LIFE Lynx

Preventing the extinction of the Dinaric-SE Alpine lynx population through reinforcement and long-term conservation

LIFE16 NAT/SI/000634

Asssessment of public attitudes toward lynx and lynx conservation in Slovenia, Croatia and Italy

Final report of the Action A.7

Authors – Aleksandra Majić Skrbinšek, Meta Mavec, Tomaž Skrbinšek, Anja Molinari Jobin, Ivana Selanec, Zdravko Budimir

University of Ljubljana, Biotechnical Faculty, 01/2020

University of Ljubljana

BIOM UDRUGA / ASSOCIATION

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Methods

Study area

Study area of the attitude survey has included the entire Alpine-Dinaric LIFE Lynx project area of Italy, Slovenia, and Croatia. Slovenian study area has been additionally divided into the Alpine and the Dinaric part.

Questionnaire

A great deal of attention was dedicated to the development of the questionnaire, the main tool for data collection. The process included identification of the relevant issues to be explored where entire project team has participated and the subsequent design and testing of the wording of the questions. The original questionnaire was designed in the English language which participaitng national teams have translated into their languages. The questionnaire was made up of 50 questions, most of which were closed-ended questions. Respondents were invited to comment the questionnaire or anything else related to the project and lyxn conservation.

The questionnarie included questions covering following topics:

- General sentiment towards lynx
- Perceptions about lynx
- Knowledge and believes about lynx
- Opinions about different management measures and approaches
- Evaluation of information sources about lynx
- Demographic characteristcs of the respondents
- Project visibility

In designing the questionnaire we've also used the questionnaire used in a public attitude survey in Slovenia and Croaita in 2007 (Interreg IIIA DinaRis).

Target groups and sampling

With the public attitude survey we've targeted the main stakeholder groups which are either crucial for their conservation or which livelihoods lynx presence can impact – general public in the project area, hunters in the project area and small livestock breeders in the project area (sheep and/or goat farmers).

In Slovenia, a sample of potential general public respondents was obtained from the register of inhabitants – a random stratified (Alps and Dinarics) sample of adult (18 years and older) inhabitants was obtained from the national Statistical Office. The sample included first name, last name, and address of the selected potential respondent. In Croatia, sample sizes were calculated at the settlement level based on the available census data. Actual persons were

selected through a combination of approaches, such as local mailing lists, phone books, etc. In Italy, a commercial panel sample was used. In Slovenia questionnaires were sent to the potential respondents and an envelope with prepaid return postage was included. Seven days later a reminder /thank you card was sent to increase response rate. In Croatia, a combination of regular and electronic mail was used and in Italy all questionnaires were filled online.

Sample of farmers was obtained in Slovenia from the register of farmers at the Ministry of agriculture, forestry, and food. Names, last names, and addresses were obtained, and questionnaires were sent by mail with an envelope with prepaid return postage. Seven days later a reminder /thank you card was sent in order to increase response rate. In Croatia and Italy, no additional effort was made to obtain a sample of framers. They were identified within the general public sample by answering a question if they own sheep/goats.

Sample of hunters was obtained in Slovenia in collaboration with Hunters Association of Slovenia (HAS). HAS has forwarded an online version of the questionnaire to all Slovenian hunters with an invitation to fill it out.

