Socio-economic aspects of gamebird hunting, hunting bags, and assessment of the status of gamebird populations in REGHAB countries

Part 1: Socio-economic and cultural aspects of gamebird hunting

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1- INTRODUCTION

This report is a result of the Concerted Action Reconciling Gamebird Hunting and Biodiversity (REGHAB, hereafter), within the V Framework Program of the European Union. We will address here the objectives of the first workpackage in that project, dealing with socio-economic, cultural and biological variation of gamebird hunting in Europe. On this report, we have centred the information on Galliforms, the main gamebird species in Europe, although some information will be provided for other groups of birds. Waterfowl are a highly peculiar group in many respects (habitat, hunting methods, spatial concentration, etc.), and they are relatively little important in terms of hunting bags, except in the case of Finland, and only marginal information has been included for this group.

1.1- Background

Hunting can be considered an activity culturally rooted in the human societies since pre-historical times that, originally, was probably very important for survival of human populations, and still may be so in old surviving primitive cultures thriving in remote areas. However, during the last two-three thousand years in the western world, after agriculture and cattle raising expanded, hunting has lost most of its original function as food source, but it still persists as an atavistic instinct that has proved to be difficult to be extirpated from human societies (Ortega y Gasset 1999). During most of old, middle and modern ages, in many European countries hunting was an activity often exclusive or mostly controlled by high-rank social groups, because it was soon perceived that as human populations expanded, and weapons improved, it was necessary to restrict hunting spatially or temporally, if huntable populations of game species had to be preserved in the long-term. Thus, dominant social classes made of hunting a privilege often inaccessible to the common people, and hunting was often more or less restricted during breeding seasons of game species, trying to allow recovery of game populations after hunting seasons. As could be expected, common people were not happy with this situation, and poaching became a commonplace in
many European areas. In fact, it has been suggested that the desire by common people to abolish those hunting privileges was one of the triggering elements of French revolution in the XVIII century (Ortega y Gasset 1999). At this point we may find the first important difference between countries involved in REGHAB. In Scandinavia and Fennoscandia, hunting has never been a privilege of rich and noble people, but it has always been a hobby, which is available and open for all social classes (Juha-Pekka Ripatti, pers. comm.), and this can be considered the historical root of the large differences between Finland and other REGHAB countries that will be commented below.

During the last two centuries, with the progressive advent of current social models, disappearance of old privileges of kings and nobles, changes in political systems, and establishment of current legal frameworks, hunting has become, at least partially, an activity more open to the general public (Kauski 1974). Paradoxically, this may have caused increasing problems for the sustainability of huntable populations. The case of Portugal may be considered as a paradigm in this respect. The political change occurred in Portugal during the 70s (“revolución de los claveles) induced an almost complete disappearance of old privileges on hunting lands, and the general public acquired free access to game populations. This probably caused large declines in populations of gamebird species, but also probably of predators. The system has changed recently in Portugal, and now hunting lands privately managed (“cotos”) are proving to be a much better alternative to promote conservation of, at least, game species (Borrahlo et al. 1997, A. Cavaco, pers. comm..).

Finally, in the last century, the increasing importance of nature conservation movements has highlighted the conflict between hunting and conservation reflected at many levels, one of them, the conflict between gamebird hunting and conservation of biodiversity, being the central subject of REGHAB. During the last decades there has been an increasing number of people wondering why hunting should be still allowed, given that it has no survival function anymore and it may cause problems for the conservation of some species. Of course, hunters and other people with more neutral
feelings, do not agree with that view, and their answer to that extreme criticism is often centred in two arguments: first, that hunting promotes the conservation of habitats and thus may have benefits for overall biodiversity (the subject of workpackage 2 in this concerted action; see e.g. Suggett 1999, Tapper 1999, Otero 2000); second, that hunting is an activity economically, culturally and socially important in the current European societies, involving many people and providing significant economic inputs to the rural world, and that should thus be respected by the overall population. We try to analyse here this socio-economic side of gamebird hunting in REGHAB countries, as well as evaluating the effect of hunting on gamebird populations, and the conservation problems of these species.

1.2- Aims

To synthesise overall patterns of gamebird hunting throughout Europe, such as which species are hunted, what is the approximate hunting bag in each country, how do hunting seasons vary, or how many birds (and which species) are released for hunting.

To synthesise information about whether gamebird populations are sustainable, according to species, geographical area, and hunting procedures (public versus private lands, degree of predator control, hunting pressure, hunting seasons). What are the main habitat requirements of each of the species? (restricted to managed areas or occupying alternative sub-optimal habitats such as agricultural land?) What are the factors affecting gamebird productivity? What are the observed population trends?

To evaluate variations in the social and economic value of gamebird hunting. What proportion of total human population hunts? What is the proportion of hunting on private versus public land (in terms of people involved)? How much money is produced in a general hunting area (private land and general land separately)? What is the economic input needed to maintain gamebird populations: compare wild shot birds (e.g. grouse spp) and released birds (e.g. pheasants)?
We summarise here the information gathered from collaborators in the five countries included in the project (Finland, France, Portugal, Spain, and United Kingdom). The work will be centred on the main group of birds hunted in Europe, the Galliforms, but some information will be provided about other species. To organize that information, we have divided this report in the following sections:

**Part 1: Socio-economic and cultural aspects of gamebird hunting.**

2- **General framework.** Introduction and framing of gamebird hunting in REGHAB countries.

3- **Sociological aspects.** We present a brief profile of the typical hunter on each REGHAB country, and the recent sociological evolution of this sector.

4- **Hunting bags.** A summary of data available on gamebird hunting bags in REGHAB countries.

5- **Economical aspects.** We summarize the information gathered about the economical inputs and outputs generated by the activity.

6- **Conclusions and future research.** A synthesis of the information presented in previous sections, and an evaluation of the main information gaps that should be covered by future research.

7- **References**

**Part 2: Gamebird species profiles.**

A synthesis of the current knowledge about ecological requirements, population trends, sustainability of hunting practices, number of birds released of each species, etc.
2- GENERAL FRAMEWORK

2.1- Hunting pressure

In REGHAB countries there is an estimated population of 4033957 hunters as a whole (not specifically gamebird hunters). We have been unable to obtain accurate information about the precise number of gamebird hunters, because no detailed statistics by game species have been found, because many hunters in fact do not specialize on gamebirds, and because for most countries no accurate information has been detected about hunter’s preferences on game species.

France and Spain hold a major percentage of that overall number of hunters (2.778.422 hunters, 68.9 %), followed by UK, Finland and Portugal. To better understand these data, it is necessary to adjust that crude number by overall population and/or by land surface of each country. Thus, in REGHAB countries there is an average of 2.37 hunters/Km² (Table 1), and the only country below that mean value is Finland, that holds a relatively low human population density (Table 1). These are probably underestimates of the real hunting pressure, because hunting is not performed in the whole surface of countries, and thus this value indicates that in most REGHAB countries, human hunting pressure is significant and that hunting is an activity really involving a significant number of people. However, the percentage of overall population that is involved in hunting is really low, in all cases less than 6 %. Finland is an especial case among REGHAB countries: this country holds a relatively large percentage of people practicing hunting, but due to the relatively large area of the country, and the overall low population density, hunting pressure (expressed as hunters/Km²) seems to be much lower than in other countries. Maximum hunting pressure seems to occur in the UK, which is probably related to the relatively high human population density, because,

1 We have estimated this figure from the number of hunting licences issued by the governmental agencies in each country, and thus, it could be that the real number of hunters could be higher if we assume that some people may hunt illegally.
on the other hand, UK is the country with the lowest percentage of people practicing hunting.

It is important to remark that data analysed up to this point do not take into account the movement of hunters between countries. Hunting tourism is an expanding activity in some countries, and, for example, many areas of Spain during the last decades receive annually an important number of foreign hunters, mainly from the European Union, particularly Italian and French, followed by other Europeans and by USA citizens (Junta de Castilla y León 2000). It must be remarked that this hunting tourism is mainly directed to private hunting lands, as it happens in some private hunting areas in UK. Unfortunately, information found or received about this aspect has been scarce. In Spain the number of foreign hunters visiting yearly the country is estimated as less than 25,000, most of them to practice small game hunting, particularly red-legged partridge hunting, during an average of 5.2 days (Junta de Castilla y León 2000). However, this number may be an underestimate, because this is a growing activity, and Spanish statistics on this respect are usually considered not highly reliable.

