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## Protection and use of waterbirds in the European Union

Schlagworte/key words: waterbirds, ducks, geese, hunters, hunter density, hunting regulations, hunting period, quarry species, hunting bag statistics, population estimates

### Introduction

Waterfowling has a long tradition. Already in the tombs of Egyptian kings there are pictures of people hunting waterbirds. There surely always were fluctuations in the population size of the quarry species, but in the 19th century a dramatic decrease of waterbird numbers was recorded in Northern America and Europe. Main causes for this decrease were melioration of wetlands and overhunting of most waterbird populations (e.g. MOOIJ 1996 & 1999a, REIGER 2000, RUTSCHKE 1987 & 1990). This development triggered a number of initiatives to protect waterbirds both in Northern America and Europe. Around 1920 the USA and Canada ratified a first convention for the protection of migratory game birds that pass between the two nations and first coordinated waterbird counts started during the 1920's. In Europe first systematic waterbird counts started in the 1930's in Great Britain. Since the beginning of the 1950's regular waterbird counts were also performed in the Netherlands, a few years later followed by Germany and Switzerland. Until 1963 the counts were only coordinated on a national level but since then international coordination was organised by the „International Waterfowl and Wetlands Research Bureau“ (IWRB, now „Wetlands International“) – an international charity

founded in 1954 – and the „International Waterbird Census (IWC)“ was born. Since the 1970's European scientists demanded also to start international bag statistics (PRIKLONSKY 1974). Besides based on an initiative of the former IWRB and IUCN in 1971 the „Convention on wetlands of international importance especially as waterfowl habitat“ (Ramsar Convention) was ratified. For the first time this convention used the term „wise use“ for the way human beings should use wetlands and waterbird populations. In subsequent international nature conservation treaties like the EU-Birds Directive of 1979 and the African Eurasian Waterbird Agreement (AEWA) under the Bonn Convention of 1995 this term was exchanged by the much weaker term „sustainable use“. In the scope of these international treaties also hunting should be performed according to the „wise use“ or „sustainable use“ principle (EU-Commission 2003).

At the first of May 2004 the European Union enlarged from formerly 15 to 25 member states (Fig. 1). As a result the total area of the EU increased from c. 3.2 to about 4 million km<sup>2</sup> and the human population from c. 376 million to c. 450 million citizens.

This development offers a good reason to review the implementation of the wise/sustainable use principle in hunting practice on the territory of the enlarged European Union.

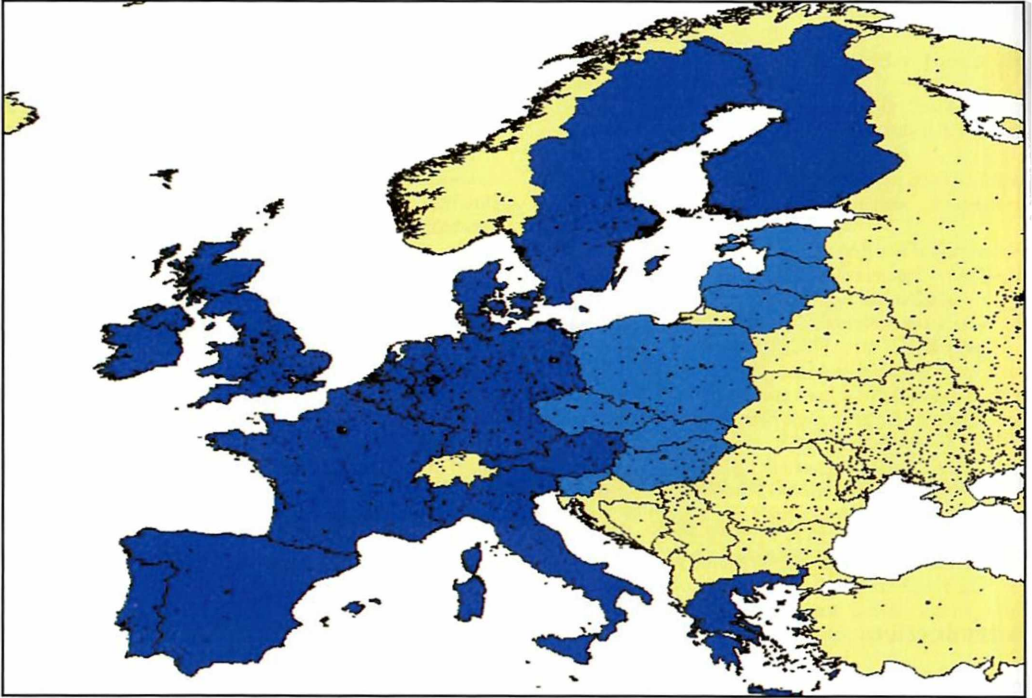


Fig. 1 The European Union of 15 member states before the enlargement of 2004 and the current size of 25 members

Die Europäische Union von 15 Mitgliedsstaaten vor der Erweiterung von 2004 und die heutige Größe von 25 Staaten

## Method

The data for this review were collected by a questionnaire about hunting regulations, quarry species, hunting periods and annual hunting bags, sent to national hunting organisations, game research institutions and national authorities as well as the evaluation of literature (e.g. CLAUSAGER 2003 & 2004, DEPLANQUE 2003, FREDERIKSEN 2002, HARRADINE 1985, LANDRY 1990, MADSEN et al. 1999, MOOIJ 1996a, 1999b, 2000a & b, ONCFS 2000, PARROTT et al. 2003, REYNOLDS & HARRADINE 1994, SCHRICKE 1990, 2000 & 2002, TAMISIER 1985, THOMAIDES et al. 2002, WIESE/KÜBLER 1984-2005) and the homepages of Danmarks Miljøundersøgelser ([www.dmu.dk](http://www.dmu.dk)), of FACE ([www.face-europe.org](http://www.face-europe.org)), of the Swedish ([www.Jagareforbundet.se](http://www.Jagareforbundet.se)) and the Polish Hunting Organisation ([www.pzlow.pl](http://www.pzlow.pl)). Because of the unexpected abundance of data for this review only data about

ducks and geese were evaluated here to keep the overview. The data were compared with data of former reviews to get an impression of the changes in hunting pressure and protection during the past decades.

## Acknowledgements

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## Results

To prepare this review about 150 persons and institutions (authorities, hunting organisations and institutes, NGO's, colleagues) in 23 countries were questioned. A feedback was received from about 110 addressees (73 %) of 22 countries (95 %). Most of them sent some more or less usable information, but 25 more extended information. Related to the number of countries this means an extremely high return rate of more than 95 %. Collected data were compiled in Tab. 1 and are analysed in the following.

### 1. Numbers and density of hunters

In the „old“ EU of 15 member states there were about 6.3 million hunters. After the enlargement the number of hunters showed a moderate increase at about 6.7 million. With nearly

1.5 million hunters France holds the pole position, followed by Spain with c. 1.2 million (Tab. 1). In most countries it is unknown how many of these hunters actually do shoot waterbirds. Germany, with nearly 340,000 hunters, belongs to the minor „hunting nations“.

In relation to the total population 1.67 % of EU-citizens in the „old“ European Union had a hunting license. After the enlargement of the EU at 25 members this proportion dropped at 1.49 hunters per 100 citizens (Tab. 1). With 7.5 % Ireland showed the highest proportion of hunters, followed by Finland with 5.7 %, Cyprus with 5.0 %, Malta with 4.3 %, Sweden with 3.7 % and Denmark with 3.2 %. Germany with about 0.4 hunters per 100 citizens merely has dwarf-size within Europe.

In the EU of 15 hunters density was 1.9 hunters/km<sup>2</sup>. After the 10 new members joined in the density slightly dropped at 1.7 hunters/km<sup>2</sup> (Fig 2). An extremely high hunters density was found in Malta, where 56.7 hunters have to share one square kilometre. At a considerable distance Malta is followed by Ireland with 4.3, Denmark with 4.0, Cyprus with 3.6 and Portugal with 3.4 hunters/km<sup>2</sup>. Germany, with 0.9 hunters/km<sup>2</sup>, belongs to the countries with a low hunters density.

### 2. Hunting regulations

Within the European Union conditions for hunters show considerable differences (Fig. 3). It shows that in 20 of 25 EU-member states (80 %) hunters have to pass a kind of hunting exam, which quality varies between a mere test on shooting skill and a rather extended theoretical and practical examination. In four EU-member states since recently new hunters have to pass an examination or there are regionally obligatory hunting examinations but not in the whole country. In the United Kingdom there is no official hunting examination at all.

More or less obligatory countrywide annual bag statistics were found in only six EU-member states (24 %), whereas in further 13 member states (52 %) there are sampling programmes, partly used to calculate countrywide bag estimates. In the other member states there are only rough estimates.

Table 1 Data to hunters and waterbird hunting bags in the European Union (*italics: extremely rough estimate*)  
 Daten zu Jägern und Wasservogelstrecken in der Europäischen Union (*kursiv: sehr grobe Schätzung*)

	Area	Population	Density	Hunters	Hunters %	Duck bag	Goose bag
	Fläche	Bevölkerung	Dichte	Jäger	Jäger %	Entenstrecke	Gänsestrecke
	ha	I	I/km <sup>2</sup>	H	H/Ix100		
Austria	83,858	8,160,000	97	115,600	1.42	90,000	2,200
Belgium	35,700	10,190,000	285	26,000	0.26	86,000	2,100
Czech Republic	78,884	10,300,000	131	115,000	1.12	325,000	1,500
Cyprus	9,851	700,000	71	35,000	5.00	50	0
Denmark	43,032	5,390,000	125	172,000	3.19	821,200	24,500
Estonia	45,000	1,400,000	31	16,000	1.14	13,500	2,650
Finland	338,145	5,200,000	15	297,110	5.71	574,800	21,600
France	550,000	58,720,000	107	1,460,000	2.49	2,200,000	21,000
Germany	357,025	82,560,000	231	338,580	0.41	550,000	37,000
Greece	131,967	10,510,000	80	293,000	2.79	<i>15,500</i>	0
Hungary	93,032	10,200,000	110	50,000	0.49	82,000	5,500
Ireland	70,300	4,000,000	57	300,000	7.50	8,650	10
Italy	301,277	57,560,000	191	809,000	1.41	450,000	0
Latvia	64,500	2,300,000	36	25,000	1.09	38,400	1,500
Lithuania	65,300	3,700,000	57	27,300	0.74	10,862	226
Luxembourg	2,586	440,000	170	2,070	0.47	2,000	0
Malta	300	400,000	1,333	17,000	4.25	120	10
Netherlands	41,526	15,650,000	377	30,000	0.19	300,000	10,000
Poland	312,685	38,500,000	123	100,000	0.26	135,000	12,500
Portugal	89,000	9,960,000	112	300,000	3.01	?	0
Spain	505,992	39,350,000	78	1,200,000	3.05	<i>150,000</i>	<i>25,000</i>
Slovakia	49,000	5,400,000	110	51,000	0.94	17,500	850
Slovenia	20,255	1,950,000	96	22,000	1.13	6,200	0
Sweden	449,964	8,900,000	20	300,000	3.37	161,000	44,400
United Kingdom	244,157	59,080,000	242	625,000	1.06	<i>1,200,000</i>	<i>49,000</i>
EU of 15	3.244.529	375.670.000	116	6.268.360	1.67	6,609,150	236,810
EU of 25	3.983.336	450.520.000	113	6.726.660	1.49	7,237,782	261,546
Cripple loss						1,809,445	65,387
Total kill						9,047,227	326,933