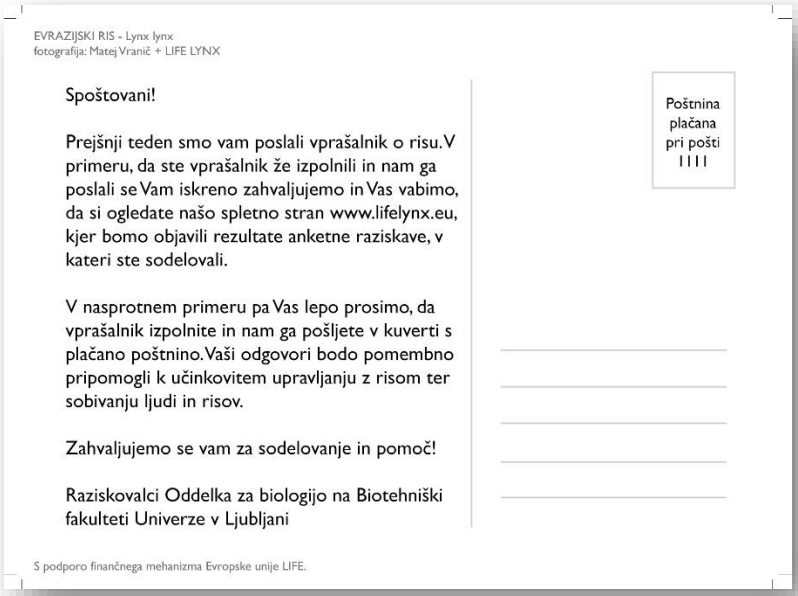


Figure 1: Reminder/Thank you card that was used in Slovenia to increase response rates for general public and farmers.

Data management and analysis

All the data was entered into an agreed excel form. A random sample of 3% of questionnaires entered by hand was re-checked for the typing mistakes at the end. We did not find any mistakes.

Results

About the sample

The obtained sample sizes were 602, 400 and 236 for Slovenia, Italy and Croatia, respectively. Response rates for questionnaires sent by mail were 30% in Slovenia and 6% in Croatia. Within the general public sample the share of females vs. males was relatively well distributed. Females made up 54%, 55% and 46% in Slovenia, Italy and Croatia, respectively. The oldest were respondents in Slovenia (52 years on average), followed by Croatia (49 years average) and Italy (41 years average).

In the following section we show first the results of the respondents sampled as general public in the three countries. Those sampled directly among the hunters and farmers in Sloveni are thus not incuded here in order to keep the results representative to the public opinon as possible. Their answers are presented in the following sections “Results by stakeholder group”.

Attitudes toward lynx

General public by country

In all three countries majority of respondents described themselves as being in favour of lynx. In Italy, where the lynx are scarcest, the share of those describing themselves as being neither in

favour nor against was relatively high (35%), Figure 2. Similar distribution of opinions was found when respondents assessed their agreement/disagreement to supporting maintaining lynx in their respective countries for future generations (Figure 3, Figure 4).