<table>
<thead>
<tr>
<th>Area (Km$^2$)</th>
<th>France</th>
<th>Portugal</th>
<th>Spain</th>
<th>Finland</th>
<th>UK</th>
<th>REGHAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>551500</td>
<td>91982</td>
<td>505992</td>
<td>338145</td>
<td>242900</td>
<td>1730519</td>
</tr>
<tr>
<td>Population density (No. people/Km$^2$)</td>
<td>58847000</td>
<td>9957000</td>
<td>39317000</td>
<td>5153000</td>
<td>58649000</td>
<td>171977000</td>
</tr>
<tr>
<td>No. of Hunters</td>
<td>107.16</td>
<td>108.60</td>
<td>77.90</td>
<td>15.27</td>
<td>243.87</td>
<td>117.62</td>
</tr>
<tr>
<td>% REGHAB total</td>
<td>1479562</td>
<td>260000</td>
<td>1298860</td>
<td>290951</td>
<td>704584</td>
<td>4033957</td>
</tr>
<tr>
<td>% of Hunters within overall population</td>
<td>36.69</td>
<td>6.45</td>
<td>32.21</td>
<td>7.17</td>
<td>17.47</td>
<td>100</td>
</tr>
<tr>
<td>No. of Hunters/Km$^2$</td>
<td>2.68</td>
<td>2.83</td>
<td>2.57</td>
<td>0.86</td>
<td>2.90</td>
<td>2.37*</td>
</tr>
<tr>
<td>No. of hunting days/year</td>
<td>179</td>
<td>?</td>
<td>162</td>
<td>214</td>
<td>173</td>
<td>182*</td>
</tr>
</tbody>
</table>

Table 1. Basic descriptive data of hunting pressure in REGHAB countries during the 90s, including the number of hunters relative to land area of each country. The number of hunting days is the one corresponding to that species with a longest hunting season (*) Indicates average values for all countries.

Hunting pressure, as usual since older times, is not regularly distributed along the year, but hunting is usually stopped during the breeding season. However, some differences
have also been found between countries. The opening date of gamebird hunting season varies between 1 June (for male eider) and 10 September in Finland (for Galliforms), while the closing date varies between 31 March in Finland and 10 February in France. Most common hunting seasons in all countries are open during October and closed in February-March. This variation induce significant differences in the number of hunting days per year (Table 1), from Finland, with the longest hunting season (214 days for male eiders) to Spain with the shortest (162 days). Opening and closure dates for hunting depend upon species and latitude, because of the time of the migration or breeding period of the species in each species or country.

2.2- Hunted species

There are also large differences between countries with respect to the number of huntable species, with a maximum of 56 in France to 26 in Finland. The number obtained for Portugal is not accurate because data about “other waterbirds” are missing (see Fig. 1).

![Figure 1. Number of huntable gamebird species in each country. Asterisks (*) indicate missing data for the category “other waterbirds”.

The lower number of huntable species in northern Europe could be partially due to ecological reasons, because there is a higher diversity of species breeding in southern countries, in this case increased by the large number of species migrating to the south out of breeding season, and thus there is a higher number of species present in southern countries during hunting season. However, this factor cannot explain the large
differences in the number of huntable species between, for example, France and Spain. In fact, this is associated with an already long-lasting conflict between northern countries protecting their breeding species, and southern countries making the harvest. The information compiled about each species, and discussions during the workshops indicates that this is a conflict still far from solved. For example, during the first workshop of this project held in Ciudad Real on September 2001, Finnish participants remarked that hunting of migratory species outside Fennoscandia is viewed as a problem, particularly for Ortolan Bunting (*Emberiza hortulana*) and waterfowl. Similarly, there is increasing concern about the cases of other migratory species such as doves, thrushes, or quails (see “gamebird species profiles” below). However, it must be recognised that in some cases, bird species breeding in the north, and considered as non-problematic garden birds, are game species that become agricultural plagues in southern countries due to concentrations of huge numbers in restricted areas, such as the common starling in Spanish agricultural areas (*Sturnus vulgaris*). A critical example may be that of the Little bustard (*Tetrax tetrax*), a declining species that concentrates during late summer and winter in restricted areas of southern Spain, where farmers claim they cause damages to cultivations, and where, given the high numbers found in winter, the species was traditionally hunted, and still restricted especial shooting permits have been conceded on recent years (despite the protected status of the species) where they cause problems to farmers (Blanco et al. 2001).

It is somehow surprising to find such big differences between EU countries with respect to the number of huntable species. Probably, national regulations such as those about huntable species or hunting seasons should be framed within an international legislation, particularly for migratory species such as those mentioned above. When conservation of northern species implies economical costs for rural environments of southern countries, it should be considered some kind of international compensation schemes to compensate for those damages.
2.3- Trends in numbers of hunters

The number of hunters in recent years has followed similar trends in the three REGHAB countries for which data could be found (Finland, France and Spain). The number of hunters slightly increased up to the 80s, when it started to stabilize or even decreased, as in the case of France (ONCFS-UNFDC, 2000; Fig. 2). More precisely, in France, the number of hunters validating their licence increased until 1975/76. In 1976, the exam to deliver a hunting licence was imposed (a similar exam testing the knowledge of hunters about wildlife, hunting laws, security norms, etc. has been implemented in Spain too). Since 1977-78, the number of hunters validating their licence has been decreasing regularly by –1.8% / year (mean value over 1977-78 / 1999-00; ONCFS, 2001a).

Figure 2.- Evolution in the number of registered hunters in three REGHAB countries.
This decline or stabilization could be due to several factors that have been analysed in detail for the French case. The causes put forward to explain this decline are that retired hunters are not replaced (in Havet, 1996) because of 2 phenomena (Vastel, 199?): on the one hand, urban life has produced a mental aloofness from hunting and, on the other hand, one must follow an initiatory process (permit, handling of arms) which discourages young people for whom hunting is a recreational activity rather than a passion. Other possible reasons are the decline in small game species (ONCFS-UNFDC, 2000), less freedom to hunt as one pleases (dates, modes of hunting), the difficulties to find a hunting territory (see Havet, 1996; Vastel, 199?, ONCFS-UNFDC, 2000), and the increasing expenses of hunting (Pinet, 1995; Vastel, 199?). Data from Spain are less accurate, because since 1989 Spanish hunters do not obtain a national hunting license, but they must obtain a license for each Autonomous Community (Regional Governments) where they want to hunt. Thus, in Spain the number of hunters probably increased regularly from 1961 to 1985, and since the late 80s the number of hunters is probably slightly declining (Delibes et al. 1995).

Probably, this stabilization or decline in the number of hunters could also be partially explained by the development of the nature conservation movements in Europe and their associated ideas (mainly against killing of animals). This fact again suggests that hunters may be a retreating social group, and that this activity may be losing social support, and consequently, in order to maintain hunting in the long term, it may be inevitable to obtain the support of a major social force claiming for respect to nature conservation principles. In this sense, the achievement of solutions to the conflicts between hunting and biodiversity conservation is as important for hunters as for conservationists. The extinction or decline of emblematic predatory species that may be associated to hunting activities may result in increasing opposition to hunting by overall society, and this may induce additional restrictions to hunting activities in the future (Viñuela et al. 1999).
7- SOCIOLOGICAL ASPECTS OF HUNTING IN EUROPE

3.1- Sociological profile of REGHAB hunters

We have found reasonably accurate information about the sociological profiles of European hunters, but, as pointed out in the previous section, it has been impossible to obtain specific information about gamebird hunters, for similar reasons. Thus, the information detailed below should be considered as referred to hunters as a whole, not as specific for gamebird hunters.

Hunting in Europe is a basically masculine activity, as the percentage of men among hunters was higher than 89.5 % in all the countries considered (Table 2). The smallest bias to males was found for UK, and the largest for Spain and Portugal, where more than 99 % of hunters are men (Table 2).


