is a demand for more frequent reports on the summarised national harvest statistics.



## SLOVENIA

The land area of Slovenia is 20 270 km<sup>2</sup> (58% woodland, 28% pasture, 7% arable land). In total, there are more than 20 000 registered hunters, corresponding to 1% of the 2 million inhabitants.

To hunt in Slovenia, one is required to be a member of a hunting club. All hunting clubs and hunters are members of the national hunters' association, Lovska zveza Slovenije (LZS). In addition to the membership, one is required to pass a hunting exam consisting of both a practical part (usually one year of practical work on the hunting ground which can also be prolonged), and a theoretical part (consisting of 50 – 60 hours of lectures, more than 10 partial exams, and a final exam in front of the examination board nominated by the Minister of Agriculture, Forestry and Food of the Republic of Slovenia). A hunter must also pay a yearly fee, normally between 120 – 150 EUR. The hunting exam is valid for life.

Wildlife, including game species, is owned by the state, and the hunting rights are entitled to everyone who is a member of a hunting club and has a year-valid member card (confirmed by a year-valid sticker). The hunting right is therefore not related to ownership of the land, and hunters are allowed to hunt throughout their hunting ground. The minimum requested area of a hunting ground is 2 000 hectares of huntable land, and the average size is about 4 500 hectares. Theoretically, landowners can decide to ban hunting on their property, but this is very rare, and the landowner then loses the right to compensation for damages caused by wildlife. A landowner has an exclusive right to become a member of the local hunting club, also when the minimum quota of hunters has been reached. Otherwise in this situation, a hunting club may reject membership for new hunters who do not have a landownership within the hunting ground.

Slovenian hunters state that their main reason for hunting is sustainable management of wild game populations. In total, 22 species are allowed for hunting, 6 bird species, 6 ungulate species and 10 other mammal species. The game species that are harvested in the largest numbers are roe deer (30 000 – 35 000 individuals yearly, and total annual registered mortality of about 45 000 individuals), wild boar (in the latest decade about 10 000 harvested per year but with a substantial interannual variability, and maximum of 13 178 harvested wild boar in 2019), red deer (5 000 – 7 000 per year) and Alpine chamois (around 2 000 per year). Release of game for hunting is allowed for pheasant and grey partridge.

Harvest reporting is mandatory for all game species and must be done immediately. For several species (all ungulates, mesocarnivores and hooded crow), hunting grounds are assigned a certain quota each year that must be filled and accounted for to the authorities, in the case of ungulates this includes material proving (all left hemimandibles must be collected, assigned and given to the special commission in January each year, for the previous year). If a hunting club does not fill its quota, it is assigned a “yellow card” and a fine (minimum 4 200 EUR). A hunting club that receives two “yellow cards” can no longer continue hunting. On the day of the hunt, each individual hunter must bring the carcass of a harvested individual to a collecting point where the animal's health status is inspected and a responsible person of the hunting club must register several attributive data in the online hunting-information system (e.g. species, sex, estimated age or age category, body mass, health status, date and hour, location of harvest in 1 x 1 km grid). This registration should preferably be done immediately, and no later than the 10th of the following month. All registered data are available for registered end-users on a daily basis and summarised data are also available for the general public (<http://oslis.gozdis.si/>). In addition, each hunter can access the database for its own hunting ground and view more specified regional information. Slovenia has had a mandatory reporting system since the 1950's. In 2006, an online information system was introduced in which the hunters report the above mentioned information on harvested animals, but also information on animals that are found

dead. This means that the total registered mortality is reported. Apart from attributive data, it has been mandatory to also report the exact harvest location (GPS coordinates) for all large carnivores and ungulates since 2015. For monitoring purposes, scientists may also request hunters to report other data which are not mandatory, for example fertility and foetal counts in wild boar.

At present, the collection of hunting data and the reporting system is financed mainly by LZS, but the Ministry for Agriculture, Forestry and Food also started to support the system in 2019. For future developments, LZS together with Slovene wildlife researchers has managed to obtain some EU funds (H-2020 project).

The reporting system is considered as very stable, and it provides large amounts of useful and relevant information. However, there is a concern that the high penalties can generate some uncertainty in data, because when hunters are required to harvest a certain amount of game to not be fined, that can be an incentive for deliberate incorrect reporting. In 2020, a mobile application was launched for registration of animals that were killed in traffic directly into the system (funded by Slovene Road Agency). In 2021 a new mobile application will be developed within the H-2020 project StepChange, that will enable reporting of field observations by hunters as citizen scientists.



## SPAIN

The land area of Spain is 505 900 km<sup>2</sup> (26% woodland, 13% pasture, 34% arable land). It is estimated that there are more than 850 000 active hunters in Spain, corresponding to 1.8% of the about 47 million inhabitants. Of the active hunters, approximately 315 000 are members of the national hunter's organisation, Real Federación Española de Caza.