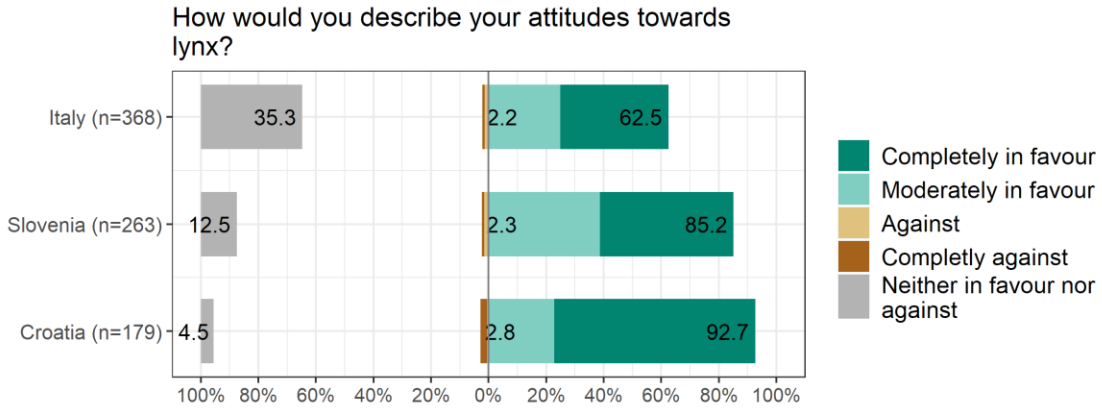


Figure 2

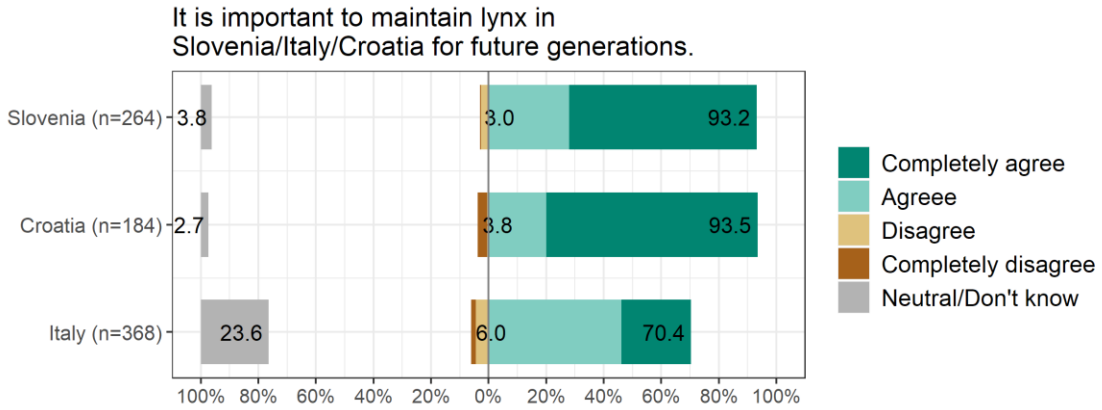


Figure 3

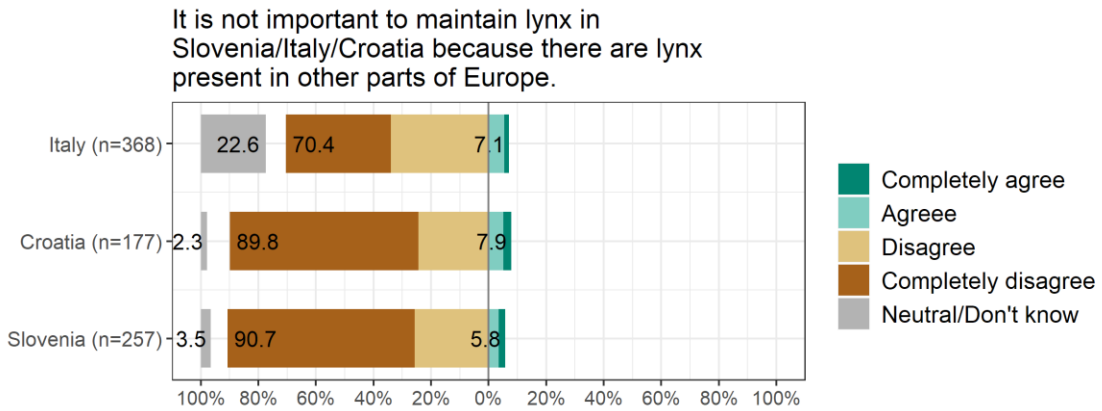


Figure 4

Results by stakeholder group

If we look at the results based on the respondents' belonging to an interest group, we see that the only group not so overwhelmingly in favour of lynx are livestock breeders since approximately quarter of them describe their own attitudes as being against lynx (Figure 5) and also questioning the need to conserve lynx for future generations (Figure 6).