<table>
<thead>
<tr>
<th></th>
<th>France</th>
<th>Portugal</th>
<th>Spain</th>
<th>Finland</th>
<th>UK</th>
<th>REGHAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Men</td>
<td>98.3</td>
<td>99</td>
<td>99</td>
<td>95.9</td>
<td>89.5</td>
<td>96.3</td>
</tr>
<tr>
<td>Age distribution</td>
<td>55</td>
<td>44.1</td>
<td>42.2</td>
<td>41</td>
<td>45.5</td>
<td>44.9</td>
</tr>
</tbody>
</table>

The average European hunter is a middle-age man, as the average age of hunters found in REGHAB countries was 44.9 years (Table 2). For example, in Portugal, 71 % of hunters are between 31 and 50 years old. Similarly, 62.5 % of Spanish hunters are between 25 and 50 years old, and 24.7 % of hunters are older than 50 years (González Arenas, J. 2000; C.E.A. 1994; López Ontiveros, 1981, 1986; López Ontiveros and Valle Buenestado 1989). Finnish hunters seem to be slightly younger than in the rest of the countries (average age of 41 years) and this may be related to the relatively large
percentage of hunters within the overall population of that country. The oldest population of hunters was found in France (average age of 55 years). Furthermore, in the only country for which this kind of data were obtained, the population of hunters is becoming older in recent decades, as the average age of French hunters has increased from 43.7 in 1986 to 55 in 1999, and this fact could be related to the decrease in the number of hunters detected in that country.

The development of hunting activities arise mainly due to family tradition (average of 69.7% for all countries), particularly in France (78 %) and Spain (78 %) (Table 3). The only exception seems to be UK, where, although family tradition is also important, the influence of friends is more important (Table 3).

<table>
<thead>
<tr>
<th>Onset of hunting</th>
<th>France</th>
<th>Portugal</th>
<th>Spain</th>
<th>Finland</th>
<th>UK</th>
<th>REGHAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>Family</td>
<td>?</td>
<td>Family</td>
<td>Family</td>
<td>Friends</td>
<td>Family</td>
</tr>
<tr>
<td>(78%)</td>
<td>(75%)</td>
<td></td>
<td>(56.9%)</td>
<td>(51%)</td>
<td>(69.7%)</td>
<td></td>
</tr>
<tr>
<td>(30%)</td>
<td>(35%)</td>
<td>(45%)</td>
<td>(36%)</td>
<td>(31%)</td>
<td>and tertiary</td>
<td></td>
</tr>
<tr>
<td>% of rural origin</td>
<td>50%</td>
<td>?</td>
<td>27</td>
<td>90%</td>
<td>43%</td>
<td>46%</td>
</tr>
</tbody>
</table>


A piece of information particularly relevant to understand the economic inputs generated by hunting, as discussed below, is the social status of people practicing hunting. Unfortunately, the heterogeneity and quality of information found precludes a detailed analysis of professional dedication, except data provide for France by ONC. In 1998-99, French hunters were mainly workers and inactive people, but “farmer” was the professional category with the highest proportion of hunters (ONCFS-UNFD, 2000) (Table 4). Similar data and conclusions were reported by Pinet (1993).
For other REGHAB countries, only a general picture of social origin may be provided, distinguishing between primary sector (production of raw material, e.g. farming and forestry), secondary sector (treatment of raw material, e.g. industry), and tertiary sector (public services sector) (Table 3).

<table>
<thead>
<tr>
<th>Professional status</th>
<th>% of hunters in the French population according to their professional status</th>
<th>% of the professional status in the hunter population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers</td>
<td>26.1%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Employers</td>
<td>8.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Senior executive managers</td>
<td>4.6%</td>
<td>6.2%</td>
</tr>
<tr>
<td>Executive managers</td>
<td>6.9%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Employees</td>
<td>5.2%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Workers</td>
<td>6%</td>
<td>26.1%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>5.2%</td>
<td>29.1%</td>
</tr>
</tbody>
</table>

Table 4. Professional dedication of French hunters. Data from ONCFS-UNFDLC, 2000

It is remarkable the small percentage of hunters working on the primary sector, while most REGHAB hunters seem to be workers at the secondary or tertiary sectors. Pinet (1997) considered in his study of socio-economics of hunting in Europe twelve European countries (including three REGHAB countries, Spain, France and UK), and, on average, only 10 % of hunters were workers at the primary sector, while 31 % of hunters were workers at the secondary sector, and 49 % workers at the tertiary sector. Thus, it seems that hunting is currently an activity little connected with rural workers. This fact is particularly marked in France, where the main professional activities of hunters are included in the public services sector (45 %), followed by the secondary sector (27%) (Pinet, 1997). However, at least in the case of France this is probably a consequence of the relatively low overall number of people currently working on the primary sector, because, as detailed above, farming was the professional activity including a larger percentage of hunters. Likewise, in Spain, only 25-35 % of the landowners of game estates are people related with the primary sector (González Arenas, 2000; López Ontiveros and Valle Buenestado, 1989). Perhaps this fact may be related with the increasing economical costs of hunting in Europe (see below).
This social origin contrasts with the spatial distribution of hunters, because in most countries, rural hunters are a significant part of the collective, with the possible exception of Spain, where 75% of hunters are of urban origin (Table 3). This apparent contradiction may be explained from two points of view. First, there could be a problem of definition of “urban” and “rural” hunters, due to the general difficulty of distinguishing between both sectors, that may be defined following different qualitative or functional criteria (Corrales, 1993), and that, additionally, not necessarily have been unified in the studies revised. This fact, along with recent transformation in rural social environments, that precludes an assimilation of the primary sector with the rural environment (or secondary/tertiary sectors with urban societies), may be introducing confounding factors in the information. Furthermore, in the only study found summarizing socio-economic information of hunting in Europe (Pinet, 1997), it was estimated that as whole, urban hunters are more common in Europe (42%).

Nevertheless, it is important to remark that, at least in some countries such as Spain and France, there are still important numbers of rural hunters, with relatively low purchasing power, practicing hunting through local hunting societies, often on communal lands, and usually by traditional hunting methods instead of practising hunting methods where massive numbers of birds are killed (such as driven shooting maintained by releases) (Cuenca, J. 1996; De Grandes, L. 1994; López Ontiveros 1981, 1986). This kind of hunter has been masterly portrayed, within the context of modest rural Spanish environments by Miguel Delibes (1963; 1977; 1979; 1988).

On the other hand, although hunting privileges have largely disappeared in Europe, it must be recognised that at least in some countries, hunting is still clearly related to high social classes, only sometimes in the classic social sense of noble’s or king’s large tracts of land aimed to hunting, currently more often in the sense of wealth. For instance, in Spain, during XIX and XX centuries, those high-class game estates, some of them probably among the largest private lands in Europe, have been sold out mainly to rich people, in some cases with clear political influence, and hunting is still considered as a social mark of wealth and of a given social status (Pérez Henares 1994).
3.2- Perception of hunting by the French society

To understand what is at stake in the debate about hunting, IFEN (IFEN, 1998) and SOFREMCA (Vastel, 1997) recently carried out two surveys in France among a sample of more than one thousand people who were representative of the population. There was a marked difference between the results obtained by these two surveys.

The survey by IFEN emphasizes that the people who are in favour of hunting (typical profile: man, rather old, modest income) represent 39% of the population and that this percentage has increased over the last 20 years. However, the proportion of people who had an unfavourable opinion of hunting (typical profile: woman, young, from the Paris region) was higher (50%), and this percentage has been stable for 20 years. Hunting refusal is related to moral reasons (defence of life, love of animals) rather than ecological ones. Even so, hunting is perceived as an activity which endangers protected wild species (and the other users of nature) while its role in the control of animal populations, and management of the countryside, is more or less well perceived. Although it has been recognized that hunting has a traditional dimension, its role as an element of the regional identity is not perceived more than it is in economic development.

