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Abstract: There are nine Alpine chamois (*Rupicapra rupicapra*) populations in the South of Germany. The total German population is estimated to be around 9'000 to 11'000 animals. There are also four Alpine ibex (*Capra ibex*) populations in the South of Germany. The total number of ibex in Germany is about 200 to 300 individuals. These are fully protected by German law.
6.6 Germany
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Introduction

Germany covers a total area of 337,042km² in which four broad physiographic regions can be recognized. Across the north of the country west of the Berlin region, the North German plain is generally flat except in the north where it is penetrated by rolling morainic hills running roughly parallel to the Baltic Sea. To the south of this region are the Mid-German highlands stretching across the whole country. The western part of the highlands is formed by the Rhine plateau through which the Rhine flows in a relatively steep gorge. At the plateau’s eastern edge is the complex upland-lowlough terrain drained by the Weser and Leine rivers. The Harz mountains form the eastern edge of the trough with the Thuringen Wald lying to the south. The Mid-Germanic highlands end with the Erzgebirge along Germany’s border with the Czech Republic. The third region, Southern Germany, stretches from the Mid-German highlands south to the Bavarian Alps and from the Black Forest along the east bank of the Rhine, west to the Bohemian Forest (Böhmer Wald) along the Czech border. The Swabian Jura (Schwäbische Alb) and the Franconian Jura, forming the southern part of this region, are the main mountainous areas. To the south of the Jura lies the most southerly mountain region of Germany, the Bavarian Alps and plateau, which abut Switzerland and Austria. Germany’s climate is intermediate between the western oceanic and eastern continental regimes, in turn influenced by the varied topography of its different regions.

Current status of Caprine

There are two native species of Caprine in Germany, Alpine chamois (Rupicapra rupicapra rupicapra) called Germar or Gems in German, and Alpine ibex or Steinbock (Capra ibex ibex). Only a small portion of Germany provides suitable habitat for these species. Both species have a patchy and isolated distribution. For chamois, the Bavarian Alps is the most important area. For ibex there is even less suitable habitat, and that is restricted to parts of the Allgäuer Alps, the Wetterstein mountains and Berchtesgaden. Despite geographic and temporal variations in management strategies (Bauer 2000a, 1995), both species appear to be in satisfactory condition, particularly alpine populations.

Currently, there are nice populations of chamois in Germany. Chamois in the Bavarian Alps were severely reduced in numbers in the past, but have since rebounded through a combination of their high breeding potential (Bauer 1982, 1983, 1985, 1987, 1990a, 1991; Brüdermann and Still 1981; Caughey 1979; Schröder 1971) and a series of mild winters. However, many small, isolated non-alpine chamois populations have suffered from a lack of consistent and appropriate management policies, and a public perception of the species not being native in these predominantly forested habitats that is not supported by the animals’ behaviour (Bauer 1986, 1991; Bauer and Pfleger 1989; Brüdermann and Still 1987; Kritmer 1960), patterns of habitat and vegetation use (Bauer 1986, 1991; Elsner-Schäck 1982; Hams 1980, 1985, 1986), reproductive ecology (Bauer 1983, 1985, 1987), colonisation abilities (Bauer 1985; 1990b; Caughey 1983) and its wide distribution in different sub-alpine habitats during the Neolithic period (Bauer 1984, 1991; Heptner et al. 1966; Kritskie 1979; Salzmann 1975).

The virtual elimination of Alpine ibex through hunting from Germany and the remaining parts of the European Alps by 1850, may be attributed primarily to superstitious beliefs about the magic properties of almost every part of the animal’s body. Re-introductions were mostly carried out in areas considered suitable (Graf and Schröder 1978), and not based on historic records. Future re-introductions could be based on suitability models of available habitat (Wiersma and Schröder 1983). Today, ibex occur in four populations in the Bavarian Alps. All were reintroduced relatively recently. The first was made in Hinter Kössen, Berchtesgaden, using 24 animals from the Berlin and Munich Zoological Gardens which originated from the Altaia valley, Italy. Because this species still exists only in low numbers in Germany, its is considered problematic, nor is it hunted. However, its sedentary behaviour and limited colonisation abilities can detrimentally affect alpine vegetation locally (Kofler 1983; Kofler and Ströhder 1985; Schröder and Kofler 1986).