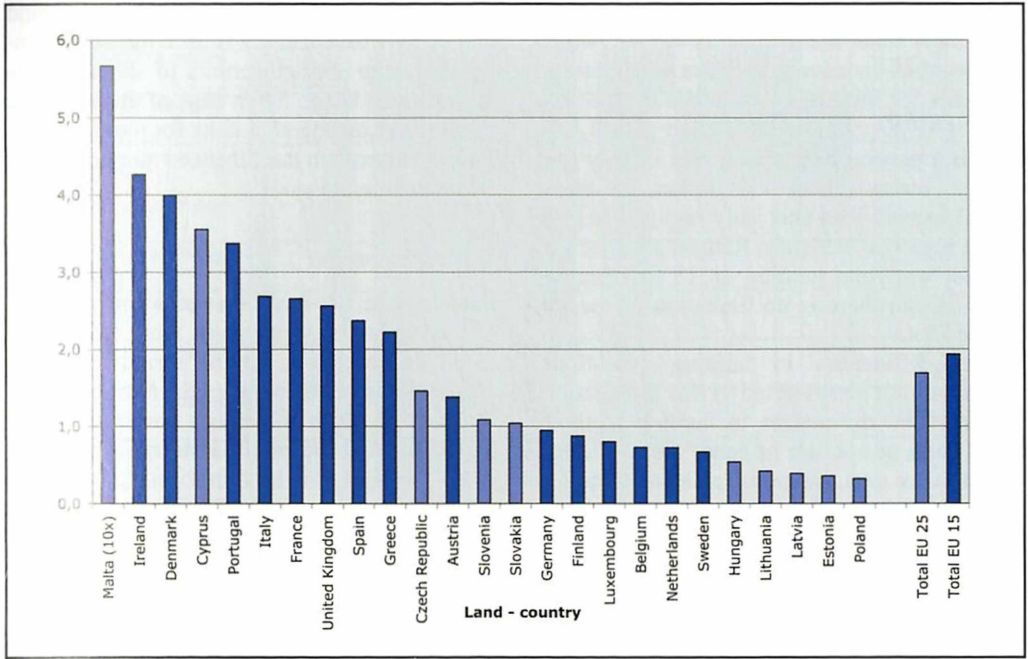


Fig. 2 Hunters density in the European Union (Hunters/Squarekilometer)  
 Jägerdichte in der Europäischen Union (Jäger/Quadratkilometer)

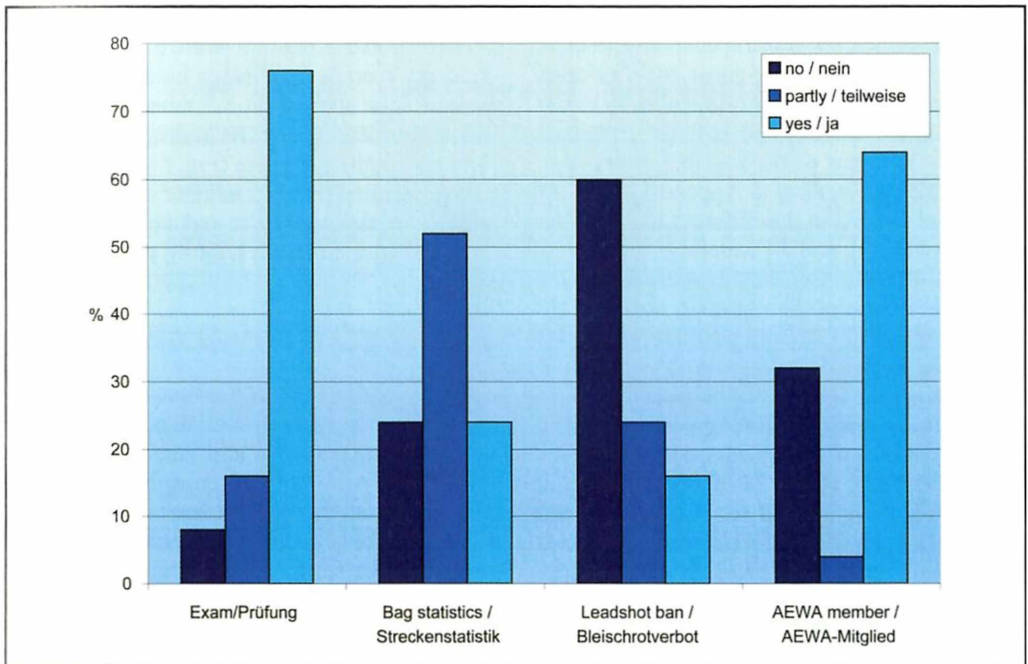


Fig. 3 Differences in the conditions for hunting between the member states of the European Union  
 Unterschiedliche Voraussetzungen für die Jagd in den Mitgliedstaaten der Europäischen Union

Although the European Union as well as 16 of its member states are member of AEW, which „Parties shall endeavour to phase out the use of lead shot for hunting in wetlands by the year 2000“ (AEW, Annex III: Action plan 4.1.4), there is a general ban of lead shot in only four member states (16%) and further six states (24 %) banned lead shot only regional (e.g. in nature reserves, wetlands, Ramsar sites etc.) or only for waterbird hunting. In 15 EU-member states (60 %) there is no limitation of the use of lead shot.

Further differences in hunting conditions, which will not be reviewed in this publication, are inter alia differences in hunting methods (from boats or not, use of decoys, use of dogs, bag limits or not), weapons (pellet shot, bullet, birds of prey or even bow and arrow), hunting times (only dawn, dawn and evening or whole day) etc.

### 3. Quarry species

Appendix II of the EU-Birds Directive (79/409/EWG) lists, which bird species can be hunted in the member states (Tab. 2). Altogether 26 waterbird species were listed as quarry species: one swan species, six goose species and 19 duck species, of which 12 (three goose and nine duck species) are huntable in all (Appendix II/1) and 14 (one swan, three goose and 10 duck species) only in a part of the member states (Appendix II/2). According to Appendix II on the territory of the EU in the different EU-member states between 12 and 24 waterbird species are listed as huntable. But the EU members make very different use of their hunting possibilities. With exception of Estonia - where more species are hunted as listed for the country in Appendix II - single members use between 7 and 95 % of their waterbird „hunting-potential“. The highest number of waterbird species are huntable in Denmark, where 22 of 24 allowed species are regularly hunted (c. 92 %), followed by Estonia, with 19 of the allowed 17 species (c. 112 %), France with 19 of 20 allowed species (c. 95 %), Latvia with 17 of 18 (c. 94 %), Finland with 16 of 19 (c. 84 %) and Sweden with 16 of 20 allowed species (c. 80 %) free for hunting. Germany, with 14 quarry waterbird species of 17 possible ones (c. 82 %) holds a

middle position. But we have to keep in mind that in spite of Appendix II each member country can issue special permits to shoot species not included in the list in case of unreasonable damage or considerable risks for public health. This could explain the enhanced number of species huntable in Estonia.

### 4. Hunting period

Between the EU-member states and even between regions in some states there are considerable differences in hunting periods for ducks and geese. In most countries the hunting period for ducks is situated between the beginning of September and the end of January (Fig. 4). For geese the picture is less uniform. In a number of countries geese have no hunting season (e.g. Italy, Luxembourg, the Netherlands, Portugal, Slovenia) and in other countries there is no hunting season in winter. In general goose-hunting season begins between the beginning of September and the end of October and ends between the middle of November and the end of February (Fig. 5).

The longest waterbird hunting season we find with six months in France and Malta, followed by the United Kingdom with 5.5 months. In Germany there is an average hunting period of 5 months for ducks and 3.5 months for geese. In the European Union the average is 4 months for ducks and 3 for geese (Fig. 6). But we have to keep in mind that in a number of countries or regions special permits to reduce crop damage can prolong the official hunting period considerably.

### 5. Hunting bags

Under consideration of the fact that only few EU-member states have reliable country-wide waterbird bag statistics and that the quality of the country estimates is considerably different, most country bag estimates produced in this review only can be conservative estimates and should be handled with care. But currently these are the best data we have.

Based on the collected data, it seems that on the territory of the European Union at least 7.2 million ducks and 260.000 geese, i.e. about 7.5 million waterbirds are bagged annually. The high-

Tab. 2. Quarry waterbird species in the European Union according to Appendix II of the Birds Directive  
 Jagdbare Wasservogelarten in der Europäischen Union gemäß Appendix II der EU-Vogelschutzrichtlinie

	Belgium	Czech Republic	Denmark	Germany	Estonia	Greece	Spain	France	Ireland	Italy	Cyprus	Latvia	Lithuania	Luxembourg	Hungary	Malta	Netherlands	Austria	Poland	Portugal	Slovenia	Slovakia	Finland	Sweden	United Kingdom
<i>Cygnus olor</i>																									2
<i>Anser fabalis</i>																									25
<i>Anser brachyrhynchus</i>																									4
<i>Anser albifrons</i>																									17
<i>Anser anser</i>																									25
<i>Branta bernicla</i>																									2
<i>Branta canadensis</i>																									25
<i>Anas penelope</i>																									25
<i>Anas strepera</i>																									25
<i>Anas crecca</i>																									25
<i>Anas platyrhynchos</i>																									25
<i>Anas acuta</i>																									25
<i>Anas querquedula</i>																									25
<i>Anas clypeata</i>																									25
<i>Nettion rufina</i>																									2
<i>Aythya ferina</i>																									25
<i>Aythya fuligula</i>																									25
<i>Aythya marila</i>																									9
<i>Somateria mollissima</i>																									6
<i>Clangula hyemalis</i>																									8
<i>Melanitta nigra</i>																									9
<i>Melanitta fusca</i>																									8
<i>Bucephala clangula</i>																									12
<i>Mergus serrator</i>																									5
<i>Mergus merganser</i>																									4
huntable species	15	13	24	17	17	15	13	20	22	12	13	18	14	12	14	13	14	14	13	12	12	13	19	20	19
actually hunted	4	6	22	14	19	10	12	19	12	9	11	17	8	1	7	12	1	4	6	9	1	4	16	16	13
%	26,7	46,2	91,7	82,4	111,8	66,7	92,3	95,0	54,5	75,0	84,6	94,4	57,1	8,3	50,0	92,3	7,1	28,6	46,2	75,0	8,3	30,8	84,2	80,0	68,4