In contrast, the conclusions of the SOFREMCA survey emphasize first of all the existence of a gap between the intensity of the public debate and the level of awareness of the French, i.e. hunting is not perceived by the wide public as an actual society conflict. This opinion is characterized by a kind of neutrality (explained by the degree of penetration of hunting in the society – AFIT, 1997; IFEN, 1998) or indifference towards hunting. Hunting is perceived as obsolete because of its practices (exclusive passion, male chauvinism…) which have not followed the socio-cultural changes, but also modern because of its values (authenticity, social interaction, balanced lifestyle through a legitimised activity ensuring a good management of nature…). Its social
utility is recognized through its role in species population control, management of rural landscapes and as an economy's driving force. Also, hunting is perceived as an integral part of the cultural patrimony.

These contrasting results highlight that, in order to solve this kind of conflicts, more sociological studies of this type have to be carried out, in order to detect clearly what the position of the society is in relation to these issues.

4- GENERAL PATTERNS IN GAMEBIRDS HUNTING BAGS

Gamebirds are the most important game species in Europe, as more than 80% of the whole game hunting bags in most REGHAB countries are included within this category (Fig. 3; see also Aebischer 1997), even although there are some mammalian species traditionally important as game species in many countries (such as hares all over Europe or rabbits in the Mediterranean area). In fact, in Spain, given the importance of some mammalian prey (mainly rabbit and hare) gamebirds are relatively not so important (Fig. 3).

Galliforms and Passeriforms (mainly thrushes) comprise 74% of the gamebirds hunted. Within Galliforms, the most important species are the Common quail (33.6%), the Red-legged partridge (32.8%) and the Common pheasant (28.0%), representing 94.4% of all Galliforms, while thrushes are about 98% of the overall number of Passeriforms (Fig. 5).
Figure 3. Relative importance of gamebirds hunting bags as compared to mammalian small game species hunting bags in some REGHAB countries.

Figure 4. Relative importance of different groups of birds within overall gamebird hunting bags. Data from all REGHAB countries pooled.
Information about hunting bags has been extracted from official national statistics. In some cases these statistics may be considered as reliable, such as those provided for Finland, France and UK, which are traditionally supervised by the Finnish Game and Fisheries Research Institute, the Game Conservancy Trust, and the Office Nationale de la Chasse, respectively. However, there is general consensus about the low quality and reliability of Spanish game statistics, and thus, the figures for this country must be considered as tentative. In Spain, the Regional Governmental Agencies are responsible for elaborating game statistics, but there is general agreement in that the methods used, and especially the assessment of the validity of data obtained, are of low quality. In fact, most of the official statistics in Spain pool all birds hunted in just three categories (red-legged partridge, quail and other birds). As an example of the low reliability of those official statistics, in the Balearic Islands a team of technicians directed by J. Mayol elaborated an independent estimate of hunting bags, by personal inquiries in game estates, and the numbers obtained were very different from official figures (Table 5). It is important to note that, with the exception of red-legged partridges, official figures clearly underestimated the number of birds hunted.
<table>
<thead>
<tr>
<th>Species</th>
<th>Results from independent estimates by technicians</th>
<th>Official results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MALLORCA</td>
<td>MENORCA</td>
</tr>
<tr>
<td>Red-legged partridge</td>
<td>58.000</td>
<td>7.000</td>
</tr>
<tr>
<td>Wood pigeon</td>
<td>32.000</td>
<td>2.000</td>
</tr>
<tr>
<td>Turtle dove</td>
<td>11.000</td>
<td>-</td>
</tr>
<tr>
<td>Common quail</td>
<td>9.000</td>
<td>-</td>
</tr>
<tr>
<td>Thrushes (shot)</td>
<td>253.000</td>
<td>27.000</td>
</tr>
<tr>
<td>Thrushes (trapped)</td>
<td>537.247</td>
<td>157.000</td>
</tr>
</tbody>
</table>

Table 5. Yearly estimates of hunting bags obtained by independent technicians and official hunting bags statistics. Official hunting bags pool all captures in three categories (J. Mayol, pers. comm.)

Considering those official statistics, in REGHAB countries an estimated number of 76,266,440 birds are hunted every year. This is a minimum estimate, because quantitative data could not be obtained for some species in all countries, particularly those included in the categories “other birds” and “other waterfowl” (excluding Mallard; see Figs. 5 and 6). Gamebird hunting bags from France and UK alone comprise 65% of the overall hunting bags in REGHAB countries (Fig. 6). We found strong differences between countries in the hunting pressure, estimated as hunting bags per Km² (Fig. 6). These estimates must be taken with caution, as in most countries, with the exception of Finland, gamebird releases are common (see “Species profiles”), and thus the number of birds killed is more a reflect of the number of birds released that of wild birds killed. In any case, and keeping that caution in mind, Portugal seemed to have the highest hunting pressure (123.4 killed birds/Km²), while Finland had the lowest (3 killed birds/Km²), with an average for all REGHAB countries of 44.1 killed birds/Km². These results agree with hunting pressure estimated as number of hunters/Km², since Portugal had one of the highest values (only slightly lower than UK), and Finland the lowest. It is interesting to note that in France the numbers of birds killed per area unit is relatively low (Fig. 6), although the number of hunters/Km² is similar to that of Portugal. The same seems to happen in Spain, although in this case, uncertainties about reliability of information on hunting bags preclude reaching a definitive conclusion.
An inspection of differences in hunting bags between countries suggests that in Finland, UK and Portugal gamebird hunting is concentrated, respectively, in waterfowl, Galliforms, and thrushes (Fig. 7). It is clear, for example, that the Portuguese hunters show a clear preference for hunting thrushes (Reis Cipriano 1999). Most of species hunted in UK are pheasants and pigeons (Fig. 7). In most countries Galliforms are the main gamebird species, except in Finland, where waterfowl are more than 50% of hunting bags, and Portugal, where the number of thrushes hunted seems to be larger than that of Galliforms. Gamebird hunting in France and Spain seems to be more diversified among the different groups (Fig. 7), although Galliforms are still the most important group.

Given that in most regional hunting statistics in Spain data are pooled in three categories (see above), to include Spain in Fig. 7 we have considered data provided by the Spanish Hunting Federation (FEC), and obtained from about 4,000 questionnaires distributed among federated members (“Cazdata”; Angel Gracia, pers. comm.).

Figure 6. Number of gamebirds hunted yearly in REGHAB countries, and percentages for each country. The line shows an estimate of hunting pressure (number of birds killed/Km2).
Although these data are not probably much more reliable than official statistics, they are the only available to estimate the relative importance of each gamebird species.

Figure 7. Relative importance of each bird group within overall gamebird hunting bags.

Figure 8 shows the geographical variation in hunting per species. There is a marked variation in the relative importance of each gamebird species for different countries. There are some gamebird species hunted almost exclusively in only one of the considered countries (e.g. Red Grouse in UK or Garganey and Goldeneye in Finland). In contrast, no single species is the most important in more than one country, although thrushes, red-legged partridges and wood pigeons are important game species in several countries. Thus, every country has a variable number of species that are particularly selected, but these species rarely are included among the most important five species in other countries. In this respect, the main gamebird species in Spain are the red-legged partridge, the thrushes, the Common quail, the Turtledove and the Wood pigeon. In UK the standing out species are the Red grouse and especially the Pheasant, in Finland the Garganey, the Black grouse and the Goldeneye and in France the Mallard.
Thrushes were originally hunted in southern Spain, mediterranean coast and Balearic Islands by traditional trapping methods (“filats”, “liga”), because large flocks use to gather in specific habitats such as olive trees extensive exploitations. More recently, probably due to the decline in numbers of other small game (mainly rabbit and red-legged partridge), the hunting of thrushes by shooting has clearly increased, and some experts are worried about the future sustainability of thrush hunting at the levels shown today in Spain (see “gamebird species profiles” below).

