RESEARCH PAPER

ANIMALS ON REGIONAL COATS OF ARMS IN RUSSIA: GEOGRAPHICAL ASPECTS

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ABSTRACT. The broadly-used official regional symbols allow increasing awareness of animals, which is essential to their effective conservation and ecotourism development. The presence of animals on the coats of arms of the Russian regions was evaluated. It was found that 49% of them show animal figures, and these regions constitute 76.3% of the country's territory. About twenty animals are shown on the analyzed coats of arms, of which 63% are mammals. The most common are bears (including polar), eagles, and martens. Some rare and endangered species like Amur (Siberian) tiger and Caucasian leopard are also shown. The majority of the regional coats of arms depict only one animal, while two or three animal figures appear together only in a few cases. The geographical distribution of the animals depicted on the regional coats of arms coincides only partly with the true zoogeographical patterns. This is an expected finding because coats of arms are elements of the cultural space, even if they represent natural features. Although the regional coats of arms reflect a small portion of the entity of Russian animals and the choice of animals does not always match the true conservation needs, this auxiliary 'channel' of promotion of the knowledge of animals appears to be valuable.

INTRODUCTION

Effective biodiversity conservation depends strongly on the broad public awareness of natural heritage values, vulnerability, endangered species, and other related issues. Various aspects of this topic were addressed by numerous experts, including Kassas (2002), Martín-López et al. (2009), Clements (2013), Lee and Iwasa (2014), Opermanis et al. (2015), Lundberg et al. (2019), and Dimopoulos and Kokkoris (2020). Additionally, the rich biodiversity of a given territory is an important ecotourism resource, rational exploitation of which also requires the increased awareness of visitors (Meletis and Harrison 2010; Olmsted et al. 2020; Abidin et al. 2021). Because of this, it appears to be highly important to actively promote the knowledge of territorial biodiversity through various 'channels' and with various approaches. Particularly, place branding techniques can become helpful (Jones et al. 2009; Hassan and Rahman 2015; Tam 2019). Linking key elements of biodiversity, including genera and species of animals and plants, to names and images of regions, cities, and other localities seems to be really helpful for increasing the public awareness of the wildlife heritage of a given territory. A good example can be found in Brazil where it is recommended to use flagship species for nature conservation needs (Wosnick et al. 2021).

Russia and its numerous territories can boast outstanding biodiversity, which is effectively conserved in nature (and biosphere) reserves, national parks, and other protected areas with federal and regional status. Their quantity reaches 12000 (with >100 nature reserves), and they occupy up to 14% of the country's territory (Marcot et al. 1997; Spetich et al. 2009; Bukvareva et al. 2015; Grebennikov 2016; Romanov et al. 2017). An increase in public awareness of particular elements of this biodiversity, including animal species, can positively influence further improvement in nature conservation practices. For instance, the public awareness campaign facilitated the conservation of saiga antelope (Howe et al. 2012). Another task is ecotourism development, which remains in low demand on the national scale (Ruban and Yashalova 2020), and the usage of place branding techniques for biodiversity promotion seems to be promising for its successful solution.

The Russian Federation consists of 85 administrative units, which include republics, regions, national districts, and cities of federal importance. Each of them has official symbols, including flags, songs, and coats of arms. The latter are complex and usually serve to reflect the regional identity, i.e., the specific features of the regional nature, culture, economy, achievements, and heritage. The coats of arms are designated officially by special regional legal acts. Their present versions were adopted in the post-Soviet times (after 1991), but some of them use elements

from the symbols used in the Soviet period (1917–1991) and even earlier, during Tsarist times (before 1917). Regardless, these new symbols reflect the modern identity of the Russian regions. The regional coats of arms are actively used in official documents, at various meetings and exhibits, on house facades, on product labels, in mass media, etc. It is among their purposes to make the region well-identifiable and to stimulate regional pride. In other words, coats of arms contribute to a better awareness of the regional distinctive features by both locals and visitors. The presence of animals on coats of arms is common. Although their figuring sometimes follows heraldic traditions, which is typical of the national coats of arms (Wrona 2005), the marketing-related role of such symbols (Droulers 2016) makes them very useful to promote the knowledge of the regional wildlife, i.e., to link the key elements of biodiversity to regional brands. In Russia, such a heraldic tradition is strong, as a two-headed eagle has been depicted in its national coat of arms for centuries.