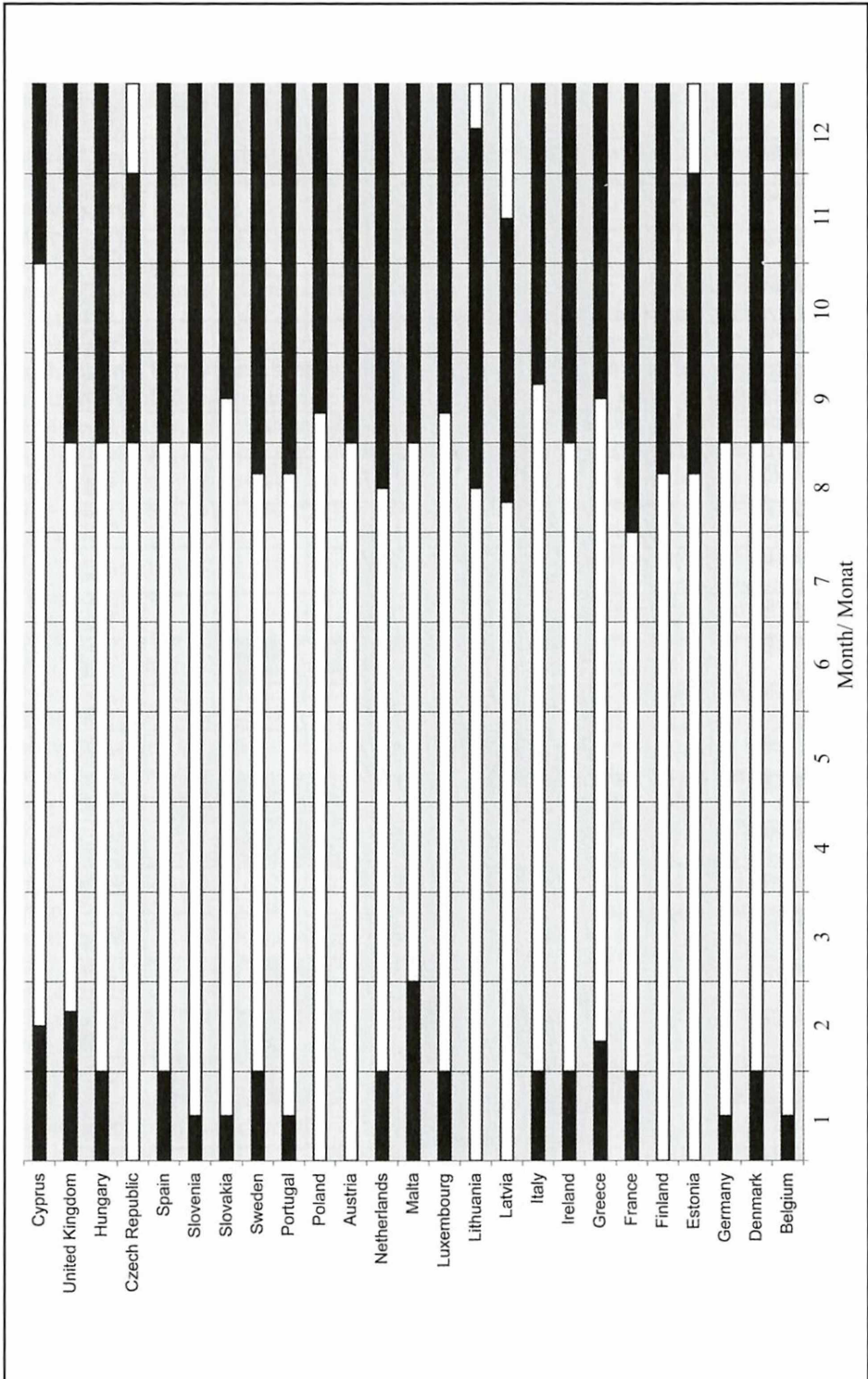


Fig. 4 Current hunting periods for ducks in the EU member states  
Gegenwärtige Jagdzeiten für Enten in den EU-Mitgliedsstaaten

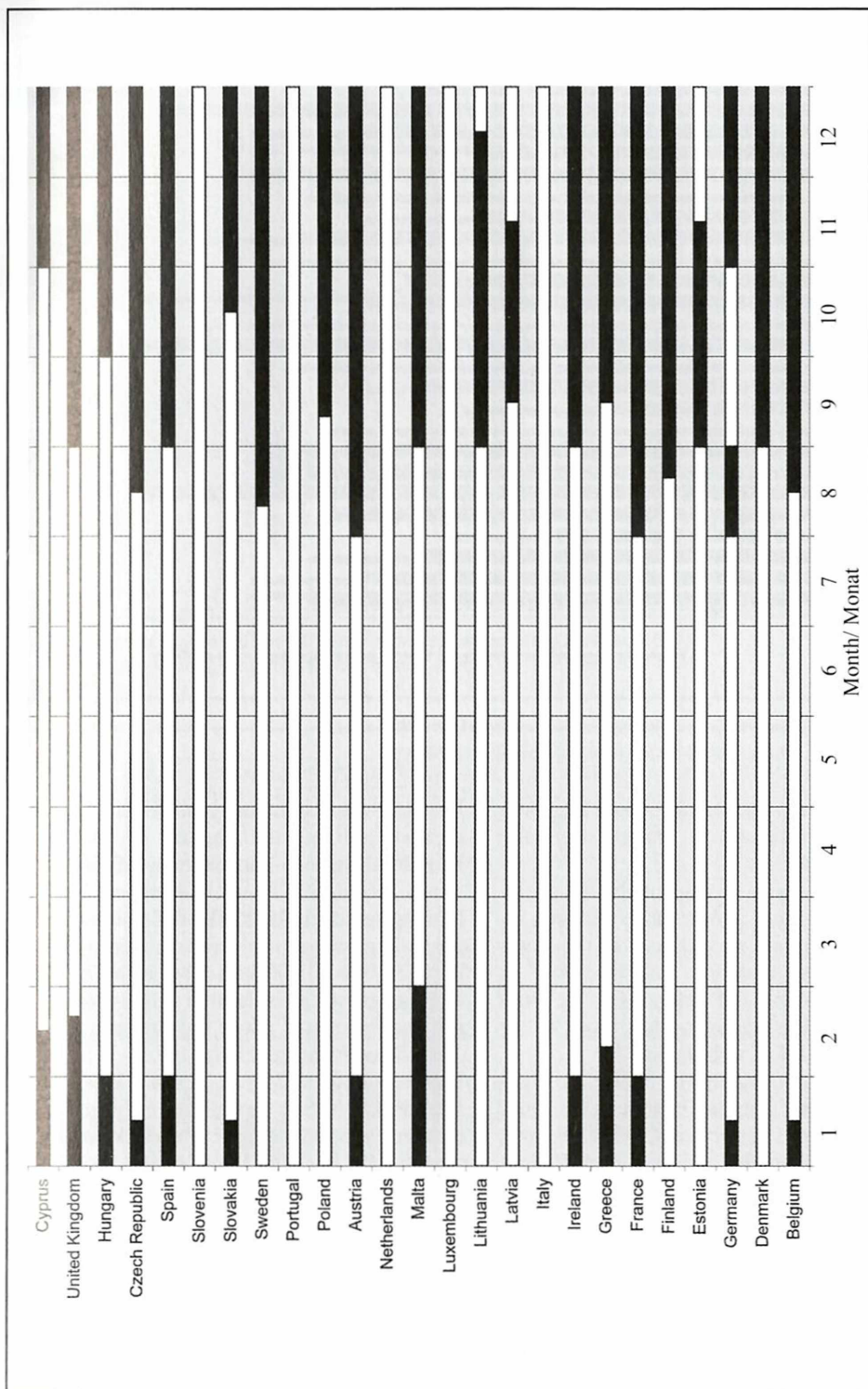


Fig. 5 Current hunting periods for geese in the EU member states  
Gegenwärtige Jagdzeiten für Gänse in den EU-Mitgliedsstaaten

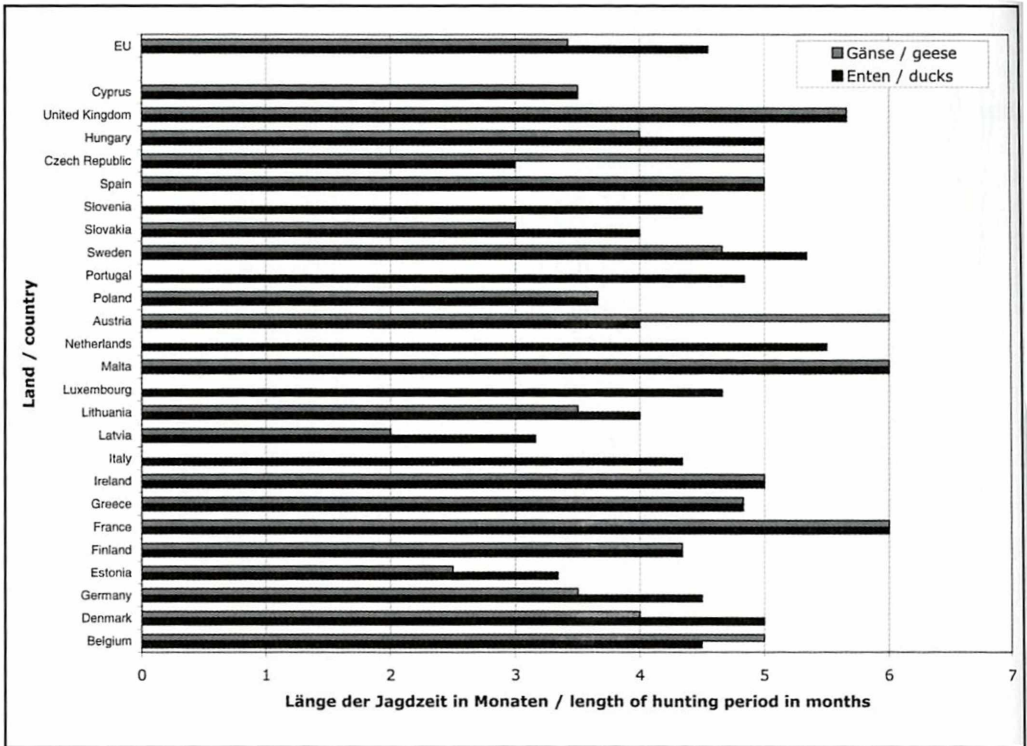


Fig. 6 Length of goose and duck hunting periods in the EU member states  
Länge der Gänse- und Entenjagdzeiten in den EU-Mitgliedsstaaten

est bags are shot in France, the United Kingdom and Denmark, followed by Finland, Germany and Italy (Tab. 1).

In the EU annually an average of about 2 waterbirds/km<sup>2</sup> is bagged, with a range between almost 20 in Denmark as well as 8 in the Netherlands and less than 0.1 waterbirds/km<sup>2</sup> in countries like Spain and Ireland (Fig. 7). With 1.6 waterbirds/km<sup>2</sup> Germany lies close to the EU-average of 1.9 waterbirds/km<sup>2</sup>.

With more than 10 waterbirds/hunter the highest bag per hunter is annually shot in the Netherlands, followed by Denmark with about 7, Belgium with about 3.5 and the Czech Republic with 2.8 waterbirds/hunter. In the EU the average is about 1 waterbird/km<sup>2</sup> and in Germany 1.7 (Fig. 8). Almost 50 % of all ducks bagged in the EU are bagged in France and the United Kingdom. About one third of all ducks is bagged in France (Fig. 9). Further important duck bags are annually shot in Denmark, Finland, Germany and Ireland.

For geese the situation is different. Here the highest numbers are bagged in the United Kingdom, Sweden and Germany, followed by Spain, Denmark, Finland and France. Until the hunting season 1999/2000 the Netherlands held the pole position with an annual goose bag of up to 50.000-60.000 geese, but since then only Greylag geese can be hunted with a special permit and the annual goose bag dropped at about 10.000 geese annually (Fig. 10).

Eleven countries reported their duck bags specified and in further 5 countries only Mallard is a quarry species, i.e. specified duck bags were reported by 16 countries in which about 80 % of the reported ducks was bagged. These data were used to get an indication of the composition of the EU-duck bag. According to these data it seems that on the EU territory about 68.3 % of duck bag are Mallard, followed by the Teal with c. 14.4 % (Tab. 3).