**Figure 8.** Differences between countries in the importance of each gamebird species. The main four species for each country, in terms of hunting bags, are represented as cumulative percentages adjusted to 100 %. The categories “Other birds” and “Other waterfowls” have not been considered, due to differences between countries in the species included.
5- ECONOMICAL ASSESSMENT OF GAMEBIRD HUNTING IN REGHAB COUNTRIES

5.1- Variation of hunting economics in Europe

The economic assessment of an activity based on the use of a wildlife resource is extremely complex, if what is intended is to consider every aspect related with the ecological network in which that resource is included. Additionally, hunting is an activity associated to a large variety of economic sectors, and this makes difficult to estimate accurately the economic movements generated by the activity. Furthermore, some intrinsic traits of the activity (e.g. in some cases there may be large variation in prices paid to access hunting due to personal deals), and the legal framework highly variable between countries, or even regions within the country, such as the case of Spain (Sánchez Gascón 1998), also precludes giving accurate estimates of economic movements generated by hunting. For example, in Spain, it is often asserted that a good deal of the money involved in hunting can not be assessed because there are no official data to keep track on it. In other words, hunting in Spain is often associated to black economy that, obviously, is difficult to quantify. Finland is again peculiar, in the sense that every hunted bird is "free", that is, the hunter does not have to pay for it to anybody.

Other problems encountered while making this assessment have been the different methodologies used, and objectives pursued, in each available study, as well as the problems to accurately estimate hunting bags in some countries (see above). As in previous sections, even more difficult has been trying to obtain specific information about gamebird hunting, and most studies or information found refer to hunting as a whole.
For the reasons outlined above, it is often pointed out that the accurate assessment of hunting economics is a quite complicated task (e.g. Bernabeu 2000). The information presented below is referred to the estimated economic inputs generated by hunting, but not to the intrinsic value of gamebirds; the latter is much more complex to quantify, and modern models of environmental and ecological economic science should be used for that purpose (e.g. Azqueta, 1996; Naredo, 1994; Naredo, 1996; Martínez Alier and O’Connor, 1997). This task falls beyond the scope of this report, and also far from the expertise of the team involved on it. Thus, we will try to give only a general picture of the relative economic importance of gamebird hunting in REGHAB countries, and an overview of published information about this subject.

Taking into account the reservations pointed out previously, and from the compiled information available, we estimate that the money generated by hunting in REGHAB countries is about 5 thousand million € (Fig. 9). This estimation indicates that, from the economic point of view, hunting may be particularly important in France and UK (about 71 % of that economic movement corresponds to these two countries), followed by Spain, while the economic value of hunting in Portugal and Finland seems to be much lower.
In the case of Spain, it is important to point out that the information considered for this estimation (Metra-Seis 1985) is probably out of date, and consequently may be an underestimate of the real current economic value of hunting in Spain. However, this is the only study, to our knowledge, dealing with hunting economics for all the country, and that may be compared to the information obtained from other countries. The current economic movement generated by hunting in Spain has been recently estimated by a recognised expert (Sáenz de Buruaga 2002) as something between three and four thousand million €. In this case, the economic importance of hunting in Spain would be even higher than in France (where economic movement generated by hunting was estimated to be less than two thousand million € by the early 90s). Given this poor state of knowledge, the Spanish Parliament has commissioned a study of economics of hunting (Sáenz de Buruaga 2002), but unfortunately, data are still not available.

![Figure 10. Estimated average expenses per hunter and year in REGHAB countries. After Pinet (1993, France), Fontoura (1996, Portugal), Metra-Seis (1985, Spain), Annual Game bag (Finland, 2001), and Cobham Resource Consultant (1997, UK).](image)

This estimation indicates that the REGHAB hunter would spend yearly an average of about 1222 € in practicing hunting. As for other aspects previously analysed, there were large differences between countries with respect to the expenses faced by hunters
to perform this activity. At one extreme would be again Finland, where hunting seems to be a relatively cheap activity (average yearly expenses per hunter of 203 €). At the other extreme would be UK, where the hunter would spend 10 times more money, about 2200 € /year (see Fig. 10).

With respect to how expenses are distributed among different socio-economic sectors, we have distinguished between:

- **Taxes.** Legal costs that hunters/game estates landowners must pay to Governmental, Regional or Local Agencies to practice hunting.

- **Equipment.** Purchases of material necessary to practice hunting (weaponry, ammunition, clothes, etc.)

![Figure 11. Distribution of expenses by hunters among different sectors (see text for definitions). Estimates from France, Spain and Portugal have been averaged.](image)

- **Hunting rights.** Direct costs of hunting performance, such as cost to access hunting lands, prices paid by each bird hunted, social quota of hunting societies, etc.
· Transport. Money spent on displacements to and from home and hunting lands. We have also included here maintenance costs (food and accommodation).

· Other expenses. Other varied expenses faced by hunters, such as dog purchasing, training, and maintenance, purchasing of game literature, etc.

We have been able to obtain detailed enough data to be considered in this kind of analysis for three REGHAB countries (Portugal, France and Spain). The major part of the expenses of hunters is devoted to the transport category (average of 29%; Fig. 11). This is coherent with an increasing urban origin and secondary/tertiary professional sector to which most REGHAB hunters belong, as explained above. Thus, hunting may induce an important economic movement in the transport, accommodation and catering industries of rural areas where hunting is performed, and this has been widely recognised at local or national levels (e.g. Pinet 1982; Bernabeu 2000; Junta de Castilla y León 2000). Thus, interestingly, hunting may be indirectly promoting a displacement of rural population from the primary sector to the secondary/tertiary sectors.

In contrast, taxes represent the smallest proportion of hunting expenses. It has been pointed out by Spanish experts that hunters and game estates landowners in Spain pay relatively small amounts of money for this activity, as compared to taxes charged to other activities (Fungesma 2001), and this seems to be the rule also for neighbouring countries. This fact opens a possible way of dealing with the conflicts between hunting and biodiversity, which has been often mentioned in the REGHAB workshops, and in other meetings and literature sources in Spain as well (Fungesma 2001): by increasing tax charges to those game estates landowners or managers (e.g. hunting societies) that are not involved in “good” management practices, and, conversely, by reducing charges to the ones that manage their hunting lands protecting overall biodiversity, the governments could find a way to promote good management practices, and restrict bad ones.
This distribution of expenses among different sectors also varies between countries (Fig. 12). In this sense, overall expenses of Portuguese hunters seems to be slightly larger than those of French hunters, and are only surpassed by UK hunters (see Fig. 10), while hunting in Spain seems to be much cheaper, only more expensive than in Finland (see also Fig. 10). The expenses in travel and subsistence of Portuguese hunters seems to be particularly high, while the most expensive hunting rights are those paid in Spain, where, conversely the expenses within the category “other” are very low (Fig. 12).

If we try to analyse the economics of hunting as a complete system, i.e. trying to assess where the input money comes from, and where it finally goes, information found is extremely insufficient. In this respect, the only state-based studies we have been able to find have been for Spain (Metra-seis 1985; see Table 6) and France (see below). Albeit the heterogeneity of the methodologies and objectives used in those two studies and in other studies revised (Bernabéu 2000; Cano Carrillo and Pulido García 1991; Ayala 1985; Otero 1990; APROCA 1998; Diputación Provincial de Toledo 1971; Alvarado Corrales 1991; C. E. A. 1994; González Arenas 2000; Elorrieta and Castellano 1999), it seems that capital input in the Spanish hunting world comes mainly...
from hunting rights (supporting information presented above). This input capital goes mainly to the primary sector, with smaller amounts to the secondary and tertiary sectors, again supporting information provided above. However, little is known about the details of where exactly that input money to the primary sector goes, although it seems that a significant part is reinvested in farming.