The main objective of the present study was to analyze the representation of animals on the coats of arms of the Russian regions as important biodiversity elements, addressing their geographical distribution and examining the potential of this specific, but promising and novel 'channel' of biodiversity promotion. This study only included animals for three reasons. First, animals can be identified with more precision than plants. Second, animals are more recognizable by the broad public. Third, such animals as bears are stereotypically associated with the image of Russia. More generally, this contribution was aimed at exploring the very possibility of using official regional symbols for increasing the public awareness of biodiversity. This possibility is linked to the information, which can be deduced from the official regional coats of arms. Notably, their general importance as brands that are well-visible to the local population and visitors is undisputable as the active use of the regional coats of arms in Russia is very common. This work specifically focused on the information about animals provided by these official symbols to the people (both locals and visitors).

MATERIALS AND METHODS

The officially designated coats of arms of all 85 Russian regions were checked for the presence of animal figures (the coats of arms can be found easily on the Internet, including web portals of regional administrations). Only real animals were considered in the study, mythic creatures were excluded as they cannot inform about biodiversity. All real animals were identified by their common names and actual Latin names. The majority of animals were identified to the level of genus, although species and even subspecies identification are also possible in several cases (official descriptions of the coats of arms facilitate such identification). There were also few animal figures, which could be identified only too generally (e.g., birds, fishes. etc.). All this information (Table 1) served as material for the present analysis.

Table 1. Animals in the coats of arms of the Russian regions (numbers are used on subsequent figures)

Regions (area, 10³ km²)	Animal	
	Common name	Latin name
1. Bashkortostan (142.9)	Horse	*Equus*
2. Belgorod (27.1)	Lion, Eagle	*Panthera leo, Aquila*
3. Chukotka (721.5)	Polar bear	*Ursus maritimus*
4. Chelyabinsk (88.5)	Camel	*Camelus*
5. Dagestan (50.3)	Eagle	*Aquila*
6. Evreyskaya (36.3)	Tiger	*Panthera tigris altaica*
7. Ingushetia (3.6)	Eagle	*Aquila*
8. Irkutsk (774.8)	Sable	*Martes zibellina*
9. Ivanovo (21.4)	Lion, Eagle	*Panthera leo, Aquila*
10. Kabardino-Balkaria (12.5)	Eagle	*Aquila*
11. Karelia (108.5)	Bear	*Ursus*
12. Khabarovsk (787.6)	Two bears, Tiger	*Ursus, Panthera tigris altaica*
13. Komi (416.8)	Wild bird, Six mooses	---, *Alces*
14. Krasnoyarsk (2366.8)	Lion	*Panthera leo*
15. Kurgan (71.5)	Marten	*Martes*
16. Kursk (30.0)	Three partridges	*Perdix*
17. Magadan (462.5)	Three fishes	---
18. Mordovia (26.1)	Fox	*Vulpes*
19. Nizhniy Novgorod (76.6)	Deer	*Cervus*

20. Novgorod (54.5)	Two bears, Two fishes	*Ursus, ---*
21. Novosibirsk (177.8)	Two sables	*Martes zibellina*
22. Orenburg (123.7)	Marten	*Martes*
23. Perm (160.2)	Bear	*Ursus*
24. Primorye (164.7)	Tiger	*Panthera tigris altaica*
25. Pskov (55.4)	Leopard	*Panthera pardus*
26. Ryazan (39.6)	Two horses	*Equus*
27. Sakha (Yakutia) (3103.3)	Horse	*Equus*
28. Samara (53.6)	Wild goat	*Capra*
29. Saratov (101.2)	Three sterlets	*Acipenser ruthenus*
30. Severnaya Ossetia – Alania (8.0)	Caucasian leopard	*Panthera pardus ciscaucasica*
31. Sverdlovsk (194.3)	Sable	*Martes zibellina*
32. Tambov (34.5)	Three bees	*Apis mellifera*
33. Tomsk (316.9)	Horse	*Equus*
34. Tyumen (1464.2)	Two sables	*Martes zibellina*
35. Tyva (168.6)	Horse	*Equus*
36. Vladimir (29.1)	Lion	*Panthera leo*
37. Voronezh (52.2)	Two eagles	*Aquila*
38. Udmurtia (42.1)	Swan	*Cygnus*
39. Ulyanovsk (37.2)	Two lions	*Panthera leo*
40. Yamalo-Nenets (769.3)	Two polar bears, Reindeer	*Ursus maritimus, Rangifer tarandus*
41. Yaroslavl (36.2)	Bear, Deer	*Ursus, Cervus*
42. Zabaykalye (431.9)	Eagle, Buffalo	*Aquila, Bubalus*