If we correlate the reported EU-duck bag to the population estimates of the quarry species based

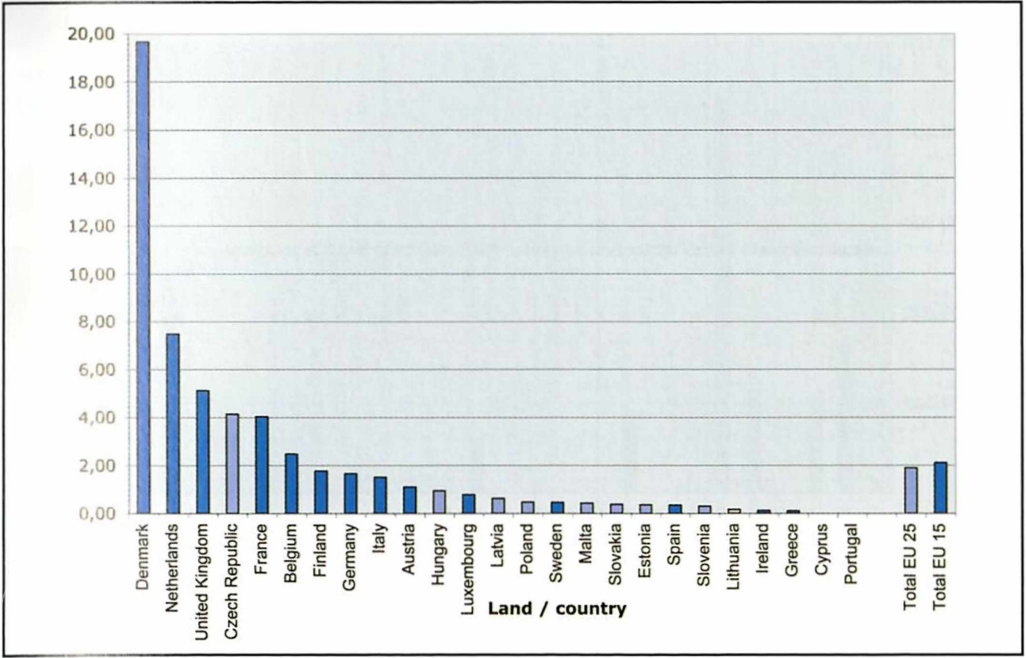


Fig. 7 Waterbird bag per square kilometre in the countries of the European Union  
 Wasservogelstrecke pro Quadratkilometer in den Ländern der Europäischen Union

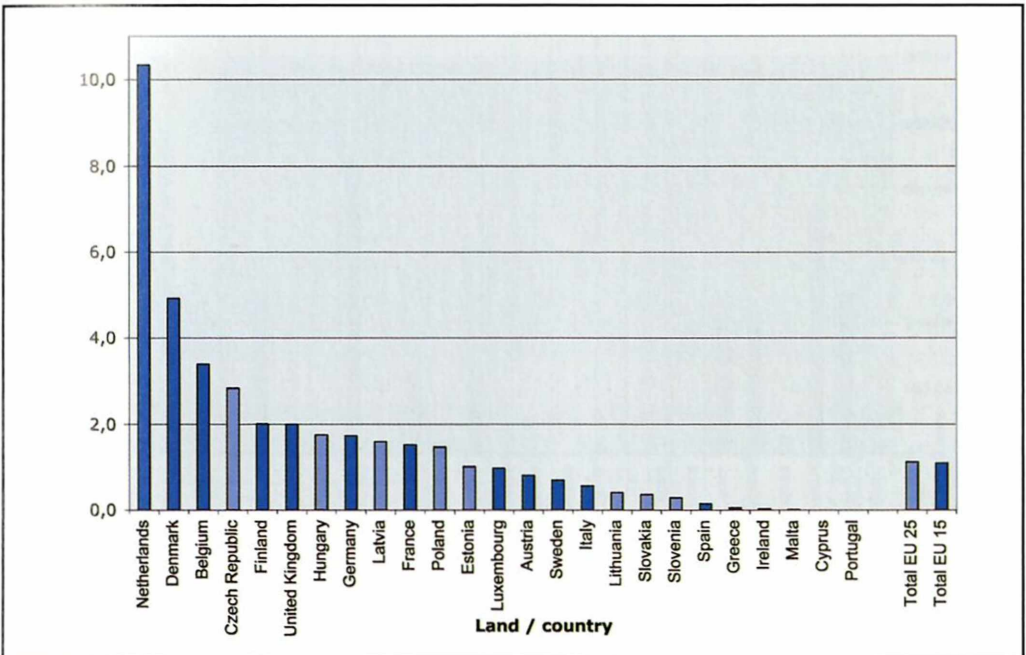


Fig. 8 Waterbird bag per hunter in the countries of the European Union  
 Wasservogelstrecke pro Jäger in den Ländern der Europäischen Union

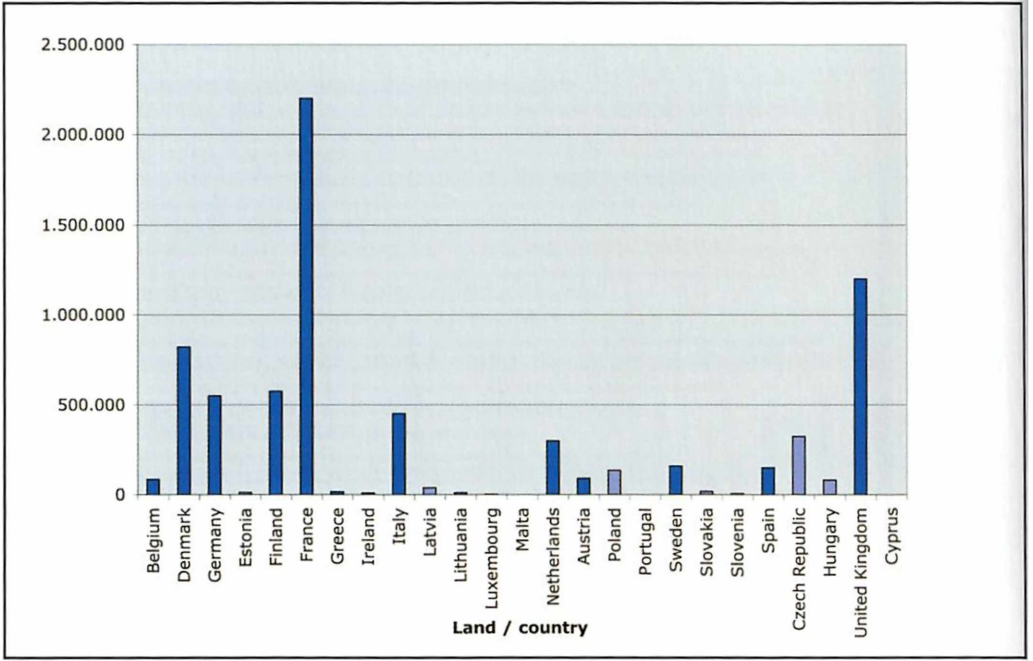


Fig. 9 Duck bags in the countries of the European Union  
Entenstrecken in den Ländern der Europäischen Union

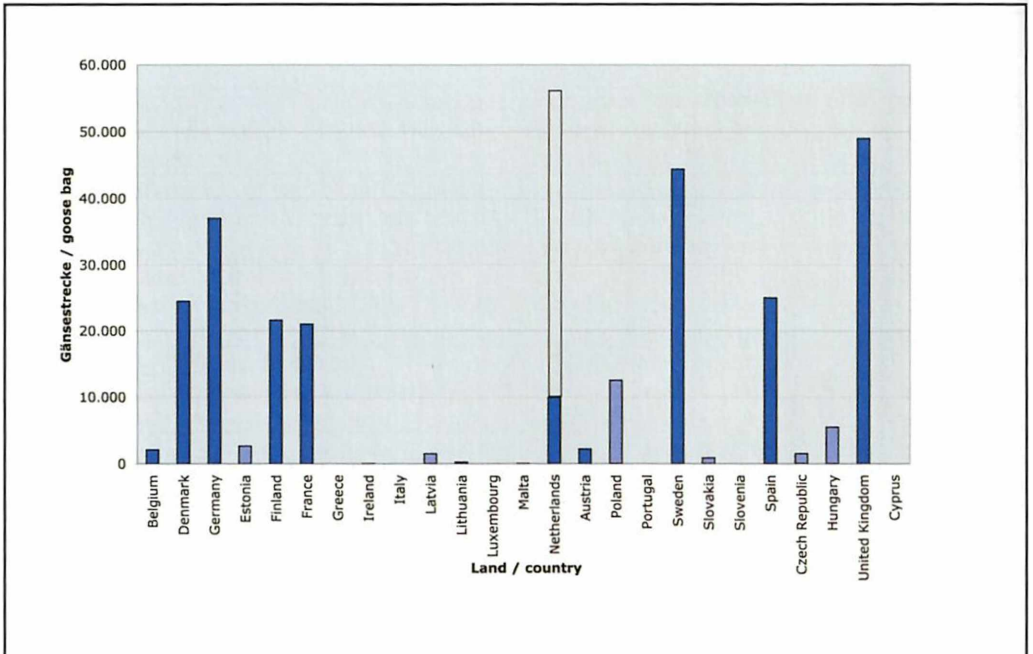


Fig. 10 Goose bags in the countries of the European Union  
Gänsestrecken in den Staaten der Europäischen Union

Table 3 Specified annual duck bag in the countries of the European Union  
 Nach Arten gegliederte jährliche Entenstrecke in den Staaten der Europäischen Union

Species	English	German	Annual bag HB	%	Population size PS	% bagged HB/PSx100	Cripple loss CL	Total kill HB+CL	% killed HB+CL/PSx100	Pop. Trend
<i>Anas penelope</i>	Wigeon	Pfeifente	392.717	5,4	2.000.000	19,6	98.179	490.896	24,5	INC?
<i>Anas querquedula</i>	Garganey	Knäkente	43.653	0,6	3.000.000	1,5	10.913	54.566	1,8	DEC
<i>Anas crecca</i>	Teal	Krickente	1.041.975	14,4	3.000.000	34,7	260.494	1.302.469	43,4	STA
<i>Anas strepera</i>	Gadwall	Schnatterente	32.091	0,4	300.000	10,7	8.023	40.114	13,4	STA
<i>Anas platyrhynchos</i>	Mallard	Stockente	4.940.852	68,3	8.500.000	58,1	1.235.213	6.176.065	72,7	DEC
<i>Anas acuta</i>	Pintail	Spießente	124.436	1,7	1.750.000	7,1	31.109	155.545	8,9	DEC
<i>Anas clypeata</i>	Shoveler	Löffelente	142.104	2,0	1.000.000	14,2	35.526	177.630	17,8	DEC
<i>Aythya ferina</i>	Pochard	Tafelente	108.657	1,5	1.800.000	6,0	27.164	135.821	7,5	INC
<i>Aythya fuligula</i>	Tufted Duck	Reihente	109.606	1,5	2.000.000	5,5	27.402	137.008	6,9	INC
<i>Aythya marila</i>	Scaup	Bergente	2.010	0,0	450.000	0,4	503	2.513	0,6	STA
<i>Somateria mollissima</i>	Eider	Eiderente	116.299	1,6	2.500.000	4,7	29.075	145.374	5,8	DEC
<i>Ciangula hyemalis</i>	Lang-tailed Duck	Eisente	24.081	0,3	4.700.000	0,5	6.020	30.101	0,6	STA
<i>Melanitta fusca</i>	Velvet Scoter	Samtente	6.727	0,1	1.000.000	0,7	1.682	8.409	0,8	STA
<i>Melanitta nigra</i>	Common Scoter	Trauerente	5.682	0,1	1.800.000	0,3	1.421	7.103	0,4	STA
<i>Bucephala clangula</i>	Goldeneye	Schellente	122.130	1,7	500.000	24,4	30.533	152.663	30,5	INC?
<i>Mergus serrator</i>	Red-breasted Merganser	Mittelsäger	8.617	0,1	220.000	3,9	2.154	10.771	4,9	INC
<i>Mergus merganser</i>	Goosander	Gänssäger	16.146	0,2	300.000	5,4	4.037	20.183	6,7	INC
			7.237.783	100	34.820.000	20,8	1.809.446	9.047.229	26,0	

Table 4 Specified annual goose bag in the countries of the European Union  
 Nach Arten gegliederte jährliche Gänsestrecke in den Staaten der Europäischen Union

Species	English	German	Annual bag HB	%	Population size PS	% bagged HB/PSx100	Cripple loss CL	Total kill HB+CL	% killed HB+CL/PSx100	Pop. Trend
<i>Anser anser</i>	Greylag Goose	Graugans	128.503	49,1	610.000	21,1	32.126	160.629	26,3	INC
<i>Anser albifrons</i>	White-fronted Goose	Blessgans	26.032	10,0	1.400.000	1,9	6.508	32.540	2,3	INC?
<i>Anser fabalis</i>	Bean Goose	Saatgans	26.219	10,0	600.000	4,4	6.555	32.774	5,5	STA
<i>Anser brachyrhynchus</i>	Pink-footed Goose	Kurzschinabelgans	28.241	10,8	277.000	10,2	7.060	35.301	12,7	INC
<i>Branta canadensis</i>	Canada Goose	Kanadagans	50.938	19,5	140.000	36,4	12.735	63.673	45,5	INC
<i>Branta leucopsis</i>	Barnacle Goose	Weißwangengans	1.109	0,4	440.000	0,3	277	1.386	0,3	INC
<i>Branta bernicla</i>	Brent Goose	Ringelgans	504	0,2	240.000	0,2	126	630	0,3	DEC
			261.546	100	3.707.000	7,1	65.387	326.933	8,8	

on the International Waterbird Census (IWC) of Wetlands International (DELANY & SCOTT 2002), it shows that on an annual basis on the territory of the EU about 21 % of the quarry duck populations is bagged (Tab. 3). Hunting pressure seems to be very different between species and is highest on Mallard of which about 58 % of the estimated population is bagged annually, followed by the Teal with c. 35 %, the Goldeneye with c. 24 %, the Wigeon with almost 20 % and the Shoveler with c. 14 %.