General conservation measures taken

At the federal level, general conservation legislation is provided by the 1976 Federal Law on Nature Conservation, but most specific legislation operates at the state level. Each state has a ministry responsible for administering its protected areas, along with a scientific and technical agency. Research and advice is also provided to (federal) agencies by the Federal Institute for Vegetation Research, Nature Conservation and Landscape Management. Consultative input at all government levels is provided by various Councils for Nature Conservation.

Administration and management of game species, including Caprine, are regulated by the Forestry department within state owned forests. Large private landowners maintain their own independent forest service, usually with an important game management section. For the remaining areas leased from landowners (e.g. farmer
co-operative leasing to hunters), administration is maintained by public hunting authorities within the offices of the district presidents. These in turn, answer to the State Ministries of Rural Areas, Food, Agriculture, and Forestry. So far only two of the 16 ministries include small wildlife units to advise them. Research and advice are also provided by federal agencies such as the Forest Research Institute or World Forestry in Bonnburg, several small wildlife ecology institutes attached either to forestry or veterinary faculties at universities (e.g., Freiberg, München, Göttingen, Kiel), together with a network of state Forestry Research Institutes (FRI). One of the most significant ecological research institutes maintained and operated within the former DDR, the Institute for Forest Research in Eberswalde, is being dissolved, and unless replaced will be a significant loss for wildlife research in Germany.

All large mammals, including Caprinas, are subject to federal hunting law (Budenjagdgesetz) of 29 November 1952 (BGBl. 1, p.70f.), modified 28 June 1990 (GBB 1, p.1221 and p.1249), and by the "Einigungsgesetz" of 31 September 1990. Hunting laws may be modified within states (Landesjagdgesetze, e.g., hunting season) and are only marginally treated by conservation legislation, except in national parks. Hunting is generally not affected by protected area status (except in National parks) unless declared a non-hunting game reserve under the hunting legislation. For this reason, the status of ungulates is not reflected by the presence of viable populations existing in protected areas, but by persistent hunting regulations. These are powerful enough to determine the status of a species. Private hunting and conservation groups may also own and manage nature reserves. Most state hunting associations have become accepted, though critically regarded, members of the German Conservation Union (Deutscher Naturschutzbund). There have been several encouraging attempts at co-operation between hunters and natural conservationists, but in general the results have not been satisfactory. Increasingly, hunters are taking a more active role in the establishment of harvest and conservation strategies of game species, by financing or carrying out their own research and management projects. Except for waterfowl, hunting occurs within hunting territories and the right to hunt comes with land ownership. To be able to hunt, however, the landowner must own at least 75ha, or at least 15ha if several people are to share the hunting rights. Any landowner, or lessee of hunting rights, has obligations to insure, for maintaining a diverse and healthy population of game and non-game species in natural habitats. Game has to be managed in such a way that agriculture, forestry and fisheries are not affected detrimentally, and any damage caused by game has to be compensated. Restrictions and hunting quotas determined by forestry or the regional administration are obligatory. An important component in German gamekeeping is the hunters' obligation to co-operate with the government in mitigating the effects of hard winters on game, in controlling feral dogs and cats, and in fighting the spread of endemic diseases (rabies) and pathogens dangerous to humans (e.g., tapeworms, etc.). Therefore the role of the German hunter includes an important land husbandry component. Quality is assured by comprehensive hunting examinations that follow a typical preparation period of about 12 months. The five classes of protected areas within Germany are: National Parks (Nationalpark), Nature Parks (Naturpark), Protected Landscapes (Landschaftsschutzgebiet), Natural Monument Sites (Naturdenkmale) and Nature Reserves (Naturschutzgebiete) (UCCN 1987b). Caprinas occur in several protected areas, although hunting is possible in all except those designated non-hunting game reserves under the Hunting Laws. To date, hunting has been virtually unrestricted in protected areas, and even to some degree in national parks. As for the other types of protected areas, conservationists are demanding that these be closed to hunting. As most protected areas, other than national parks, are either small or very small in size, the value of this demand is being generally questioned.