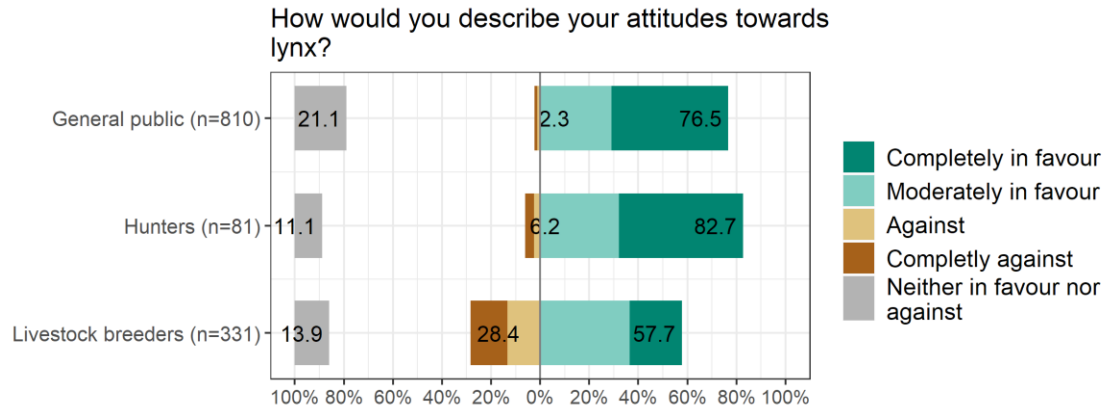


Figure 5

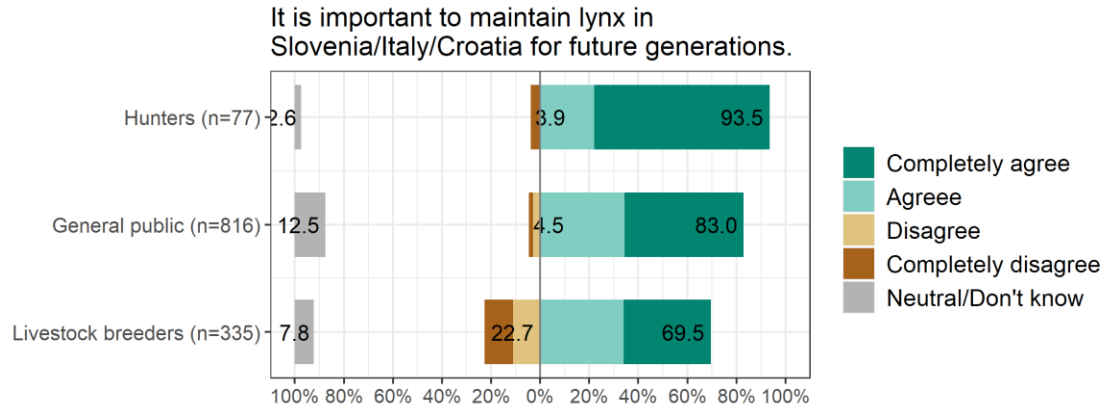


Figure 6

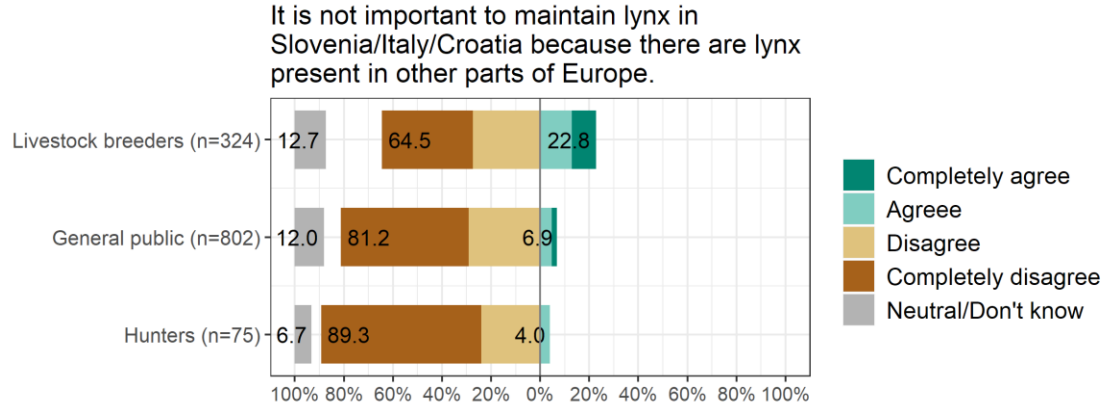


Figure 7

Fear of lynx

General public by country

Large carnivores invoke strong feelings in people, those often include admiration, hatred but also fear. Lynx avoid people and are not considered to be dangerous to them, which respondents from Slovenia and Croatia seem to be well aware of (Figure 9). Majority of