For the geese bag statistics of 10 countries were specified, from three more countries there were rough estimates of the bag composition and in further six countries no geese or only one goose species are quarry species. Altogether from these countries about 83 % of the bagged geese were reported. These data were used to get an indication of the composition of the EU-geese bag. From these data it seems that on EU territory c. 49 % of the goose bag are Greylag geese, followed by the Canada Goose with c. 19.5 %, the Pink-footed Goose with almost 11 % and the White-fronted and Bean Goose with 10 % each (Tab. 4).

The correlation of the reported EU-geese bag to the population estimates of the quarry species based on the International Waterbird Census (IWC) of Wetlands International (DELANY & SCOTT 2002) shows that about 7.1 % of the added populations of all quarry goose species is bagged annually on the EU-territory (Tab. 4). The hunting pressure is very different between the species and is highest on Canada Geese of which almost 36.5 % of the estimated population is bagged annually, followed by the Greylag Goose with c. 21 % and the Pink-footed Goose with about 10%.

## Discussion

To be according to the wise use principle, hunting can not be restricted on the principle not to „overuse“ the populations of the quarry species, but has to conserve wildlife in the best possible natural status, i.e. besides conserving a sufficient population size the hunter also has to consider population structure and ecology, social and age structures, correlations between the species and its environment. The aim of hunting

cannot be to achieve the highest bag, but should be to shoot in such a way that the composition of the bag is as close as possible to the natural selection by predators (DICK et al. 1994). In the context of hunting wise use clearly implies sustainable consumptive use with an emphasis on maintaining populations of a species at a favourite conservation status. In the absence of good information on population dynamics and hunting take of sedentary and migratory species high levels of exploitation should generally be avoided (EU-COMMISSION 2003).

Although it is surely impossible for humans to be active and to use natural resources without influencing a number of natural processes and other species, in the scope of the wise use principle it is very important to reduce the negative influences of human activities to the lowest possible level. For a wise and sustainable use of waterbird populations it therefore seems obligatory that:

- the hunting season of a species is oriented on the ecology and annual cycle of the species instead of on the period with regional maximum numbers,
- reliable population and bag estimates are collected,
- reliable specified data are collected about annual reproduction and mortality rates
- reliable data about age and sex composition of the population and the bag are collected for each species.
- a methodology should be developed to react at short notice on negative population development of a species with qualified measures to conserve or restore its favorite conservation status.

In consideration of these requirements for sustainable hunting in the European Union we have the following situation:

*Hunting periods.* Because of the moult of the body feathers until the end of August most waterbirds are only limited usable for consumption. Furthermore because of „winter stress“ geese loose weight from the beginning of November and ducks from the beginning of January (Fig. 11). Not only because game should come on the table in best quality, but also for ecological reasons, a sustainable hunting period should be between the beginning of September

and the end of October for geese and between the beginning of September until the end of December for ducks.

**Population estimates.** The current population estimates for waterbird species in Europe (DELANY & SCOTT 2002, GILLESSEN et al. 2002) are the best estimates we ever had, but we have to be aware of the fact that they still are only rather rough estimates (MOOIJ 1999c). Especially the counts of Mallard, Greylag and Canada Geese are far from complete (e.g. more often populations in parks, private ponds etc. are not counted). The rather high proportions of the populations of the Mallard and the Teal (Tab. 3) as well as the Canada and Greylag Goose killed by hunting (Tab. 4) could be the result of too low population estimates for these species.

**Bag statistics.** Only six EU-member states (24 %) produce more or less reliable obligatory countrywide annual bag statistics, whereas

in further 13 member states (52 %) there are sampling programmes, partly used to calculate countrywide bag estimates. In the other member states there are only rough estimates (Fig. 3). In a considerable number of countries the bag samples are too small or not representative enough to calculate countrywide bags. Moreover in spite of the fact that in most countries the big game bag is split up in species, age and sex the waterfowl bag is often only divided in the categories „geese“ and „ducks“. As a consequence there are no reliable bag statistics in almost 3/4 of the EU member states, i.e. the produced bag data are not good enough to make a reliable estimate of the proportion of the populations annually taken by hunting. Besides the shortcomings of the waterbird counts also the lack of reliable bag statistics could be the reason for the rather high proportions of the populations of the Mallard and the Teal (Tab. 3) as well as the Canada and Greylag Goose (Tab. 4) annually taken by hunting. Furthermore we have to consider a

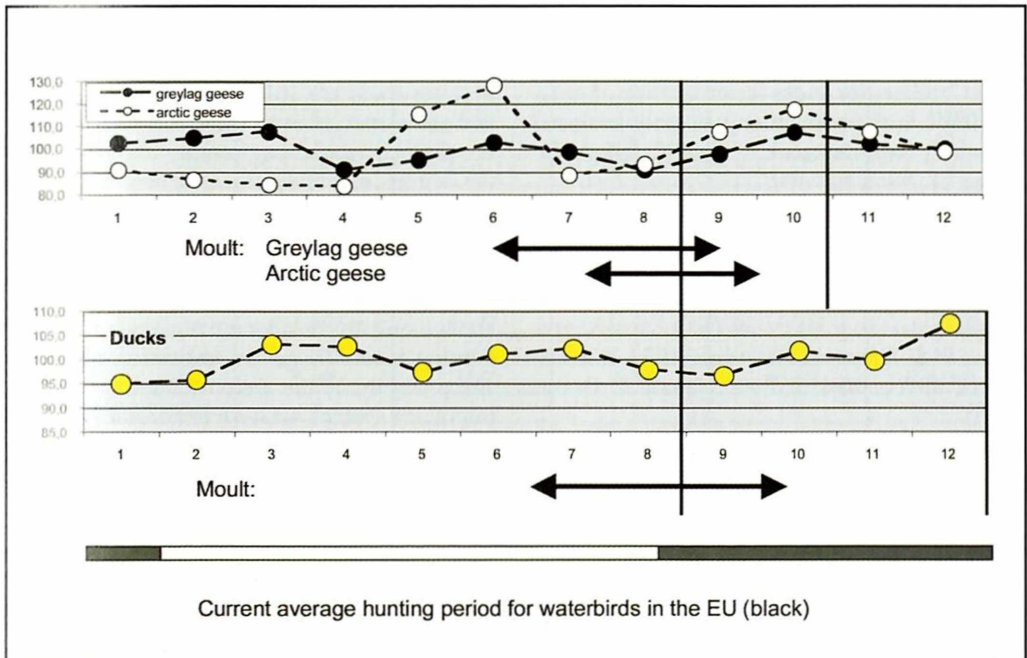


Fig. 11 Annual cycle of body weight in ducks and geese compared to the current average hunting period for waterbirds in the European Union  
 Jährliche Variation des Körpergewichtes bei Enten und Gänsen verglichen mit der heutigen Durchschnittsjagdzeit für Wasservögel in der Europäischen Union

considerable number of misidentifications, by which an unknown number of other duck or goose species was recorded being „Mallard“ or „Greylag“, e.g. because the hunter just did not know better or because the bagged duck or goose belonged to a non-quarry species. In the scope of most current waterbird hunting methods it is unavoidable occasionally to shoot non-quarry species. Such bagged, but non-quarry species more often are recorded as a huntable species or not recorded at all. Meltofte (1978, 1979, 1994) found in Denmark that about 8 % of an average waterbird bag were non-quarry species and at the Lower Rhine area in Germany a percentage of 5-10 was found (MOOIJ, unpublished data), whereas in the Czech Republic about 5 % of the ducks bagged were non-quarry species (MUSIL 2005).

*Reproduction and mortality rates.* Data about reproduction and mortality rates are available for only a few waterbird species. In the scope of the international goose counts in some regions annual reproduction rates of a number of goose species are collected (Mooij 1996b & 2000e) and mortality rates of some goose species were calculated from ring recoveries (EBBINGE 1991, MOOIJ 2000e). For ducks the proportion of juvenile birds in the population was only analysed regionally (e.g. Denmark, United Kingdom) by means of „wing surveys“.

About the actual influence of waterbird hunting on mortality rates most data are theoretical calculations as well as estimates based on data from other continents or on non-representative sampling data (e.g. BAUER & GLUTZ VON BLOTZHEIM 1968, CRAMP & SIMMONS 1977, KALCHREUTER 1990, 1994 & 2000, OWEN & BLACK 1990).

*Age and sex rates.* With the exception of the results of some „wing surveys“ there are hardly any data about the age and sex rates in waterbird bags. The few studies about this item showed that age and sex rates in the waterbird bags can differ considerably from the rates in the hunted population and that these rates can show considerable fluctuations depending from the hunting period as well as the hunting method. It is unknown if these differences can influence the middle and long-term development of

the hunted populations. Also the sensibility for lead poisoning seems to depend on sex and age (BERGMANN et al. 1994, COOKE et al. 1995, KALCHREUTER 1994, MOOIJ 1999a, OWEN & BLACK 1990, RUSANOV 1990, SANDERSON & BELLROSE 1989, WAURISCH 1989). Sex and age ratios also can help to get an impression of the status and to predict population development of the hunted species. These preliminary findings show the importance of collecting sex and age ratios of hunted species.

In consideration of the preceding facts it has to be concluded that under the current conditions it is not possible to shoot waterbirds in a sustainable way in the European Union. In most countries the list of quarry waterbird species as well as hunting seasons are more based on tradition than on ecological knowledge. In general hunting is considered to be „sustainable“ as long as there are still periodic regional concentrations of a species, big enough to shoot a reasonable bag for local hunters. Most reflections about current hunting intensity and sustainable use are mainly based on a more or less local view, e.g. in Germany it is often stated that goose hunting in Germany is sustainable, because there are still high numbers of geese and some species even show increase. Besides the German goose bag is only about 10 % of the winter maximum in Germany and about 2 % of the added Western Palearctic populations of the quarry species (MOOIJ 1999b). But to assess if the national hunting pressure on a migratory species is sustainable or not, it is not enough only to consider the regional or national hunting level. To get an indication about the sustainability of the national hunting level on migratory species we have to consider the total hunting level within their living range, i.e. for most ducks and geese the total hunting bags in the Western Palearctic.