To hunt in Spain, one is required to pass a hunting exam for the autonomous region in question, and to have a weapons license and a permit from the landowner to hunt on his/her property. The hunting license must be renewed every year and the weapons license every five years.

The hunting rights are owned by the landowner, who has the right to decide who can hunt on the property. The autonomous regions have different minimum requirements regarding what size a piece of land must have for hunting to be allowed. Often, several landowners with adjoining properties can combine these to reach a sufficient area. Landowners can also lease hunting rights to other hunters, hunting teams or hunting clubs.

Spanish hunters state that the main reasons for hunting are meat, trophies and pest control. In total, 61 species are allowed for hunting, 43 bird species, 10 ungulate species and 8 other mammal species. The game species that are harvested in largest numbers are European rabbit (more than 6.2 million individuals yearly), thrush (5.1 million), red-legged partridge (2.8 million) and pigeons (2.7 million). Release of game for hunting is allowed for red partridge, pheasant, rabbit, quail and hare.

Harvest reporting is mandatory for all game species. Hunters report their harvest to their hunting area or hunters club. The representative of the hunting area or the hunters club in turn informs the autonomous regions on a mandatory basis. Data are specified to species and region and finally summarised by the Ministry of Agriculture who publishes a yearly report on their website. Hunting data are collected for all game species, but some species are grouped, for example pigeons. The time span between the reporting of the hunter and the final report cannot be specified as it varies greatly between the different autonomous regions. In addition to harvest numbers, the sex must be specified for big game.

The system for harvest reporting is paid for and controlled by the autonomous regions and the central government, which means that costs can vary between different parts of the country.

The system is considered to be working well, as data are gathered from the entire country. A mandatory system is however considered a weakness, as data might not be accurately reported.



## SWEDEN

The land area of Sweden is 438 570 km<sup>2</sup> (66% woodland, 2% pasture, 7% arable land). There are almost 300 000 active hunters (i.e., the number of hunters that pay the hunting license in the form of a game management fee in a given year), corresponding to 2.9% of the 10 million inhabitants. There are several hunters' associations, but the largest is the Swedish Association for Hunting and Wildlife Management (SAHWM) with about 150 000 members.

To hunt in Sweden, one is required to pass a hunting exam consisting of both a theoretical test and up to three practical tests, including safe weapons handling and shooting tests (e.g. one specific shooting test for hunting of big game). To take the practical tests, one must first pass the theoretical test. The exam is valid for life. To hunt with a weapon, a valid weapons license is required. The hunter can apply to the police for a weapons license after he/she has passed the exam. All hunters must also pay a yearly game management fee in years when they are active as hunters.

The landowner owns the hunting rights regardless of the size of the land. The landowner can use the hunting right or lease it to other hunters. A large part of Swedish land, mainly in the north and central parts, are owned by the Swedish government or large private companies. On most of this land, the hunting rights have been leased out to individual hunters or hunting clubs.

Swedish hunters state that the main reasons for hunting are recreation, meat, management and trophies. In total, 48 species are allowed for hunting, 28 bird species, 6 ungulate species and 14 other mammal species. The game species that were harvested in the largest numbers in 2017/18 were wild boar (114 800 individuals), roe deer (103 300), moose (84 700) and mallard (69 500). Release of game for hunting is allowed for pheasant, partridge and mallard. Released game is included in yearly assessments of harvest statistics.

Harvest reporting is voluntary for all game species except those that are hunted with a license or as part of a government-approved plan. Such species, mainly moose, red deer and large carnivores must be reported to the county administrative board. SAHWM has, since 1938, a government assignment to estimate the yearly harvest for all game species subject to voluntary reporting. For this, Sweden is divided into about 300 Hunting Management Precincts (HMP). Hunting teams report their total harvest, the size of their hunting ground and what HMP they belong to. For each species, harvest per unit area is calculated and extrapolated to the total area of the HMP. Estimated harvest is then summed up for county and nationally. In addition to harvest numbers, hunting teams can also report biological data (e.g., sex, weight) for ungulates and moose observations (an observational abundance index for moose, red deer and large carnivores). Most hunting teams report online, directly into the SAHWM owned database Viltdata, but reports on paper are also accepted. In 2019 a mobile application was launched to facilitate reporting, as a way of improving data quality and increase the proportion of reporting teams.

Summarised biological data and moose observations becomes publicly available immediately upon registration, whereas estimated harvest becomes available upon estimation, usually about three months after the closure of the hunting season. Data are published at local, regional and national scale.