<table>
<thead>
<tr>
<th>INPUTS TO THE HUNTING ECONOMIC SYSTEM</th>
<th>OUTPUTS TO PRODUCTIVE SECTORS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat sale.</td>
<td>Primary sector (farming):</td>
</tr>
<tr>
<td>139.975.605 (14.3%)</td>
<td>landowners and/or hunting</td>
</tr>
<tr>
<td></td>
<td>rights owners.</td>
</tr>
<tr>
<td>Access to hunting lands.</td>
<td>Secondary sector (industry):</td>
</tr>
<tr>
<td>792.868.811 (81%)</td>
<td>weaponry, clothes, etc..</td>
</tr>
<tr>
<td>Taxes and other expenses related</td>
<td>Tertiary sector (public services):</td>
</tr>
<tr>
<td>with hunting activity.</td>
<td>food&amp;accomodation, insurances,</td>
</tr>
<tr>
<td>46.005.968 (4.7%)</td>
<td>licences, etc.</td>
</tr>
<tr>
<td></td>
<td>3.357.456.821 (34.3%)</td>
</tr>
</tbody>
</table>


The total amount of money generated by hunting in Spain was thus estimated to be 978.850.384 € (Metra-Seis 1985). About 88% of this amount would correspond to small game hunting (Metra-Seis 1985), and, as suggested by Fig. 3, probably more than 80% of this percentage would correspond to gamebird hunting. However, as previously pointed out, this figure may be an underestimate of current situation, because the difficulties to estimate real capital movements associated to hunting and because hunting business in Spain has been growing quickly during last two decades (so data from the study might be out of date). In any case, the capital movements generated by hunting in Spain seem to be a marginal amount of money when compared to other activities affecting the environment, such as farming, cattle raising, or forestry. For example, it has been estimated that the money generated by hunting is less than 4% of the capital involved in forestry (López Ontiveros and Valle Buenestado 1987).
On the other hand, it is remarkable that hunting may generate almost 100,000 jobs, most of them in rural areas, in the three countries for which data were obtained (see Table 7), although the relative importance of this job creation with respect to other activities seems to be also relatively low, even in UK, where hunting employment was higher than in France or Spain (Cox et al. 1996). However, these data must be taken with caution, because, one more time, there was no a homogenous methodology, and the level of comparison with other productive activities is relatively poor. Again the data for Spain must be considered as out of date, and the employment generated by hunting in Spain has been recently estimated as more than 80,000 jobs (Sáenz de Buruaga 2002). On the other hand, to our knowledge there has not been any detailed analysis of the quality of those jobs, and we may suspect that, given the clear seasonality of hunting, many of them may be only temporal, and given the low level of qualification required for many of them (e.g. beaters), probably the salaries paid low. Furthermore, it is well known that many of the jobs created by hunting, especially temporary jobs (e.g. beaters again) are often not officially recorded, because they are included in the black economy referred above.

<table>
<thead>
<tr>
<th></th>
<th>UK</th>
<th>France</th>
<th>Spain</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct employments</td>
<td>41500</td>
<td>3098</td>
<td>11187</td>
<td>55785</td>
</tr>
<tr>
<td>Indirect employments</td>
<td>21165</td>
<td>22748</td>
<td>No data</td>
<td>43913</td>
</tr>
<tr>
<td>TOTAL</td>
<td>62665</td>
<td>25846</td>
<td>11187</td>
<td>99698</td>
</tr>
</tbody>
</table>


Furthermore, to obtain a realistic picture of the economic importance of hunting as a whole, and of gamebird hunting in particular, it would be necessary to assess the impact that this activity has on the whole ecosystem, to generate estimates of how the activity influences its own long-term sustainability, and how it may affect the economic inputs generated by other activities using the same ecosystems (e.g. eco-tourism). However, within the limits of our search, no studies with that level of detail have been performed in REGHAB countries. In UK, it is clear that hunting contributes to the creation and maintenance of wildlife habitats, and there is an open line of collaboration
between countryside sports organizations and government or NGOs institutions aimed to biodiversity preservation (Sugget 1999).

5.2- Relationship between hunting bags and costs of hunting activity

We have not obtained detailed information of the prices paid per hunted birds for all the species and countries, a difficult task out of the scope of this project. However, following the official national statistics on hunting bags and considering the average costs of hunting, we can provide an estimate of the average cost per hunted bird in each country (Fig. 13).

By this method we would estimate an average cost of each hunted bird in REGHAB countries of 59.51 €. As observed for other variables, large differences were found between countries (Fig. 13). On one extreme would be Portugal, where, although the average of expenses of hunters are relatively high (see Figs. 10 and 12), given that hunting pressure seems to be also relatively high (see Fig. 6), the costs per hunted bird are the smallest of all REGHAB countries. On the other extreme would be Finland, Spain and France, where hunting bags per hunter are relatively low (3.5, 11.1 and 16.8 captures/hunter and year, respectively), but, comparatively, the expenses devoted per capture are relatively high (France: 78.5€; Finland: 57.4€; and Spain: 68.1€ per capture). UK seems to be a peculiar case, where costs per capture are among the highest (62.9€), but where the number of captures is also high (34.9 captures/hunter and year), which is probably related to the outstanding importance of hunting of released pheasants in that country (see “gamebird species profiles” below).

These data may explain why UK and France alone cover 71 % of the total amount of money generated by hunting in REGHAB countries. In the case of UK, due to high capture rates, high costs per capture, and a relatively large number of hunters. France, with a larger number of hunters, and a higher cost per capture, approaches the capital flow estimated for UK, although French hunters seems to have a lower profitability in terms of captures per hunter.
Figure 13. Relationship between the average number of hunted birds per hunter and estimated average cost of each hunted bird.

As indicated above, the studies about this aspect in Europe seem to be scarce, but we must highlight the detailed survey, with no counterpart in Europe, of the economic importance of grouse shooting in Scotland, a subject about which at least two thorough studies have been published (McGilvray, J. 1995 and Fraser of Allender Institute, 2001), evaluating the capital generated by this famous hunting activity and the implications for local economies.

Grouse hunting in Scotland generated 940 employments during 2000, 630 of them full time, and the rest temporary, and this constituted 1.72 % of the overall employments (Fig. 14). This means an increase in the generation of employment with respect to 1996, but a decline when compared to 1989 (Fig. 14). These jobs mean a total amount of 15,655,097 € devoted to salaries, including direct and indirect employments. Considering just direct employment, and subtracting losses generated by grouse management (estimated to be 10,464,244 €), this activity would contribute 5,190,853 € to the British Gross Domestic Product. Landowners of grouse moorlands have lately increased the investment on grouse management using the revenues obtained from grouse shooting. Thus, in 1994, only 6.3 % of moors invested more than 50 % of revenues on improving grouse moors, while 33.3 % moors did so in 2000.

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>%</th>
<th>1994</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 10%</td>
<td>15</td>
<td>29.4</td>
<td>31</td>
<td>64.6</td>
</tr>
<tr>
<td>10-25%</td>
<td>8</td>
<td>15.7</td>
<td>8</td>
<td>16.7</td>
</tr>
<tr>
<td>25-50%</td>
<td>11</td>
<td>21.6</td>
<td>6</td>
<td>12.5</td>
</tr>
<tr>
<td>50-75%</td>
<td>3</td>
<td>5.9</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>75-100%</td>
<td>5</td>
<td>9.8</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Over 100%</td>
<td>9</td>
<td>17.6</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Total</td>
<td>51</td>
<td>100</td>
<td>48</td>
<td>100</td>
</tr>
</tbody>
</table>


A similar case of economic importance to that of grouse in UK could be the red-legged partridge in Mediterranean countries, but the studies assessing this aspect are very scarce. Fontoura (1992) estimated that red-legged partridge hunting generates a capital between 272 and 328 million €, with an approximate cost per capture of 45 €, most of it devoted to the public services sector (48%) (Fig. 15).
5.3- Social and economic impacts of hunting in France

The social and economic impacts of hunting have been analysed in detail in France. The jobs created from the money collected through taxes are categorized as follows (Pinet, 1993; data for 1992 and 1986, ONCFS, 2001):

<table>
<thead>
<tr>
<th>Category of job</th>
<th>Number of jobs in 2000</th>
<th>Number of jobs in 1992</th>
<th>Number of jobs in 1986</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insurance</td>
<td>660 jobs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National hunting and wildlife guards</td>
<td>1408</td>
<td>1,422</td>
<td>1,575</td>
</tr>
<tr>
<td>Administration</td>
<td>ONCFS 114</td>
<td>102</td>
<td>118</td>
</tr>
<tr>
<td></td>
<td>FDC</td>
<td>373</td>
<td>321</td>
</tr>
<tr>
<td>Field technicians</td>
<td>ONCFS 128*</td>
<td>101</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>FDC</td>
<td>340</td>
<td>124</td>
</tr>
<tr>
<td>Research (ONCFS)</td>
<td>128*</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Workers</td>
<td>29*</td>
<td>86</td>
<td>74</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,098</strong></td>
<td><strong>&gt; 2,306</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Global estimate
* at ONCFS

Most French hunters (72%) paid less than 53 € per year for the right to be a member of a hunting association or to rent a hunting territory (FF 0-23 € / ha of plain / year; 15-30 € / ha of forest / year). The estimated total financial flow amounted to 278,444,000 € for 1992 which represented 7,850 jobs (Pinet, 1993).
The main beneficiaries of this financial movement are:

- Landowners. No information was available on this subject, except for the Forest National Institution whose income from hunting was 25,670,000 € in 1992 (land is rented between 1.5-38 €/ ha / year – prices in 1997). This money does not correspond to jobs.