respondents from Italy on the other hand, chose “Not sure” answer to the statement that lynx often attack humans, and close to 40% of them expressed they would be afraid to go hiking in forest where lynx are present (Figure 8).

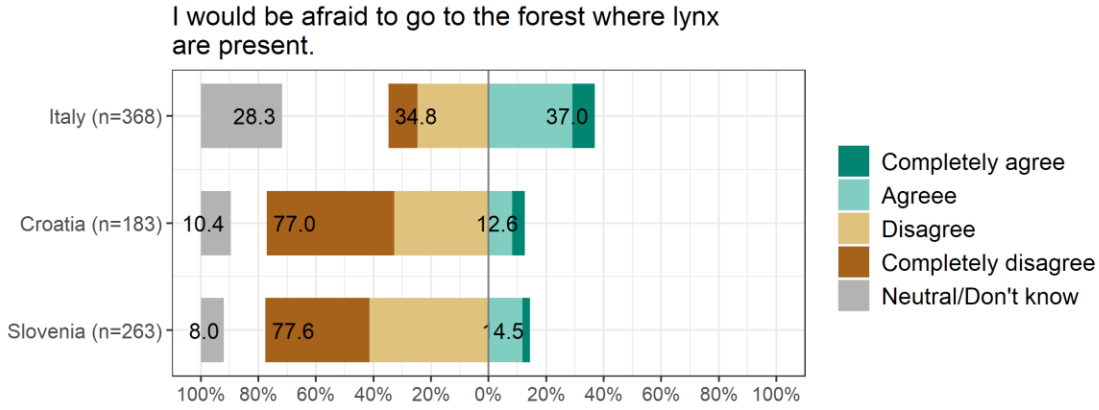


Figure 8

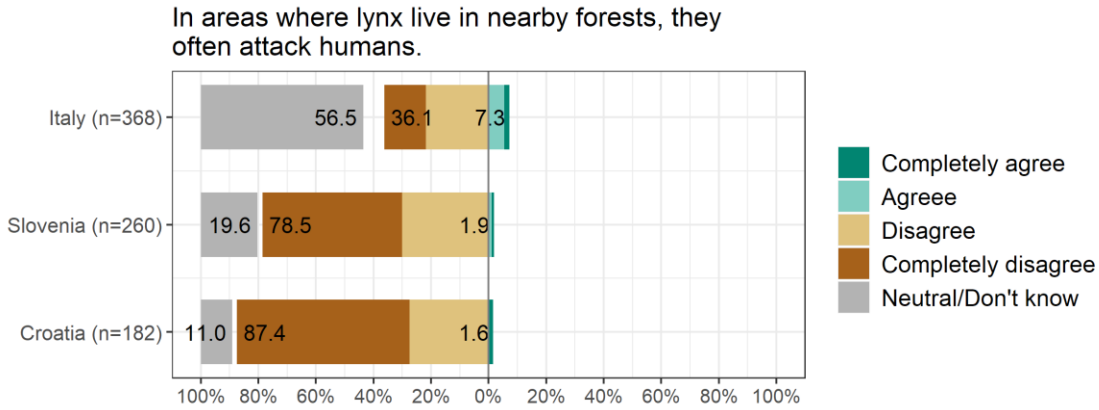


Figure 9

Results by stakeholder group

Fear of lynx seems to be to some degree an issue with the general public and livestock breeders (Figure 10).