The analytical procedures were as follows (their simplicity is explained by the pioneering nature of this study). First, the share of the regional coats of arms reflecting animals was calculated. Second, the numbers of animal taxa and specimens on the coats of arms were addressed. Third, the abundance of animals on the regional coats of arms was assessed. For each animal, the number of regions with the relevant coats of arms, the presence in a given region and the entire country, and the status were established. The presence was registered with the overview by Litvinov et al. (2018) supplemented by various sources of biological information available online. As for the status, domesticated animals were distinguished from wild animals, and rare and endangered species of special concern were identified with the information from the World Wide Fund for Nature (Russia) (WWF (Russia) 2021). The noted indicators of abundance were measured for the entity of the considered regions, i.e., where animals appear on the coats of arms. These procedures formed the basis for further qualitative interpretation of the potential efficacy of the coats of arms for increasing the public awareness of biodiversity.

RESULTS

Of all 85 Russian regions, as many as 42 regions have coats of arms with figures of real animals (Table 1), i.e., the share of these regions is 49%. Importantly, they represent all main geographical domains of the country, including European Russia, the Russian South, the Urals, the Russian Arctic, Siberia, and the Russian Far East (Fig. 1). 81% of these regions have coats of arms with one animal, and the remaining 19% of the regions have coats of arms with two kinds of animals (Table 1). When two animals are shown, the most common combination is a bird and a mammal (Table 1). As for the number of animal specimens, one specimen of each animal is shown in the majority of cases. However, there are coats of arms showing two, three, and more specimens (Table 1). As many as six moose heads coupled with the wild bird figure symbolize the Republic of Komi, whereas two bears and two fishes symbolize the Novgorod Region.

The animals shown on the coats of arms of the Russian regions are quite numerous (Table 2). More common are mammals (63%), and less common are birds (21%), fishes (11%), and insects (5 %). Of the identified animals, the most typical are bears, including polar bears (17% of the regions), eagles (17% of the regions), and martens, including sables (14% of the regions). Horses and, surprisingly, lions (the latter do not occur in Russia) are also quite common on the coats of arms (12% of the regions each).

The regional coats of arms with bears are found in the western (European) part of Russia, the Russian Arctic, and the Russian Far East (Fig. 2). Bears really populate these territories and are widely known as a symbol of Russia. Eagles are typically represented on the coats of arms in

Fig. 1. Geographical distribution of the regional coats of arms with animal figures (regions with such coats of arms are marked as circles, with numbers explained in Table 1)

**Table 2. Abundance of animals in the coats of arms of the Russian regions**

Animal	Number of regions	Regional presence	National presence	Status notes
Bear (including polar)	7	Yes	Yes	Polar bear – WWF(R) (rare)
Bee	1	Yes	Yes	
Buffalo	1	Yes	Yes	Domesticated
Camel	1	Yes	Yes	Domesticated
Deer (including reindeer)	3	Yes	Yes	Reindeer – domesticated
Eagle	7	Yes	Yes	
Fish (unspecified)	2	Yes	Yes	
Fox	1	Yes	Yes	
Horse	5	Yes	Yes	Domesticated
Leopard (including Caucasian)	2	Yes (1 region)/No (1 region)	Yes	Caucasian – WWF(R) (rare)
Lion	5	No	No	
Marten / sable	6	Yes	Yes	
Moose	1	Yes	Yes	
Partridge	1	Yes	Yes	
Sterlet	1	Yes	Yes	WWF(R) (rare)
Swan	1	Yes	Yes	
Tiger	3	Yes	Yes	WWF(R) (rare)
Wild bird (unspecified)	1	Yes	Yes	
Wild goat	1	No	Yes	