Based on conservative estimates derived from incomplete and restrictedly reliable data it can be stated that in the 1960's about 283,000 geese were taken annually. In the 1970's at least about 300,000 geese were bagged, in the 1980's it were at least 367,000, in the 1990's at least 520,000 and between 2000 and 2005 at least 780,000 geese per annum (Tab. 5). The data base for ducks is even less complete and reli-

Table 5 Conservative estimates of the annual hunting kill of geese in Europe since the 1960s  
 Vorsichtige Schätzung der jährliche Entnahme von Gänsen durch die Jagd in Europa seit den 1960er Jahren

country	ESTIMATED ANNUAL GOOSE BAG IN THE WESTERN PALEARCTIC				
	1960's	1970's	1980's	1990's	2000-2005
Albania	?	2.000	?	?	?
Austria	1.700	2.000	3.000	1.500	2.200
Belarus	x	x	x	x	11.000
Belgium	0	150	200	500	2.100
Bosnia-Herzegovina	x	x	x	x	?
Bulgaria	7.000	14.000	10.500	12.000	14.000
Croatia	x	x	x	x	?
Cyprus	?	?	?	?	0
Czech Republic	x	x	x	x	1.500
Danmark	7.000	14.000	10.500	12.000	14.000
Estonia	x	x	x	x	2.650
Finland	2.000	2.800	4.500	8.500	21.600
former Czechoslovakia	1.500	2.000	1.800	2.000	x
Former Yugoslavia	?	4.000	4.500	?	x
France	?	?	18.000	21.000	21.000
FYR Macedonia	x	x	x	x	?
Germany	6.000	7.500	10.000	30.000	37.000
Greece	?	?	?	?	0
Hungary	7.500	5.300	7.300	4.500	5.500
Iceland	?	5.000	40.000	50.000	49.000
Ireland	?	800	?	?	10
Italy	?	?	?	?	0
Kazakhstan	x	x	x	x	72.000
Latvia	x	x	x	x	1.500
Lithuania	x	x	x	x	226
Luxembourg	?	?	?	?	0
Malta	?	?	?	?	10
Moldavia	x	x	x	x	2.000
Netherlands	7.000	10.000	42.500	65.000	10.000
Norway	?	1.150	5.000	12.000	14.500
Poland	6.300	12.000	12.600	12.500	12.500
Portugal	?	?	?	?	?
Romania	5.000	3.000	4.000	4.000	5.000
Western part of Russia	x	x	x	x	320.000
Serbia & Montenegro	x	x	x	x	?
Slovakia	x	x	x	x	850
Slovenia	x	x	x	x	0
Spain	?	?	3.000	?	25.000
Sweden	2.000	5.000	10.000	30.000	44.400
Switzerland	73	22	30	0	0
Ukraine	x	x	x	x	49.000
United Kingdom	?	?	?	45.000	49.000
Western part of USSR	230.000	210.000	180.000	210.000	x
<b>TOTAL BAG</b>	283.073	300.722	367.430	520.500	787.546
<b>CRIPPLE LOSS (25%)</b>	70.768	75.181	91.858	130.125	196.887
<b>TOTAL KILL</b>	353.841	375.903	459.288	650.625	984.433

Table 6 Conservative estimates of the annual hunting kill of ducks in Europe since the 1980s according to HARRADINE 1985, PRIKLONSKI & SAPETINA 1990, RUTSCHKE 1990 and TAMISIER 1985

Vorsichtige Schätzung der jährliche Entnahme von Enten durch die Jagd in Europa seit den 1980er Jahren, nach HARRADINE 1985, PRIKLONSKI & SAPETINA 1990, RUTSCHKE 1990 and TAMISIER 1985

able as the goose data, but still it is possible to make a conservative estimates of the Western Palearctic duck bags from the 1970's of about 11 million (SCOTT 1982 in OWEN & BLACK 1990), 1980's with about 14.0 million ducks and a current level of about 14.3 million ducks annually (Tab. 6).

MELTOFTE (1978, 1979) found in Denmark that at 10 waterbirds bagged additionally 9 birds were crippled and HESPELER (1995) estimated cripple loss at 10 waterbirds compared to one bird bagged. In Northern America on principle at least 20 % is added to the reported waterbird bag because of „cripple loss/unretrieved kill“. Conservative estimates for Europe indicate that for 3-5 waterbirds bagged at least one bird has to be added because of cripple loss. For that reason at least 25 % of the reported waterbird bags should be added to compensate for birds shot but not retrieved or crippled by hunters (EBBINGE 1991, KALCHREUTER 1994, LAMPPIO 1982a & b, MARTIN & PADDING 1998, MOOIJ 1991 & 1999b, MOREHOUSE 1992, SANDERSON & BELL-ROSE 1986).

Including 25 % of the bags for „cripple loss“ in the EU the current goose bag is about 327,000 and the Western Palearctic goose bag increased from at least 350,000 in the 1960's at 460,000 in the 1980's and at about 1 million currently (Tab. 4 & 5). After inclusion of the cripple loss rate the current EU duck bag is about 9 million ducks and the Western Palearctic duck bag was at least 17 million in the 1980's and at present (Tab. 3 & 6).

The Western Palearctic ducks population size was estimated at 30-35 million in both the 1980s and at present by Wetlands International (ROSE & SCOTT 1994, DELANY & SCOTT 2002). Compared to these estimates hunters would have annually killed about 50 % of the duck populations in the 1980's and currently (Tab. 7), which does not seem very realistic. Russian scientists

ESTIMATED ANNUAL DUCK BAG IN THE WESTERN PALEARCTIC		
country	1980's	2000-2005
Albania	12.000	?
Austria	50.000	90.000
Belarus	222.500	210.000
Belgium	46.000	86.000
Bosnia-Herzegovina	x	?
Bulgaria	56.000	60.000
Croatia	x	?
Cyprus	?	50
Czech Republic	132.000	325.000
Danmark	883.500	821.200
Estonia	50.000	13.500
Finland	738.500	574.800
Former Yugoslavia	81.500	x
France	2.242.000	2.200.000
FYR Macedonia	x	?
Germany	498.900	550.000
Greece	?	15.500
Hungary	94.500	82.000
Iceland	1.000	?
Ireland	?	8.650
Italy	700.000	450.000
Kazakhstan	1.900.000	1.300.000
Latvia	96.500	38.400
Lithuania	22.400	10.862
Luxembourg	1.300	2.000
Malta	300	120
Moldavia	15.600	15.000
Netherlands	365.000	300.000
Norway	115.000	56.000
Poland	543.000	135.000
Portugal	?	?
Romania	80.000	90.000
Western part of Russia	2.500.000	4.100.000
Serbia & Montenegro	x	?
Slovakia	10.000	17.500
Slovenia	x	6.200
Spain	229.000	150.000
Sweden	168.000	161.000
Switzerland	20.000	8.000
Ukraine	1.200.000	1.250.000
United Kingdom	1.023.000	1.200.000
TOTAL BAG	14.097.500	14.326.782
CRIPPLE LOSS (25%)	3.524.375	3.581.695
TOTAL KILL	17.621.875	17.908.477

estimated for the western part of the present Russian Federation the number of breeding ducks in the past 30 years at about 50 million of which 3.5 million ducks (7 %) were bagged in the 1980's and 12-15 million (24-27%) in the 1990's (FLINT & KRIVENKO 1990, KOSTIN 1996, KRIVENKO 1996, PRIKLONSKI & SAPETINA 1990). These figures seem to be more realistic.

The different figures as well as the high proportion of ducks bagged show that current population and bag estimates can not be very reliable. Based on a current estimated population size of EU-huntable goose species of about 3.7 million birds a current goose bag of 1 million means that about 27 % of the populations is taken by hunting on a yearly basis (Tab. 7). Compared to the official population estimates of the 1960's until today, it seems that hunting kill has increased over that period from about 24 % to 27 %. Considering the considerable differences in reliability of the count results within Europe, because of gaps in count coverage, as well as communication and co-ordination difficulties between Eastern and Western Europe, especially during the „hot phase“ of the „cold war“, population estimates of the period before the 1990's are not very reliable (MOOIJ 2000e). Based on the evaluation of all available data MOOIJ & ZÖCK-

LER (1999 & 2000) revised the population estimates for Bean and White-fronted Goose for the period 1960's-1980's. After including these data in the population estimates of the quarry goose species in the EU it shows, that these populations showed a moderate growth and the proportion taken by hunting increased from 16-17 % in the 1960's to about 27 % today (Tab. 7).

After addition of the natural mortality, which is estimated to be about 5-6 % of the estimated population size (EBBINGE 1991, MOOIJ 2000e, OWEN & BLACK 1990), current level of total annual mortality would be about 33 %. In the past decades e.g. for White-fronted and Bean Goose an average annual reproductive rate of 20-25 % was found (MADSEN et al. 1999, MOOIJ 2000e), i.e. the reproductive and mortality rates show an alarming discrepancy.

As discussed before an average of 5-10 % of the waterbirds bagged belong to non-quarry species (EU-COMMISSION 2003, MELTOFTE 1978, 1979, 1994, MOOIJ, unpubl., MUSIL 2005). The majority of these birds belong to common species, but a part are rare or even endangered species, like the Lesser White-fronted Goose *Anser erythropus*. Although Lesser Whitefronts are a protected and non-quarry species in almost all

Table 7 Estimated harvest rates by hunting in geese and ducks during the past decades in Europe  
Geschätzte Entnahmerate durch die Jagd bei Gänsen und Enten in den vergangenen Jahrzehnten in Europa

GEESE						
	Population size	Quarry species	goose bag	%	corr.quarry spp.	%
1950's	2.119.800	1.828.000			2.053.000	
1960's	1.743.000	1.472.000	353.841	24,0	2.122.000	16,7
1970's	1.826.000	1.520.000	375.903	24,7	2.245.000	16,7
1980's	2.386.000	1.905.000	495.288	24,1	2.530.000	18,2
1990's	3.260.000	3.170.000	650.625	20,5	3.170.000	20,5
2000-2005	3.805.500	3.707.000	984.433	26,6	3.707.000	26,6
DUCKS						
		Quarry species	duck bag	%		
1980's		31.070.000	17.621.875	56,7		
1990's						
2000-2005		34.820.000	17.908.477	51,4		

European countries, they migrate mostly associated with the „look-alike“ and almost europe-wide hutable (Greater) White-fronted Goose *Anser albifrons* and hunting kill seems to be the main cause for the dramatic decrease of the species (GALLO-ORSI 2001, HEREDIA et al. 1996, MADSEN et al. 1999).

About 50 % of the juvenile and about 10 % of the adult Lesser White-fronted geese, marked in Norway, about 16 % of all and 23 % of the juvenile Lesser Whitefronts ringed in Northern Siberia as well as about 15 % of all and 75 % of the juveniles ringed in the arctic part of Ural were reported shot (KAHANPÄÄ 2004, MOROZOV & SYROECKOVSKY Jr. 2002, TOLVANEN et al. 1999). Besides data indicate that Lesser White-fronted Geese seem to be so curious that they fly back to the hunter (ALPHÉRAKY 1904), which could explain the high rates of Lesser Whitefronts in local goose bags (e.g. 1 of 4 Whitefronts near Pulkovo, St. Petersburg and 7 of 31 near Olonetz, Karelia) (MOOIJ, in print).

Based on these data and the theory of probabilities it can be calculated that at least between 15 and 20 % of the Western Palearctic population of currently 8,000-13,000 individuals (DELANY & SCOTT 2002) is killed by hunting, i.e. between 1,200 and 2,600 Lesser Whitefronts are shot at a yearly basis, which would explain the annual decrease of the population with about 5 % (AARVAK & TIMONEN 2004, AARVAK et al. 1996 & 1997, KALYAKIN 1996, LORENTSEN et al. 1999, MOOIJ 2001, MOROZOV 1996, MOROZOV & KALYAKIN 1997, SYROECKOVSKI JR. 1996, TOLVANEN et al. 1998, 1999, 2000 & 2001).

To get more exact data about this item, it would be necessary to include bagged but non-quarry species into bag statistics.