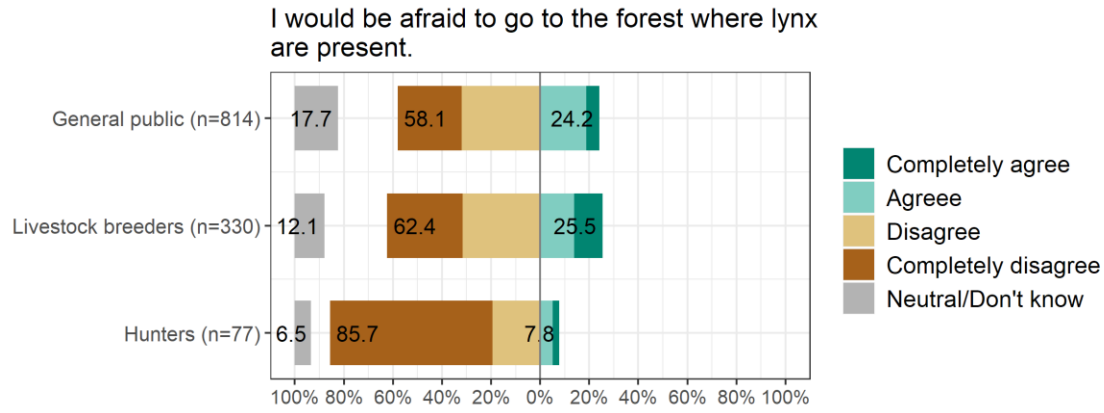


Figure 10

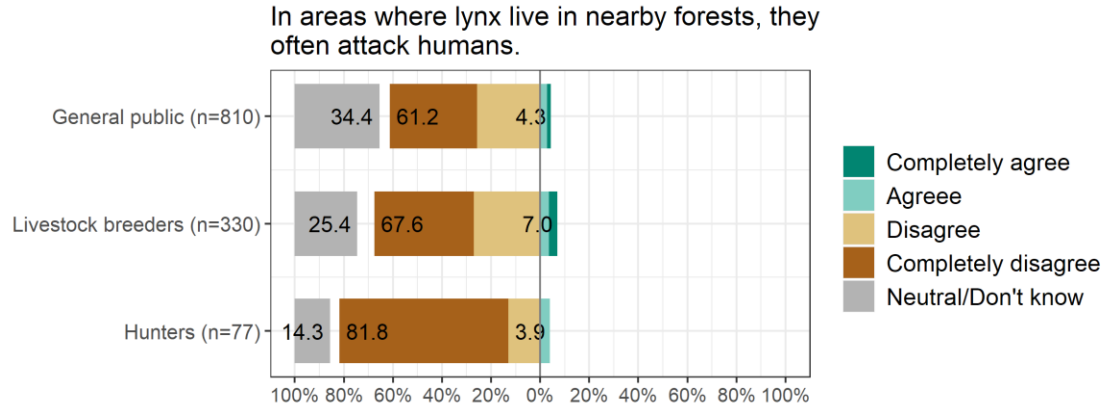


Figure 11

Acceptance of lynx in local environment

General public by country

One of the important factors determining lynx population chances for long-term survival is whether the local inhabitants are willing to tolerate lynx in their vicinity. Majority of all respondents, especially those from Slovenia and Croatia disagrees with extermination of the species (Figure 12). Economic impacts of coexisting with large carnivores are often one of the factors influencing acceptance levels. Respondents in our survey are not concerned with the potential financial damage caused by lynx (Figure 13). When and where strong negative attitudes toward wildlife develop, wildlife poaching can become an issue. Respondents from all three countries participating in the LIFE Lynx project believe that illegal killings of lynx are not justifiable (Figure 14).