Note: WWF(R) (rare) – rare species according to the World Wide Fund for Nature (Russia).

the southwest of the country (Fig. 2), although their actual distribution is much broader and embraces a significant part of Russia. Notably, eagles are often shown on the coats of arms of the mountainous republics of the Russian South (Dagestan, Ingushetia, and Kabardino-Balkaria), and are stereotypically associated with mountain environments. Martens are often found on the coats of arms from the Urals and West Siberia (Fig. 2). Although this animal populates these territories, it is also common in other parts of the country, mainly in East Siberia. Of the other animals of interest, tigers are typical to the southern part of the Russian Far East (Fig. 2), where they actually live.

Many animals from the regional coats of arms are actually present in the relevant regions (Fi. 3). Two regions employ animals (leopard in Pskov and wild goat in Samara), which do not occur in their territories but are known from
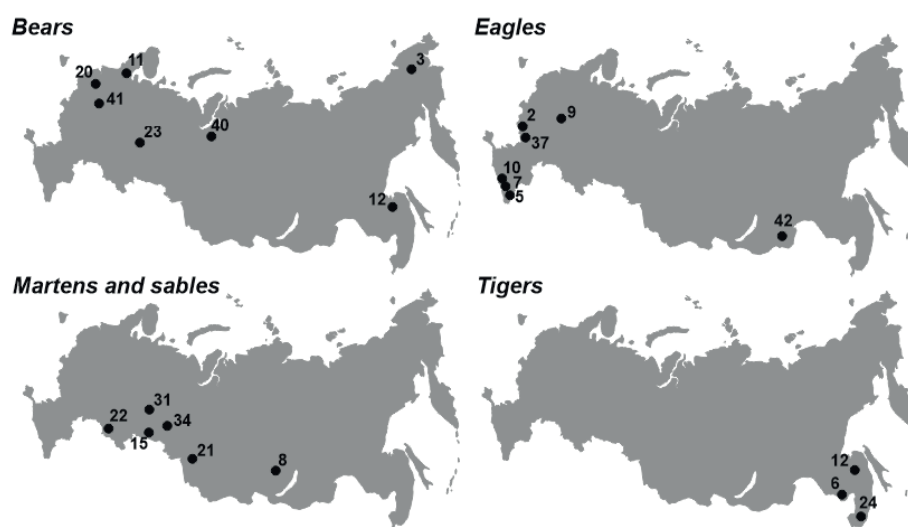
Fig. 2. Geographical distribution of the regional coats of arms with common animal figures (marked as circles, with numbers explained in Table 1)

other parts of the country. The animal, which is shown on many coats of arms, but does not occur either regionally or nationally, is a lion. Most probably, the use of this animal follows a very common heraldic tradition more typical for Western Europe (Wrona 2005). Four animals, including the popular horse, are domesticated, but the majority (84%) are wild. Four of them are recognized by the World Wide Fund for Nature (Russia) as rare and requiring conservation (WWF (Russia), 2021) (Table 2). Of them, Amur (Siberian) tigers and Caucasian leopards are subjects of special national conservation programs implemented in the Russian Far East (Miquelle 2015; Poddubnaya et al. 2021) and the Northern Caucasus (Kharchenko et al. 2019), respectively.

The regions considered in the present study are all official administrative units of the Russian Federation of the same level. Nonetheless, their difference in size is evident (Table 1). Some of them cover the area measured by millions of square kilometers, whereas the others cover

only thousands of square kilometers, i.e., their size may differ by 1000 times. This factor also needs to be taken into account (Table 3).
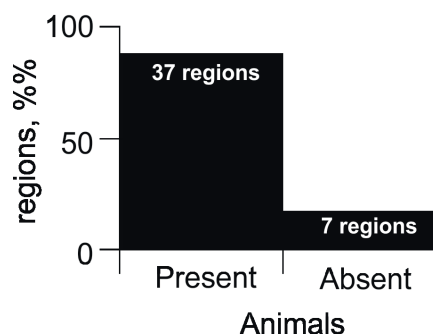
Fig. 3. The presence of the animals shown on the coats of arms in the respective region