- Game breeders (128,350,000 €, corresponding to 3,500 jobs in 1992, compared to 1,600 jobs in 1986).

- Personal gamekeepers, the number of jobs was 3,800 in 1992 (but most gamekeepers have another job)

- The commercial hunting societies, for hunting or dog training (70,064,000 € in 1992, equivalent to about 950 jobs)

The results of Pinet's survey (1993) show very well the economic weight of hunting in France, which places this activity at the same level of importance as the forestry sawing branch or, in quite another field, as the film production business (Pinet, 1995). The even partial update of these figures gives the same conclusions with respect to the economic importance of this activity. The social impact of this financial flow very clearly appears through the number of jobs or equivalents of full-time jobs (> 23,000 in 1992) generated by this activity. The following list shows the diversity of jobs (and economic sectors) involved in the activity of hunting:

1.- Farmland owners.

The lease of hunting rights or the sale of the right to hunt is a source of revenue for certain private landowners. Part of the taxes is used to pay reparation to farmers for damage caused by large game species. In 1999, ONCFS allocated 17,259,300 € to pay for damages (to maize, cereals, meadows…) incurred by large game species, the populations of which are managed through hunting plans (deer, wild boar) (ONCFS, 2000). Hunter associations spent about 3,775,000FF € in 1999 to prevent such damages
in sensitive areas. The funds attributed for compensation have largely increased since the 1970s (ONCFS, 1998; ONCFS 2001b).

2-Agents employed by the instances managing wildlife and their habitats.

Certain statutory taxes provision the budget of ONCFS (government-owned administrative establishment entrusted with research, management and surveillance missions regarding the wild fauna) and of the departmental hunter federations (associations of the 1901-type law which notably are given the responsibility of species-space management). Job categories are diversified: national game wardens, field technicians, administrative staff, researchers, workers, etc, and thus concern all socio-professional categories.

3-Insurance companies.

4-Arms manufacturers and ammunition industry.

5-Equipment salesmen and industry (clothes, boots, knifes, binoculars, bird forms, etc.).

6-Transport, hotel and restaurant professions.

7-Dog trades (dog food and equipment industry, veterinarians, dog breeders and trainers).

8-Game breeders.

9-Other jobs: private game wardens…

10-Publishing business (journals, books, magazines)

11-Sellers and craftsmen / manufacturers of hunting souvenirs
The hunters' expenditures are diverse. Most of them have earmarked expenditures that contribute to the general economy and to preserve jobs. The expenditures which most directly contribute to the rural development or are a source of profit for the farmer-landowners or farmers in terms of economic flow are: 1) the expenses incurred to acquire a right to hunt (Pinet, 1995), and 2) rearing of game (90% of the game breeders are farmers, this activity represents 15-60% of their turnover; Pinet, 1995).

6- SOCIAL, ECONOMICAL, AND CULTURAL FACTORS AS THE ROOT OF CONFLICTS BETWEEN GAMEBIRD HUNTING AND BIODIVERSITY CONSERVATION

The relatively cheap hunting in Finland, along with other peculiarities of that country already commented (such as relatively low hunting pressure due to low human population density) would explain why there seems to be little conflict between hunting and biodiversity conservation in Finland (see Arroyo and Viñuela 2001). If we assume that cultural reasons (such a maintenance of a relatively high density of game allowing a given kind of hunting method, such as driven shooting, in countries with high hunting pressure), and economic viability of game estates, are the main factors in the root of the conflicts between gamebird hunting and biodiversity conservation, then a country where there are apparently no important problems of game availability, with relatively low hunting pressure, and where hunting is not associated to big economic interests, would not have important conflicts, as seems to happen in Finland. It is important to note here that only 4% of Finnish hunters get income from hunting, and for most people in that country hunting is only a hobby unrelated with economical interests (Ermala & Leinonen 1995; Leinonen & Ermala 1995). Furthermore, it must be remarked that hunting in Fennoscandia seems to be culturally different to the other countries (Arroyo and Viñuela 2001). In countries such as Spain, France or UK, gamebird hunting is often focused on intensive, managed systems (e.g. gamebird releases), as compared to hunting in more natural systems as performed in Finland. This focus on management and economic arguments leads to the tension between game management and raptor conservation. In Fennoscandia, hunting is cheaper and done by more general public. There is less interest in maximising the number of birds shot and more interest in the “whole experience of hunting” (Arroyo and Viñuela 2001). Additionally, perhaps the most important reason for the lack of conflicts in Finland is the fact that Finnish hunters
have explicitly committed to accept laws, regulations and rules, and they do not want to break against them (Juha-Pekka Ripatti, pers. comm.).

Gamebird hunting may imply an important, although not clearly quantified in most cases, economic input for rural areas, and this seems particularly clear for the French case, or at local level, for some areas in UK (e.g. grouse shooting moors) and Spain (red-legged partridge hunting in Castilla-La Mancha, southern Spain is considered as one of the five most profitable economic activities of the region; see Otero 1990, Delibes 1992, Bernabeu 2000). This is due partially to the large number of hunters in some areas (although hunters are less than 6 % of overall population in REGHAB countries), but, in other cases, probably mainly to a relationship between wealth and hunting, and to the relatively high expenses that a REGHAB hunter must face to develop his hobby, sometimes his passion. Furthermore, as suggested above, hunting may be promoting a displacement of rural populations from jobs at the primary sector to jobs at the secondary and mainly tertiary sectors. This could be interesting from the point of view of the maintenance of European rural populations without depending primarily on activities such as farming, which are expected to suffer changes in the coming decades in the direction of a reduction of production. Interestingly, this could induce a long-term feedback on hunting, because as explained in the second part of this report, a return to traditional, less productive, farming practices would probably mean an improvement in the populations of wild gamebirds, that could help to maintain or even to launch gamebird hunting.

But in this sense, it is sad to say that money paid for gamebird hunting, although sometimes representing important amounts (e.g. as much as 50-90 euros/red legged partridge in Spain, or more than 500 euros/day for red grouse driving hunting in Scotland), is not always related to the quality of the birds hunted (e.g. wild vs. released) or to the quality of game management, in the sense of conservation of overall biodiversity (with especial reference here to illegal predator control, see Mañosa 2002), or preservation of habitats (something that probably has not deserved the necessary scientific attention; see Arroyo & Beja 2002). For example, in Castilla-La Mancha, the
main red-legged partridge hunting area in Spain, and probably in Europe (Garrido 1998), game managers offering wild partridges may win the same amount of money per partridge than managers selling massive releases of farm-bird birds (Patrick Fassolo, pers. comm.). In fact, it has been pointed out that hunting tourism associated to red-legged partridge driven shooting in Spain is suffering some sort of crisis during last ten years, because this kind of hunting is loosing prestige among foreign hunters because it is often mainly based on releases of farm-bred birds (Delibes 1992).

In this sense, and as discussed in REGHAB workshops, for a problem with important economic roots, economic solutions could probably have success in solving the conflicts. Some kind of financial support for good hunting practices, such as respect for protected predators and the use of correct predator control schemes, and the recognition that in some cases these good practices may suppose an economic charge on game estates revenues, should be a positive way of limiting illegal predator control.