General conservation measures proposed

Ungulate management in Germany has a long history and has resulted in a large body of legislation, regulations and often conflicting ideas. These have rarely satisfied either foresters or hunters. In particular, specific needs of populations of species are missing from forestry master plans. Harvest plans are not based on management concepts such as maximum sustained yield, but are vaguely aimed at minimizing "ungulate damage", a poorly defined criterion whose definition, measurement, evaluation and mitigation have not been elucidated despite much research. As a consequence, ungulate management with few exceptions is poorly defined, inconsistent, and very often inefficient (see Bauer 1990a). One of the major unresolved management problems facing chamois is the question of the public's and decision maker's attitudes about the species. Forestry interests tend to view chamois as forest pests, hunters are preoccupied with trophies, and conservationists tend to ignore chamois and other ungulates, or if pressed, tend to support unquestioningly forest protection. There is a great need for regional and local management plans for Caprinas based on sound ecological studies made on site. Forestry, which spends several 100 million marks each year on often inefficient protective measures, should consider giving effective research a much higher priority within its well equipped and staffed Forest Research Institutes (Forstliche Versuchsanstalt) than is done currently (Bauer 1990a). The same is true of hunters, who, well equipped and represented in hunting organisations with access to considerable financial resources, spend too much
money on administration and political representation, while insufficiently exploring their own research and management potentials. Chamois is especially poorly managed in small and isolated sub-alpine populations that are greatly affected by human-induced disturbance (e.g. tourism, forestry activities, and uncontrolled hunting).

Species accounts

Most aspects of chamois biology have been studied in Austria, Switzerland and France. The German literature is somewhat restricted (e.g. Bauer 1984, 1985, 1986a, 1986b, 1990a; Briedermann 1961, 1975; Briedermann and Still 1987; Ehren von der Maisenburg 1982; Ehren-Schack 1986; Knauz and Schröder 1983; Miller 1987, 1989; Schröder 1971, 1977; Schröder et al. 1983; Stiegl 1989). Research on ibex is even less extensive (e.g. Giacometti 1991; Graf and Schröder 1972; Kosler 1981; Kofler and Schröder 1985; Neithammer 1963; Wieruma and Schröder 1985).

Alpine chamois (Rupicapra rupicapra rupicapra)

Distribution: Found in nine populations in Germany (Map 6.6.1). 1) The only known endemic population within recent history occupies a narrow strip, 20 to 30km wide and 250km long, along the northern slopes of the Bavarian Alps from Salzburg in the east to Lindau in the west. 2) A small area (ca. 5,000ha) in the highland region of Aschau in the southern Alps. This sub-alpine, long established (>80 years) population (ca. 70 animals in 1988) was declined to <20 animals recently. 3) Natural recolonization appears to have been responsible for the population which occupies a 10,000ha area of the Upper Drau valley. There are about 40 to 50 chamois, that are highly mobile and unstable (Bauer 1991). 4) The Necker valley population near the town of Rottweil resulted from an introduction of seven animals in 1963 and from natural colonisation from the Black Forest population. The population is restricted to some steep slopes along the sides of the valley, and is highly endangered due to
the attitude of local foresters and conservationists. It is also heavily felled. Normandy >20% in 1979, the population is declining drastically to <10,000 (animal). 5) Another population, divided from eastern animals in 1929, inhabits the forests bordering the northern boundary of the Suitaian Jura, northwest of Wolfdorf. This population was estimated to be ca. 30 animals in 1990 (Braun 1986) and seems to have remained stable. 6) Until 1935, an enigmatic, enigmatic population existed in the Black Forest. By the end of the 1930s, 21 animals were introduced from Austria into the Zeller valley near the Feldberg, the region's highest peak (4,924m a.s.l.). The population is subdivided into five or six isolated sub-populations (Feldberg, Bleicher, Schönlach, Feldsee, near Wolfert) distributed over an area of about 10,000ha. The population reached its peak around 1970 with ca. 1,700 animals. It has since declined due to reductions by humans and weather, and is presently around 1,000 animals. 7) Another population established 30 years ago, hangs on in the beech forests of Wausenber, south of Nuremberg. It consists of <10 animals confined to a quarry within the forest. 8) The Elbhainebachgrube contains the most northerly distribution of animals. Here, it is restricted to small, isolated oak copses along river valleys, similar to those in the Suisan Jura and the upper Danube valley. The population was reintroduced in 1996 after an earlier attempt in 1975 and 1976 had failed (Bremm et al., 1988). A second reintroduction took place between 1997 and 1999. The present population distribution lies east of Dresden, north of the Elbe river and on the German-Czech border covering an area of about 15,000 ha. Most, however, inhabit the range in the Czech Republic. The total population of 30 animals had remained relatively constant for the last 30 years. Since 1995, the German part of this population's range has been part of the Schwarzwald National Park, but animals have virtually disappeared due to excessive tourism activities. There appear to be no animals permanently resident in the German part of this range at present. 9) There are no recent data available for the population in the Bavarian Forest, but numbers appear to be very low.