Table 3. Abundance of animals in the coats of arms of the Russian regions

Animal	Number of regions	Total area of regions, 10^3 km^2	%% of the country's area
All	42	13074.5	76.3
Bear (including polar)	7	2637.8	15.4
Bee	1	34.5	0.2
Buffalo	1	431.9	2.5
Camel	1	88.5	0.5
Deer (including reindeer)	3	882.1	5.2
Eagle	7	599.0	3.5
Fish (unspecified)	2	517.0	3.0
Fox	1	26.1	0.2
Horse	5	3771.3	22.0
Leopard (including Caucasian)	2	63.4	0.4
Lion	5	2481.6	14.5
Marten / sable	6	2806.3	16.4
Moose	1	416.8	2.4

Partridge	1	30.0	0.2
Sterlet	1	101.2	0.6
Swan	1	42.1	0.2
Tiger	3	988.6	5.8
Wild bird (unspecified)	1	416.8	2.4
Wild goat	1	53.6	0.3

It can be seen that the regions showing animals on their coats of arms constitute more than three quarters of the total territory of Russia. Of wild animals from the coats of arms, martens and bears correspond to the largest territories, whereas eagles are 'less important' due to the small area of the regions showing them on their coats of arms (Table 3). Ironically, although bears are stereotypically associated with the image of Russia, it appears that martens deserve this 'status' a bit more. One should also note the very big territory of the regions depicting a horse on their coats of arms. This animal is not wild and does not need conservation as a biodiversity element. Lions, which do not occur in Russia, but are shown due to heraldic traditions, also represent large area (Table 3).

DISCUSSION AND CONCLUSION

The frequent placement of wild animals onto the regional coats of arms (taking into account the regional presence of these animals, as well as their abundance or rare status) means that the premises for such an important 'channel' of biodiversity promotion are already formed in Russia. Many coats of arms show wild animals representing the regional fauna. Often these are either symbolic mammals (for instance, bears stereotypically associated with Russia) or endangered species (for instance, Amur tigers and Caucasian leopards). The passive functioning of this 'channel' is supposed to be as follows. The regional coats of arms do not need any special promotion and governmental efforts – they already exist and are widely used in numerous official documents, at various meetings and exhibits, on house facades, on product labels, in mass media, etc. Their abundance in the socio-economic and information environment of each region is outstanding, and, thus, they are exceptionally well-visible to both the local population and visitors. The presence of animal figures on them makes these figures also well-visible and increases the awareness. Although special studies are necessary to analyze the actual people's perception of these symbols, it is logical to hypothesize a very significant contribution of the regional coats of arms to the awareness of the figured animals. This broad awareness is the first step towards wildlife conservation and its public support. There can also be active functioning of this 'channel' when a regional coat of arms is specially emphasized to draw the people's attention to the biodiversity awareness and conservation needs.

The preliminary analysis of Internet resources allowed us to find two examples of animals depicted on the regional coats being used for increasing biodiversity awareness in Russia. In the first case, the presence of a bear on the coat of arms of the Republic of Karelia has motivated a project at the local primary school aimed to study the natural and cultural-historical aspects of bears and their habitats (https://ppt-online.org/908629). In the second case, the coat of arms of the Primorye Region is considered as an important tool to stress the importance of tigers for regional heritage and identity (https://otvprim.tv/society/primorskij-kraj_15.09.2017_55785_proekt-tigrinaja-istorija-startuet-v-primorje.html?printr).