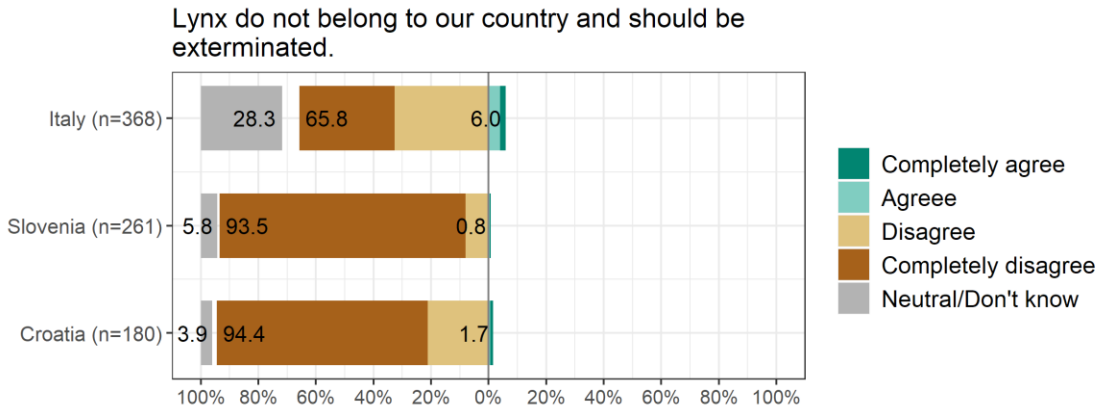


Figure 12

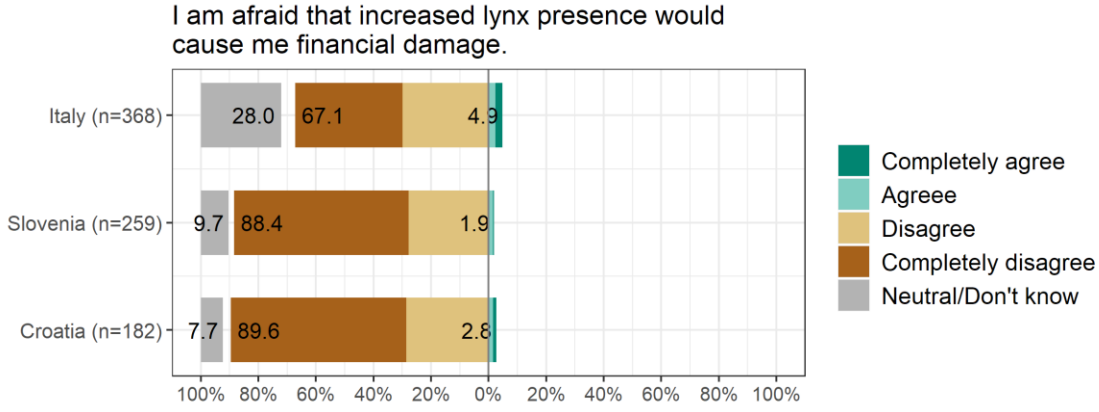


Figure 13

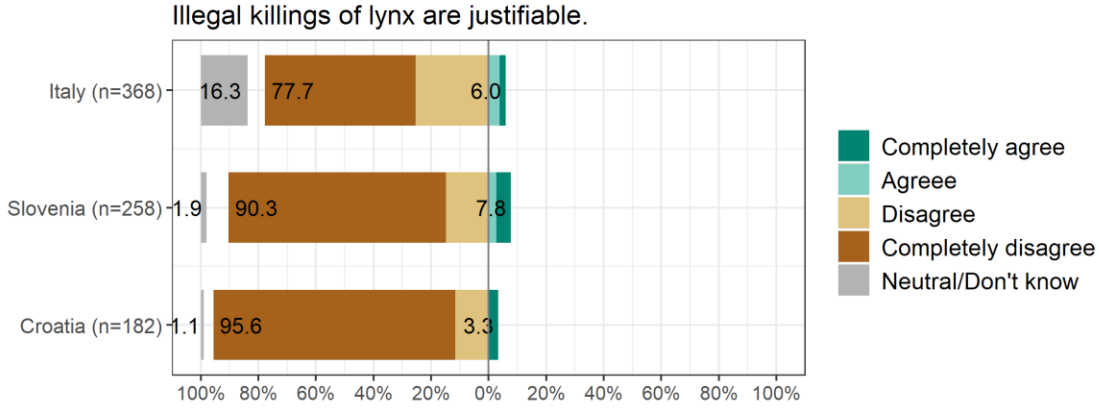
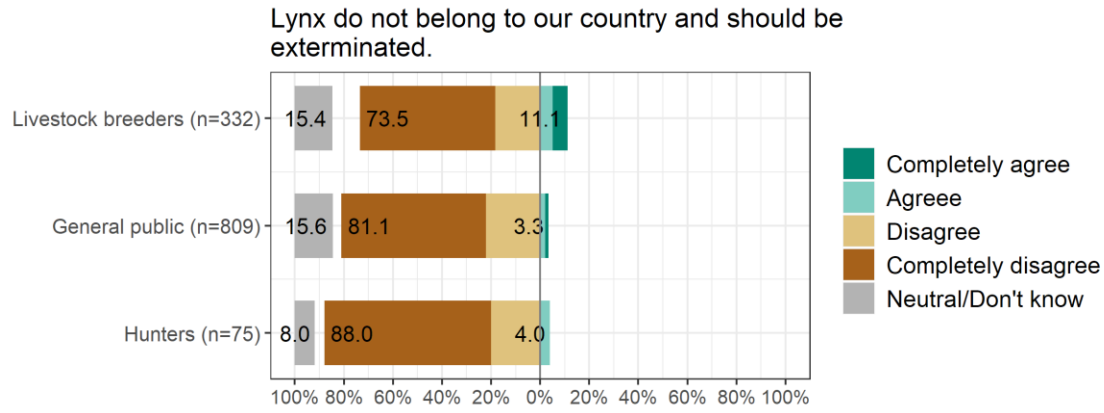


Figure 14

Results by stakeholder group

Among stakeholder groups, livestock owners are