As a summary of the preceding reflections we can conclude that in spite of the fact

- that about 30 years ago Priklonsky (1974) demanded the use of a uniform method to estimate the level of waterbird harvest in the European countries in analogy to IWC to estimate population size and
- that the EU-Commission (2003) stated that article 7 of the Birds Directive allows for the hunting of the species in Annex II in consideration of their population level, geographical distribution and reproductive rate under the

condition that the exploitation level of the these populations does not jeopardise conservation efforts, is ecologically balanced and is implemented according the wise use principle,

current waterbird hunting practice in the European Union is not compatible with the principles of wise and sustainable use. Besides the unsatisfactory quality of population estimates, there is only poor information about annual reproductive and mortality rates, annual hunting bags and the actual influence of hunting on conservation efforts. Besides in spite of all regulations and guidance there is no effective system of counter-measures to encounter a threatening over-exploitation of a species.

As the preceding facts show, in the EU it is still a long way to go to realise the aim of hunting as an acceptable exploitation according the wise use principle. The EU-COMMISSION (2003) stated that for most species the level of taking by hunting is unknown and that wise use by hunting „should include information on bag statistics, which is at present lacking or poorly developed for most species throughout the European Union.“ Furthermore „Other information may be relevant for certain species such as studies on crippling rates and impact of shotgun pellets in birds on their survival.“

Repeated statements from hunting organisations, like the German Hunters organisation DJV, that waterbird hunting is sustainable use („Flugwildjagd ist daher als nachhaltige Nutzung nachwachsender Ressourcen zu betrachten.“, DJV-Position to the exploitation of migratory quarry bird species in DJV-Handbuch Jagd 2002-2005, WIESE/KÜBLER 2002-2005) are not very helpful to reach the aim of wise use of waterbird populations and to create public awareness for the actual problems and to solve them! The reference in the DJV position paper that in spite of hunting waterbird populations did not decrease, is not enough to proof that current hunting practice is sustainable, because firstly this fact does not grant that if a population is stable today, it will continue to be so also in future and secondly – in spite of the optimistic statement – currently already between 5 and 8 hutable duck species seem to show a decreasing tendency and one of these species is the Mallard (BURFIELD & VAN BOM-

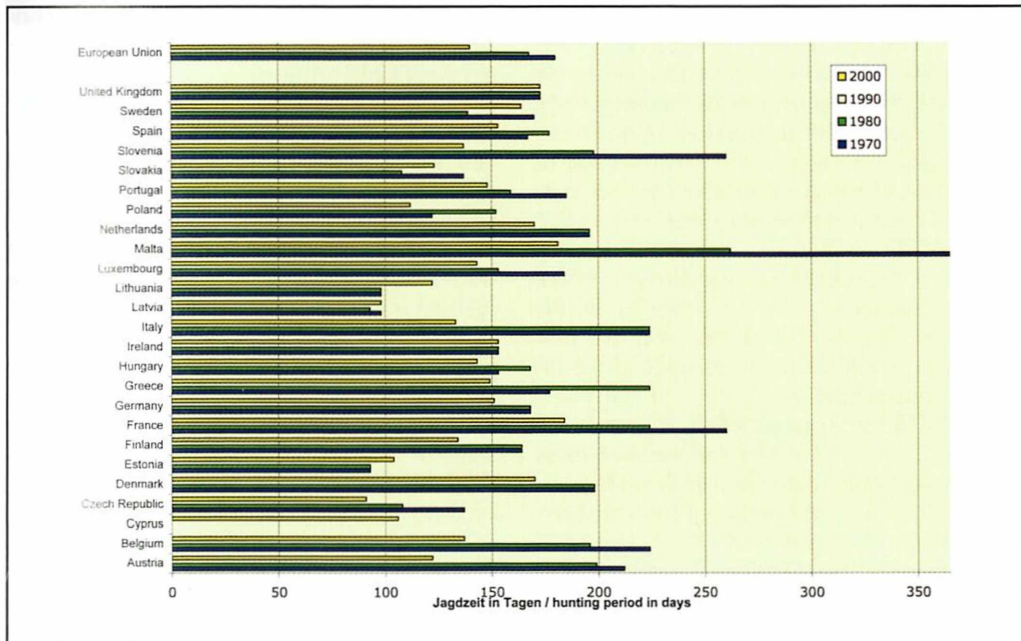


Fig. 12 Length of the hunting period for ducks in the countries of the European Union between the 1970s and today  
 Länge des Jagdsaisons für Enten in den Staaten der Europäischen Union von den 1970er Jahren bis heute

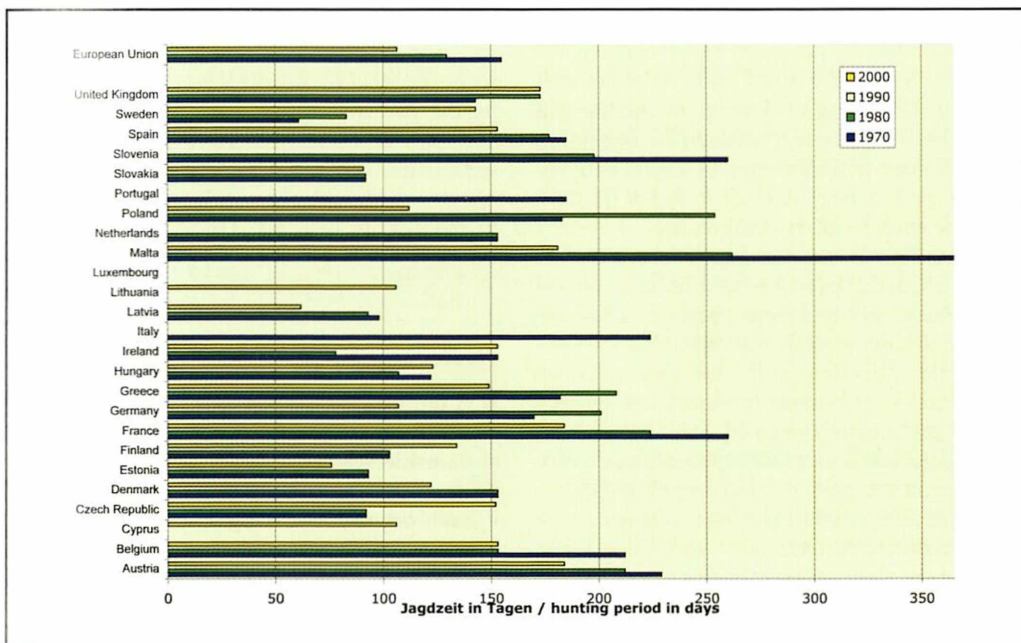


Fig. 13 Length of the hunting period for geese in the countries of the European Union between the 1970s and today  
 Länge des Jagdsaisons für Gänse in den Staaten der Europäischen Union von den 1970er Jahren bis heute

MEL 2004, DELANY & SCOTT 2002, GILLESSEN et al. 2002). Furthermore we more than ever need a strong and reliable data base to monitor the development of populations and hunting bags, especially because of progressive environmental change due to increasing intensification of human use and climate change, to develop strategies and measures to react in time on threatening developments.

In spite of the not so positive analysis of the current situation it would be wrong to get the impression that nothing happened in the past decades to develop hunting practice in the direction of sustainability

Compared to former reviews (e.g. LAMPPIO 1982a & b, 1993, LANDRY 1990) in the member states of the present European Union duck hunting periods were considerably reduced from an average of about 180 days in the 1970's to about 140 days today (Fig. 12). For geese hunting periods were reduced from an average length of about 155 days to about 100 days (Fig. 13). On the territory of the EU spring hunting, not unusual in the 1970's, is forbidden. Although ecological and culinary questionable (Fig. 11), duck hunting in January (Fig. 4) and goose hunting between November and January (Fig. 5) is still usual in most EU countries. The acceptance of a more ecologically based hunting period between the beginning of September and the end of October for geese and between the beginning of September until the end of December for ducks would mean a hunting period of 61 days for geese and of 122 days for ducks.

Since the 1970's in a number of countries the number of duck species with a hunting period was reduced and in others goose hunting was stopped countrywide or regional. But the lack of an official hunting period for a species does not necessarily mean that the species is not regularly hunted as is shown by the Netherlands, where geese are non-quarry species since 2000. However in the past years about 10,000 geese were shot annually in the scope of special permits to reduce goose damage, which is a rather high bag for a non-quarry species.

During the past four decades of their existence the quality of the international waterbird counts in the scope of the International Waterbird Census (IWC) of Wetlands International was improved considerably (MOUJ 1999c) and it is

more and more realised that reliable and specified bag statistics are needed. In an increasing number of countries efforts are made to build up a system to collect standardised bag statistics. Also the re-establishment of the Waterbird Harvest Specialist Group by Wetlands International in 2003, as successor of the Teppo Lampio's Hunting Research Group that ceased in 1995, based on the knowledge that sustainable use of waterbird populations by hunting only can be realised if there are both reliable population estimates and reliable specified bag statistics (Deplanque 2003). More often it is argued that it is unreasonable to expect hunters to record their waterbird bag specified, which is not very plausible. In most countries hunters are expected to report their boar and deer bags separated after species, sex and age. Why not ducks and geese? Besides if hunters are expected to recognise species in flight and at a distance within seconds before they shoot, why shouldn't they be able to determine the same species leisurely in the hand after shooting. It should be a matter of course that the privilege to shoot is connected with the obligation to record and report exactly what was shot (even if the species bagged is not huntable). The high level of interest in bag statistics and especially in a review on the hunting scene in the European Union is demonstrated by the fact that in the scope of the questionnaire most countries sent more or less complete information about the hunting practice in their country. Although the result surely is paliated by the fact that in a part of the countries friendly colleagues were questioned a feedback quota of 75 % to 90 % is extremely good.

### Necessary future action

It is out of the question that there is still a lot to do to make waterbird hunting more or less sustainable according to the wise use principle. Following steps seem to be necessary:

- Each country has to organise and support annual reliable waterbird counts in the scope of IWC of Wetlands International to get reliable population estimates. Because the inevitably high quality of these data it is obligatory to have a professional coordination unit in each country to organise counts, to train counters, to collect and analyse data in a very short

period of time and to optimize contacts with Wetlands International.

- Each country has to organise and support annual reliable and specified bag statistics according to an uniform collection method to estimate the level of waterbird harvest. These data should be collected on an international level by an international organisation, e.g. Wetlands International. Bag statistics should include also non-quarry species bagged. Because the inevitably high quality of these data it is obligatory to have a professional coordination unit in each country to train hunters, to organise data collection and to analyze data in a very short period of time and to optimize contacts with Wetlands International.
- In each country in the scope of the waterbird counts representative samples should be taken from the counted groups to collect data about annual juvenile proportions of the species counted.
- In each country representative samples (e.g. wings of ducks, heads of geese) should be taken from the bagged waterbirds to collect data about age and sex structures of the bagged species at an annual basis.
- An europewide mechanism should be developed to react in the short term on threatening developments in single species derived from the analysed population and bag data.
- Hunting periods should be orientated on the ecology and possibilities of consumptive use of the hunted species.
- Lead shot should be phased out europewide for waterbird hunting on the short term.
- All EU member states should become members of AEWa as well as the Bonn and Ramsar Convention.

## Summary

In the scope of International Conventions like the Ramsar and Bonn Convention, the African-Eurasian migratory Waterbird Agreement (AEWA) as well as the EU-Birds Directive waterbird hunting only should be allowed according to the principle of wise or sustainable use of natural resources. For this review data about hunting practice and hunting bags were collected from 24 of 25 member states of the European Union. This data show that about

6.7 million hunters in the EU currently take at least about 7.2 million ducks and 262,000 geese per year. After adding 25 % of the annual bag, because of crippling loss, this means that on the territory of the EU annually at least about 9 million ducks and 327,000 geese are killed by hunters. Bag data showed to be of very different quality levels and bag statistics have to be optimised considerably in most countries before they can be used as a reliable tool to estimate annual hunting kill.

The conditions for waterbird hunters are very different between single countries. The number of quarry waterbird species varies between 1 and 24 and the hunting period between three months and almost half a year.