The validity of the proposed and similar 'channels' of biodiversity promotion linked to branding and labeling of goods and places is confirmed by other studies (Courchamp et al. 2018; Hooykaas et al. 2020; Good et al. 2021). The limitations of this 'channel' are as follows. First, some coats of arms depict animals that do not occur in the given regions or even entire Russia and, thus, are not suitable for promoting conservation on the regional scale, for example, leopards from Novgorod and lions from Ulyanovsk (Table 1). Second, the reflected biodiversity is biased (with too much focus on a few mammals, a part of which are domesticated) and incomplete. The number of regions and the possibility to show animal figures on coats of arms is too limited in comparison to the outstanding richness of the Russian biodiversity (e.g., Marcot et al. 1997; Spetich et al. 2009; Bukvareva et al. 2015; Grebennikov 2016; Romanov et al. 2017; Litvinov et al. 2018). Moreover, some regions prefer to be associated with domesticated, not wild animals. Third, the efficacy of the discussed 'channel' is restricted by the ability of the broad public to identify the animals correctly. While the figures of bears and tigers are easily recognizable, this may not be the case for moose heads, partridges, or sterlets. However, all three limitations are almost unavoidable, and the place (region) branding techniques are always auxiliary to other approaches (first of all, environmental education initiatives) aimed at increasing the biodiversity awareness of the broad public.

An important question is whether the wildlife representation by the regional coats of arms satisfies the present conservation needs in Russia. It should be noted that many animals represented in the analyzed coats of arms are quite common. Rare and endangered species (e.g., Litvinov et al., 2018) are also represented, but not so frequently (Table 2), despite the decline in some mammal species that is registered in Russia (Howe et al. 2012; Bragina et al. 2015), not speaking of birds, insects, invertebrates, etc. Moreover, the coats of arms seem to be more suitable for increasing the public awareness of animals, not plants. As explained above, the latter are difficult to identify, which contrasts with the urgent need for the conservation of many plant species in Russia (Nabieva and Elisafenko 2017; Chugunov and Khapugin 2020). Moreover, coat of arms can reflect only particular elements of biodiversity, not the entire biodiversity of a region. In fact, many areas need holistic conservation approaches (Marcot et al. 1997; Griffin 1999; Romanov et al. 2017; Shchelchkova and Boeskorov 2018). This means that the regional coats of arms can serve the needs of biodiversity conservation in Russia only partly. Nonetheless, their significant focus on animals (Table 1) makes them suitable to attract the attention of the broad public to the national wildlife, which itself is very important. This results from the abundant use of the regional coats of arms and, thus, their exceptional exposure to the public.

It is reasonable to add that the present study somewhat echoes the work by Wosnick et al. (2021) who analyzed flagship species in the Brazilian states. These approaches, differing in many details and applied to very different geographical domains, were developed independently, and their co-appearance signifies the international urgency of the studies of the regional animal symbols. One can even presume the emergence of a new research field at the intersection of zoogeography and place branding. Conclusively, the coats of arms of the Russian regions should be considered as a valuable auxiliary instrument contributing to the public awareness of biodiversity and, particularly, animals as its key element. The finding of such potential is of general importance because it links the ideas of biodiversity conservation and place branding. The present study has also evident practical implications. First, new coats of arms of administrative units and settlements (where they did not exist previously) can be designed specially to include elements stimulating the public awareness of biodiversity if this issue is urgent in a given place. These procedures are controlled by the regional/local governments, and they can specify the pro-conservation requirements when they order a coat of arms. Second, the environmental and ecotourism initiatives in Russia should pay attention to the regional coats of arms and use this instrument for their own needs. Governmental support seems to be essential in this case, particularly in the context of the already launched 'Ecology' (Egorchenkov and Egorchenkov 2020; Semenova 2020) and the planned 'Tourism and Hospitality Industry' national projects. Third, the stakeholders responsible for the development of place branding strategies and/or eco-branding need to consider the potential of the regional coats of arms. In other words, the present findings can be important for improving and also integrating regional and environmental governance in Russia and beyond.

The present tentative study indicates the potential of the official regional symbols to increase the public awareness of biodiversity, which is important for nature conservation and ecotourism development. The perspectives of future research are linked to sociological surveys aimed at investigating the public perception of the regional coats of arms, i.e., their actual contribution to biodiversity awareness. This research should clarify whether the local population and visitors perceive the animals from the regional coats of arms as biodiversity elements and targets of conservation. Of interest is also whether these animals can be detected correctly by the broad public. However, even without these in-depth analyses, it is evident that future researchers should pay significant attention to conceptual developments concerning the relationship between regional branding, conservation needs and their geographical aspects. ◼

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