The system for voluntary harvest data is financed by the yearly game management fee that all hunters pay. The money is placed in a fund (The Wildlife Management Fund), and each year the government allocates a part of this fund to SAHWM for specific tasks, including the collection of harvest data and management of hunting statistics.

The system is considered effective. Data are regarded as reliable because the reporting is voluntary. With mandatory reporting there is a perceived risk of erroneous reporting from unmotivated hunters. In addition, if mandatory reporting to a state agency was implemented, the individual reports would

become public information according to the Swedish legal system, and there is a risk that that this would lead to erroneous reporting if hunters perceives their harvest as sensitive information. That data is available at local, regional and national scale is also considered an important advantage for management purposes.

Ongoing development includes a new method for harvest estimation, building on Bayesian inference. Compared with the present system, this new method is less sensitive to low reporting rates and outliers in the harvest data.



## **APPENDIX 1**

### **QUESTIONS**

#### **GENERAL CONDITIONS FOR HUNTING**

1. Approximate number of hunters in the country?
2. Which terms and conditions apply to hunting? E.g., shooting tests, registration?
3. Does the hunter need to be registered, is there a system/database for this?
4. Is there a geographic segmentation for hunters /hunting/hunting statistics? How is it done?
5. Which species can be hunted?
6. Which game species are felled in the greatest numbers?
7. Which are the most common reasons for hunting? F ex meat, trophy, management, prevention
8. Who has the right to hunt? E.g., all citizens, landowners
9. Is hunting allowed in the whole country or in parts? Which?

#### **HUNTING STATISTICS**

10. Is there an organization for the collection of harvest statistics?
11. Are the hunting statistics gathered in databases or using other systems?
12. For which game species is the harvest reported?
13. What is the main purpose of hunting statistics? F ex national "accounts", regional/local management, research, other
14. What does the system for harvest statistic cost, who pays?
15. Is it permitted to release game for hunting purposes, and which species?
16. Is released wild game included in the harvest statistics?
17. Is reporting voluntary or mandatory, or both?
18. Benefits and drawbacks with voluntary and mandatory reporting?
19. Is other data recorded for felled wild game, e.g., weight, sex, age?
20. Who reports harvesting, e.g., individual hunters, hunting teams, other?
21. How often is harvest reported?
22. How long does it take from reporting until data are accessible?
23. Is there a separate system for reporting of felled ringed birds?
24. Which overall benefits and drawbacks does the system have?
25. How accessible are harvest statistics? Published openly on the web site, written reports, other

#### **HUNTING TOURISM**

26. Is there hunting tourism, and how many hunters approximately take part yearly?
27. How is the wild game that is felled registered? Is it handled separately, or included in the regular harvest reporting?
28. Which game species are the most common/most popular among hunting tourists?

#### **WILDLIFE DISEASE**

29. Are there systems for surveying wildlife disease?
30. Who handles those systems?
31. What roll do the hunters play in the surveillance of wildlife disease?
32. Are there any government initiatives to survey or prevent wildlife disease?
33. Who handles testing for surveillance of wildlife disease?

## **PREVIOUS ISSUES OF VILTFORUM**

Viltforum's report series comes out with one or a few issues annually. All reports are available online as readable and downloadable PDF files at [www.jagareforbundet.se/vilt/viltforum](http://www.jagareforbundet.se/vilt/viltforum)

Viltforum is a series of reports from the Swedish Association for Hunting and Wildlife Management. The reports address particularly interesting issues or areas that are broadly related to hunting or game management-related questions. The content does not have to reflect the associations opinion or attitude.

Title: Survey of methods for harvest reporting of game species in Europe

Authors: Åhl Malin, Elmhagen Bodil, Bergqvist Göran

Url: [www.jagareforbundet.se/vilt/viltforum](http://www.jagareforbundet.se/vilt/viltforum)

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Survey of methods for harvest reporting of game species in Europe  
Viltforum 5/2020.

Summary: This report presents a survey of methods for reporting harvest of wild mammals and birds in 22 European countries. The survey was conducted in the autumn of 2019. Most countries (16 countries, 72 %) applied mandatory reporting for all game species permitted for hunting in these countries. The most common consequences of failure to report were a fine or refused permission for renewal of the license. Reporting is voluntary for all game species in three countries (Cyprus, Greece and the United Kingdom), while Finland, France and Sweden have both voluntary and mandatory reporting, depending on species, area and/or hunting method. Harvest data are normally publicly available within three to six months after the deadline for reporting, but in some countries, this may take more than a year. The systems in different countries vary greatly in construction, but all respondents claim to be content with their choice of system for reporting.

This report is also available in Swedish as Viltforum 3/2020.

Denna rapport finns också tillgänglig på svenska som Viltforum 3/2020.

Key words: reporting, harvest, mandatory, voluntary

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