Population: The total German population of chamois is estimated to be around 5,000 to 11,000 animals, comprising 10,000 to 15,000 in the Bavarian Alps, 20 in Adda, 30 to 40 in the Upper Danube valley, 10 to 15 in the Neckar valley, 25 in the Harz, 800 to 1,000 in the Black Forest, and 10 animals at Weinenberg.

Threats: Although not treated overall in Germany, the small sub-alpine populations are vulnerable to poaching and toxiacid events, and possibly to overenlargement. Disease, acts as a major threat to small populations and has caused declines in some (e.g.

At Elbhainebachgrube. Unless steps are taken to reverse this trend, declines will continue and many small populations are on the verge of extinction. Even large population face threats. Numbers in the Bavarian Alps are currently decreasing due to sharply increased harvest rates. Forest development has also affected many sub-populations negatively (e.g. disturbance, habitat isolation).

Conservation measures taken: Listed as Lower Risk (LC) in the 1996 IUCN Red List of Threatened Animals (IUCN 1996). Chamois occurs in a number of regions with some protected areas status. However, because it is classified in a "pette species" and thus subject to hunting laws, the question of protected area status may be considered irrelevant. In most areas, harvest rates are annually reviewed, and pressure from hunters helps maintain its existence. Local birds are frequently exterminated to protect forests, but rapid reoccupation usually occurs.

Status within country: Not threatened.

Conservation measures proposed: 1) Conduct adequate population surveys throughout the total range. 2) Bring harvest rates in line with population viability to brand hunting pressures. 3) Develop specific management plans for very small populations of particular concern, to deal with threats to their survival. In these cases, DNA studies may be useful and the possibility should be offered to hunter groups to pursue.

Alpine ibex (Capra ibex ibex)

Distribution: Four ibex populations have been established in Germany (Map 6.6.2). The first introduction was made at Kesselweg (Disentis-Glunzensee) in 1956 with 24 animals. The resulting animals came from the Vaccina valley (Italy), from Peter and Paul, and from the Berlin and Munich Zoological Gardens. The animals dispersed after a few years to the Austrian Bluehochland in 1951, the population was reduced considerably after an outbreak of ovine mange, but since then numbers have increased slowly and at present there are about 100 animals. The population straddles the German-Austrian border, with hunting in Austria and ramming in the Bavarian Alps in Germany (Gruenewald 1991). A second population was established at Feldhaus, partly the result of immigration of one male from the Austrian colony at Badiritsch supplemented by four animals from Swiss/Austrian populations in 1967. After the introduction of several more kias, this population increased to about 100 members, however, its range is very restricted and there is little potential for expansion. A small colony in Oberau (Baden 1986) was the result...
of an introduction in 1963 which failed to disperse. It is now restricted to an area of about 100 ha, and foresters consider it a problem because of range overlap. Another small, restricted population became established through natural dispersal from Austria (Kleines Walsertal), but its size is unknown.

**Population**: The total number of ibex in Germany is between 200 and 500 individuals.

**Threats**: Like most small, isolated populations in restricted habitats, epizootics, stochastic events and inbreeding depression are usually potential threats. Each of the four populations shows very slow rates of increase and little tendency, or potential, to expand. None of the four populations has much potential for long-term viability.

**Conservation measures taken**: The Alpine ibex is fully protected by German law. Three of the current populations are the result of re-introductions of animals descending originally from Italian populations. A fourth, small population has established itself by natural dispersal from Kleines Walsertal, Austria.

**Status within country**: Vulnerable.

**Conservation measures proposed**: According to studies by Wiesma and Schröder (1985) and by Graf and Schröder (1978), there are only limited sites in Germany suitable for future ibex introductions, so the potential for increasing the number of populations is very small. Existing populations should be closely monitored. Although they are poor colonizers, ibex can expand relatively rapidly. This leads to high local population densities (Niewegel 1986, Kohler and Schröder 1945), competition with other species (Kohler 1981), over-exploitation of food resources, and susceptibility to diseases and parasites.