In this sense, it has been suggested (e.g. Dennis 2000), and discussed in the second REGHAB workshop, that the conflicts between humans and raptors should be solved in a way similar to conflicts with large carnivores, as in both cases it is a problem of a predator affecting human resources (hunting, cattle rising, from poultry to cows, or fisheries). Furthermore, game species in some areas of REGHAB countries are subject to very intensive management schemes (e.g. game enclosures, stock raising, massive releases), and therefore it has been suggested (and supported by a member of our consortium, APROCA), that probably in some cases this activity should reach a legal status similar to that of stock raising. Most wolf or bear experts recognise that the most practical way of preserving a population of wolves is compensating damages and/or eliminating conflictive individuals. Even, above a given density, restricted hunting may be considered useful, as a way to selectively control the population while keeping a reasonable density, and at the same time, providing economic benefits that could be used to study and preserve the species. In this respect, it is interesting to note that the expanding population of wolves in northern Spain comes originally from the north of river Duero, where it is considered a game species, and where hunting is often
associated to smaller properties or communal lands, being more a passion than a business (Blanco et al. 1992; Juan Carlos Blanco, pers. comm.). In contrast, in southern Spain, where large game estates are more common, and where hunting is associated with important economic interest, a strictly protected population of wolves is on the verge of extinction, and similarly, this is one of the areas in Spain with more intense problems of illegal predator control (Mañosa 2002; Villafuerte et al. 1998; Viñuela & Villafuerte in press). This is a good example of how the economic interests generated by hunting are in the core of the problem, but also an example of how a predator may thrive as game species, when not overhunted.

On the other hand, there is an alternative to direct compensation for possible damages to game species: adjustments of tax charges imposed on hunting activities, providing advantages to those land owners, managers, or hunter’s societies actively contributing to preservation of habitats or species. This could be especially important to protect rare or endangered predators, that in many cases (at least in Spain) are more a problem than an advantage for the landowner. In fact, conservation ONGs (such as SEO/Birdlife and ADENA/WWF) and governmental environmental agencies in Spain (including Environmental Ministry) have clearly realized that conservation of these critically endangered species must be necessarily linked to personal contact and arrangements with landowners and game managers, and some initiatives in that direction have been started on last years (see also Fungesma 2001, Otero 2000).

However, not all solutions could be based on financial support/penalties, because, as explained above, sometimes predators may interfere with sport interest (not only economic interests). Furthermore, it must be recognised that in most cases, the subject of predator control among hunters (as well as among conservationists) is clearly biased by emotional and psychological factors. For instance, control of some predator species in Spain, such as foxes, is unfortunately often not based on scientific knowledge, but is mostly driven by psychological feelings against those predators, as recently commented by a member of our consortium (C. Otero; APROCA) and guided by personal perceptions about the effects of those predators and the best way to control them. It is
clear that often at the core of these conflicts there are cultural and psychological reasons, and there are two opposite visions of hunting among the hunters themselves: 1) hunting as a whole experience, where the number of captures is not so important, and 2) massive hunting, where the main point is killing the highest number at the meeting. At least in Spain, many voices from the hunting world commanded in the last decades by Miguel Delibes, urge a return to that somehow more romantic hunting, and this should probably be the hunting mode promoted by the Governments (while perhaps, at the same time, recognising the current existence “de facto” of a new way of stock rising).

On the other social side of the conflict, probably conservation NGOs are aware of their growing importance in the public opinion, and there is a clear problem of trust and communication between conservation and hunting movement, so they may be somehow reluctant to collaboration with hunters in some areas/situations. It is interesting to note that a commonplace in the discussion about these subjects (including those in REGHAB workshops) has been the opposing views of hunting by hunters (who often think they are the “real” conservationists spending money in preserving nature), and by conservationists (who feel that hunting is sometimes the most important conservation problem for too many species). In fact, we must acknowledge that conservation organizations have been sometimes more reluctant to even participate in our workshops than hunting organizations. There is another issue for protection NGOs, namely that they often rely on campaigning to recruit members and funds, with hunters being a much more obvious and convenient target for campaigning than the less obvious, but more insidious problem of habitat change. On the other hand, the conservation movement is reasonably fighting against a possible return to those, not so old, times in which raptors were wiped out from large European areas (up to 1960s-70s depending on the areas, and still illegal direct persecution or incidental poisoning are going on in some countries; Mañosa 2002).
7- TENTATIVE CONCLUSIONS AND FUTURE DIRECTIONS OF RESEARCH

· Gamebirds are the main game species in REGHAB countries. Some countries, such as Finland, France and UK have well implemented systems to survey gamebird hunting at national scales, and thus there are reliable statistics on hunting bags. In contrast, there is clear evidence that hunting bags statistics in other countries, mainly Spain, have very low reliability, and the system to obtain that information should be improved.

· From the sociological point of view it is remarkable that, although in most cases hunters belong to rural populations, most of them do not perform professional activities included within the primary sector. This may give them greater wealth and hence ability to pay for conservation.

· Hunting is still basically a masculine activity, performed by more than 4 million people in REGHAB countries. The number of hunters has remained stable or decreasing during last decades, and the hunters population seems to be ageing in the only country for which data are available (France). Given that most hunters start hunting due to familiar tradition, and the increasing movement of population to cities, all these data suggest that hunting may be a retreating activity in Europe. Furthermore, the progressive distancing of hunters from rural environments may imply important changes in the sustainability of hunting.

· Each country shows specific preferences for a given species of gamebirds, and, with the exception of Finland, where waterfowl seem to be the most popular gamebirds, in the rest of countries the preferred species are Galliforms.

· Overall, more than 76 million birds are hunted per year in REGHAB countries, with an average of 18.9 kills per hunter and year. Portugal seems to have the larger ratio (43.7 gamebirds/hunter/year), and Finland the smallest (3.5 gamebirds/hunter/year).

· Portugal and UK would have the largest hunting pressure, estimated as number of killed birds/surface area.
· It is clear that gamebird hunting may provide important economic inputs in rural areas. Interestingly, hunting may be promoting a displacement of rural populations from jobs at the primary sector to jobs at the secondary and mainly tertiary sectors, because a large percentage of hunter’s expenses in rural areas are devoted to those sectors. However, to deal with hunting as a complete economic system would imply a thorough analysis at the ecosystem level, including the study of the interactions between hunting and other human activities performed in the same ecosystems, an exercise that, to our knowledge, has not been developed by now. This, along with other problems, such as those related with intrinsic features of hunting activities or heterogeneous methodologies, or simply lack of accurate data, do not allow to give reliable figures of the economic movements associated to hunting. We may provide a tentative estimate of around 5 thousand million euros generated by hunting activities in REGHAB countries, although this is probably an underestimated figure.

· It should be necessary to know in more detail to what point the economic inputs generated by hunting provide benefits for the maintenance or improvement of natural systems, or even for the sustainability of hunting, something that has rarely been examined in detail (perhaps only in the case of grouse moors in UK).

· UK is the country where the expenses incurred by hunters are greatest, followed by Portugal, France, Spain and Finland. This, and the relative number of hunters in each country explain that most of the economic movements generated by hunting in REGHAB countries belongs to UK and France (71 %).

· Finland is clearly a peculiar case among REGHAB countries, most similar to other northern countries such as Sweden or Norway. Cultural and social factors, but particularly the low economical interests induced by gamebird hunting in Finland, may explain why in this country there are no apparently important conflicts between gamebird hunting and biodiversity conservation. Furthermore, the transfer of information between game biologists and hunters is very good in Finland. This may mean that the newest research results are quite quickly disseminated to ordinary hunters. Some bird experts have also taken an active role in educational work and have e.g. started to write articles in hunters’ magazines. These articles may cover issues like how to identify species, or they may just tell hunters about basic ecological processes in nature. This education, of course should be given in a very polite way.
Some gamebird species have outstanding economical and social importance, such as red grouse in UK or red-legged partridge in Portugal and Spain, and thus, these should be given priority on future research.

It is important to remark that research should be established as the basic tool to establish management policies of gamebirds (Potts 2000). In this sense research on gamebird species, particularly regular standardized surveys on each country, is of primary importance to preserve or improve populations of this species, and not all countries have implemented this kind of survey. This is particularly important for migratory species.

8- REFERENCES


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