Correlation of the collected bag data with population estimates of the quarry species showed that currently about 50-56 % of the duck and about 27 % of the goose population is bagged annually in the western Palearctic. Furthermore data analysis indicated that also the reliability of current population estimates seems to be questionable, i.e. current hunting practice still has a long way to go to become a kind of wise or sustainable use of natural resources. Besides the lack of reliable population estimates there are even less reliable data about annual waterbird bags that in a number of countries are not even specified. Furthermore data about sex and age ratios both in the hunted populations and in the annual bags are lacking, which means that there is no information about the population structure of the quarry species nor about the influence of hunting on the social structures of these populations. Hunting periods are mainly based on tradition and less on ecological criteria or possibilities to utilise the bagged birds for consumption. In most EU countries use of lead shot is still not forbidden or only restricted in such a way that the restriction is hard to control. Besides it is inevitable that in the course of regular waterbird hunting non-quarry species are shot, especially look-alike species. Some species like the Lesser White-fronted Goose are threatened by erroneous shooting.

To make waterbird hunting sustainable it is inevitable to develop an europewide system to collect reliable waterbird bags, which should include erroneously bagged species, and to optimise international waterbird counts to get

reliable population estimates. Furthermore data should be collected about age ratios both in the populations and in the hunting bag. These data should be used to monitor the status and development of the hunted populations, to estimate the influence of hunting and to launch necessary measures if a species is endangered.

## Zusammenfassung

### Schutz und Nutzung von Wasservögeln in der Europäischen Union

Im Rahmen internationaler Abkommen, wie z.B. die Ramsar- und Bonner Konvention, das Afrikanisch-Eurasische Wasservogel Abkommen (AEWA) und die EU-Vogelschutzrichtlinie, sollte die Jagd auf Wasservogel nur nach dem Prinzip eines „wise use“ oder einer nachhaltigen Nutzung natürlicher Ressourcen zugelassen werden. Anlässlich der Vergrößerung der Europäischen Union von 15 auf 25 Mitglieder (Fig. 1) wurde analysiert, inwieweit die Wasservogeljagd in der EU einer Nutzung gemäß dem Nachhaltigkeitsprinzip entspricht. Für diese Arbeit wurden mittels einer Befragung Daten zur jagdlichen Praxis bei der Wasservogeljagd sowie zu den jährlichen Wasservogelstrecken in den 25 Mitgliedsstaaten der Europäischen Union gesammelt. Von 24 der 25 EU-Staaten konnten mehr oder weniger komplette Datensätze gesammelt werden. Wegen der Fülle der Daten wurden nur die Angaben zu Gänsen und Enten analysiert.

Die Analyse zeigte, dass die ca. 6,7 Mio. Jäger in der EU gegenwärtig jährlich zumindest ca. 7,2 Mio. Enten und ca. 262.000 Gänse zur Strecke bringen. Nach Addition von 25 % der jährlichen Strecke wegen krankgeschossener bzw. nicht aufgefundener angeschossener Vögel lässt sich feststellen, dass auf dem Territorium der EU jährlich mindestens ca. 9 Mio. Enten und ca. 327.000 Gänse erlegt werden (Tab. 1). Die Analyse zeigte jedoch auch, dass die Qualität der von den einzelnen Ländern gelieferten Daten von stark unterschiedlichem Niveau war und dass in den meisten Ländern noch viel geschehen muss, bevor diese als Basis für eine zuverlässige Abschätzung der jährlichen Wasservogelstrecken genutzt werden können. Darüber hinaus wurde deutlich, dass

die Bedingungen, unter denen die Jäger in den einzelnen EU-Staaten zur Jagd gehen, außerordentlich unterschiedlich sind. So gibt es nicht nur große Unterschiede bei der Zahl der Jäger bzw. der Jägerdichte zwischen den einzelnen Ländern (Tab. 1, Fig. 2), sondern während es in fast 80 % der Staaten eine Art von Jägerprüfung gibt, greifen die Jäger im Vereinigten Königreich immer noch ohne jegliche Prüfung zur Flinte, gibt es in nur knapp einem Viertel der EU-Staaten eine einigermaßen zuverlässige Jagdstatistik und wurde der Gebrauch von Bleischrot in nur 16 % der Staaten verboten, obwohl die EU sowie 16 ihrer Mitgliedstaaten im Rahmen des AEWA versprochen haben, Bleischrot bis spätestens 2000 für die Jagd in Feuchtgebieten zu verbieten (Fig. 3).

Die Zahl der in den einzelnen Ländern jagdbaren Wasservogelarten variiert zwischen 1 und 22 (Tab. 2) und der Jagdsaison zwischen drei und nahezu sechs Monaten (Fig. 4, 5 & 6). Aufgrund der unterschiedlichen Dichte von Wasservögeln und Jägern sowie der unterschiedlichen jagdlichen Regelungen in den einzelnen Ländern zeigen auch die Streckenergebnisse zwischen den einzelnen EU-Staaten große Unterschiede.

So werden in Frankreich und im Vereinigten Königreich die höchsten Strecken geschossen (Tab. 1), pro Quadratkilometer aber werden die meisten Wasservogel in Dänemark erlegt (Fig. 7) und pro Jäger in den Niederlanden (Fig. 8).

In Frankreich werden zahlenmäßig die meisten Enten erlegt (Fig. 9) und das Vereinigte Königreich liegt an zweiter, bei den Gänsen jedoch an erster Stelle (Fig. 10). Hierbei ist zu bedenken, dass bis zum Verbot der regulären Gänsejagd die Niederlande eindeutig die höchsten Gänsestrecken erlegte (Fig. 10). Die in der EU am stärksten bejagte Entenart ist die Stockente, die mehr als zwei Drittel der EU-Entenstrecke ausmacht (Tab. 3). In Relation zu den Bestandsschätzungen für die westliche Paläarktis, werden jährlich ca. 21 % des Bestandes der jagdbaren Entenarten erlegt, wobei die Erlegungsrate bei der Stockente fast 60 % und bei der Krickente fast 35 % des geschätzten Bestandes erreicht (Tab. 3).

Bei den Gänsen ist die Graugans, die fast 50 % der gesamten EU-Gänsestrecke erreicht, die

am stärksten bejagte Art (Tab. 4). Verglichen mit den Bestandsschätzungen für die westliche Paläarkt, werden in der EU nur ca. 7 % der Gänsebestände erlegt, wobei die Kanadagans mit einer Erlegungsrate von ca. 36 % des geschätzten Bestandes an der Spitze liegt, gefolgt von der Graugans mit ca. 21 % (Tab. 4). Unter Berücksichtigung des 25 %-igen Zuschlages für den krankgeschossenen und nicht geborgenen Streckenanteil, werden in der EU jährlich rund 26 % des Enten- und ca. 9 % des Gänsebestandes zur Strecke gebracht. In Europa (EU und nicht-EU-Staaten) wurden schätzungsweise in den 1960er Jahren mindestens 350.000, in den 1980er Jahren mindestens 450.000 und gegenwärtig fast 1 Mio. Gänse erlegt (Tab. 5). Bei den Enten liegt die europäische Strecke seit den 1980er Jahren bei mindestens 17,5 Mio. Enten (Tab. 6).

Bei einem Vergleich dieser Zahlen mit den Bestandsschätzungen der jagdbaren Arten für die westliche Paläarkt zeigt sich, dass in Europa gegenwärtig jährlich 50-56 % der Enten- und ca. 27 % der Gänsepopulationen erlegt werden (Tab. 7). Unter Einschluss von 5 % natürlicher Mortalität liegt die jährliche Mortalität bei Gänsen bei ca. 33 %, bei einer jährlichen Reproduktionsrate von 20-25 % für die meisten Arten, was die Nachhaltigkeit des gegenwärtigen Bejagungsniveaus in Frage stellt. Die hohe Erlegungsrate bei den Enten liefert einen weiteren Hinweis, dass die Strecken- und Bestandsschätzungen nicht sehr zuverlässig sein können. Zuverlässige Strecken- und Populationsschätzungen sind jedoch eine Grundvoraussetzung für eine nachhaltige Jagdausübung.

Enten und Gänse mausern bis in den August und auf Grund des „Winter-Stresses“ verlieren Gänse ab Anfang November und Enten ab Anfang Januar an Gewicht. Aus ökologischen und kulinarischen Gründen sollte deshalb die Jagdzeit für Gänse von Anfang September bis Ende Oktober und für Enten von Anfang September bis Ende Dezember liegen (Fig. 11).

Seit den 1970er Jahren wurden in der EU die Jagdzeiten für Gänse und Enten immer weiter verkürzt, von rund 180 Tagen in den 1970er auf gegenwärtig rund 140 Tage bei Enten (Fig. 12), und von rund 155 Tagen auf ca. 100 Tage bei Gänsen (Fig. 13). Eine Berücksichtigung einer mehr ökologisch ausgerichteten Jagdzeit würde

die Jagdzeit für Enten auf 122 und für Gänse auf 61 Tage verkürzen.

Die Analyse zeigt, dass es zur Zeit keine ausreichend zuverlässigen Bestandsschätzungen gibt. Die vorliegenden Streckenzahlen sind jedoch noch unzuverlässiger als die Bestandszahlen, weil diese nur in wenigen EU-Staaten systematisch erfasst und vielfach nicht artbezogen ermittelt werden.

Darüber hinaus fehlen Daten über Geschlechts- und Altersanteile in der Jagdstrecke und den meisten Populationen, d.h. dass notwendige Daten über die Populationsstruktur sowie über den Einfluss der Jagd auf die Sozialstruktur bejagter Arten fehlt. Daneben beruht die Festsetzung der Jagdzeiten fast überall mehr auf Tradition als auf ökologischen Kriterien oder auf den optimalen Möglichkeiten, die erlegte Strecke konsumtiv zu nutzen. Trotz der Tatsache, dass nicht nur die EU, sondern auch 16 EU-Mitgliedstaaten AEW-Mitglied sind und Bleischrot für die Jagd in Feuchtgebieten bis 2000 verboten werden sollte, ist die Nutzung in den meisten EU-Staaten auch weiterhin erlaubt und in einigen Ländern mit Verbot ist dieses so gestaltet, dass es nicht zu kontrollieren ist (z.B. in Deutschland).

Da es unvermeidbar ist, dass bei der Wasservogeljagd auch nicht-jagdbare, insbesondere einander ähnlich aussehende Arten, geschossen werden und einige dieser Arten, wie die Zwerggans, hierdurch existentiell bedroht sind (schätzungsweise werden europaweit jährlich irrtümlicherweise 1.200-2.600 Zwerggänse erlegt!), ist es dringend notwendig diesen „Beifang“ systematisch zu erfassen und durch gezielte Maßnahmen zu verringern.

Die aufgezählten Defizite zeigen, dass die gegenwärtige Ausübung der Wasservogeljagd in der EU noch weit vom Ziel einer nachhaltigen Nutzung natürlicher Ressourcen entfernt ist. Damit Wasservogeljagd eine nachhaltige Nutzung wird, ist es unabdingbar, ein europaweites System zur Erfassung von zuverlässigen und spezifizierten Wasservogelstrecken zu schaffen. Dieses System sollte auch den „Beifang“ registrieren.

Darüber hinaus müssen die internationalen Wasservogelzählungen optimiert und auf der Koordinationsebene dringend professionalisiert werden, um zuverlässige Bestandsschätzungen

zu ermöglichen. Daneben müssen dringend Daten zum Geschlechter- und Jungvogelanteil in den bejagten Populationen und in den Jagdstrecken erhoben werden, um den Zustand und die Entwicklungstendenz in den bejagten Populationen zu beobachten. Nur so kann der Einfluss der Jagd abgeschätzt, die Wasservogeljagd nachhaltig gestaltet und für die Zukunft gewährleistet werden, dass rechtzeitig Maßnahmen eingeleitet werden können, wenn sich eine gefährliche negative Bestandsentwicklung abzeichnet.

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