the ones concerned about the potential of economic damage caused by lynx. Nevertheless, they still overwhelmingly disagree to

extermination or illegal killings of lynx.



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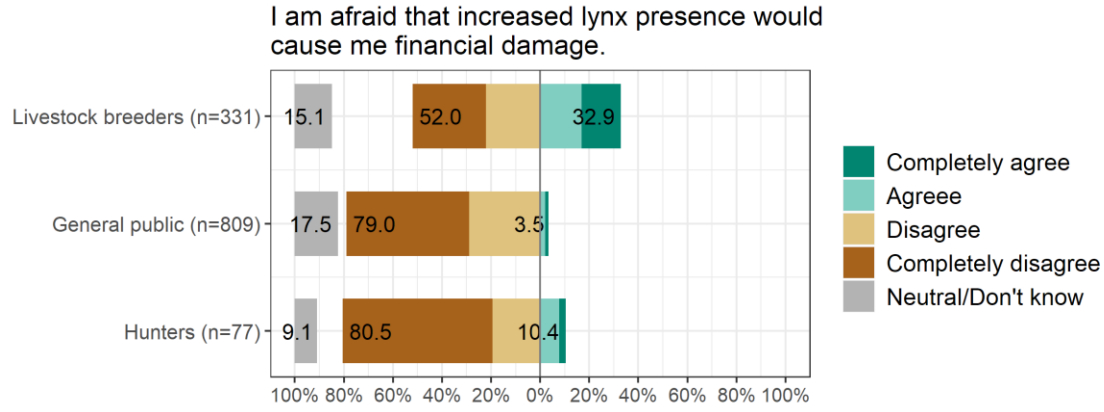


Figure 16

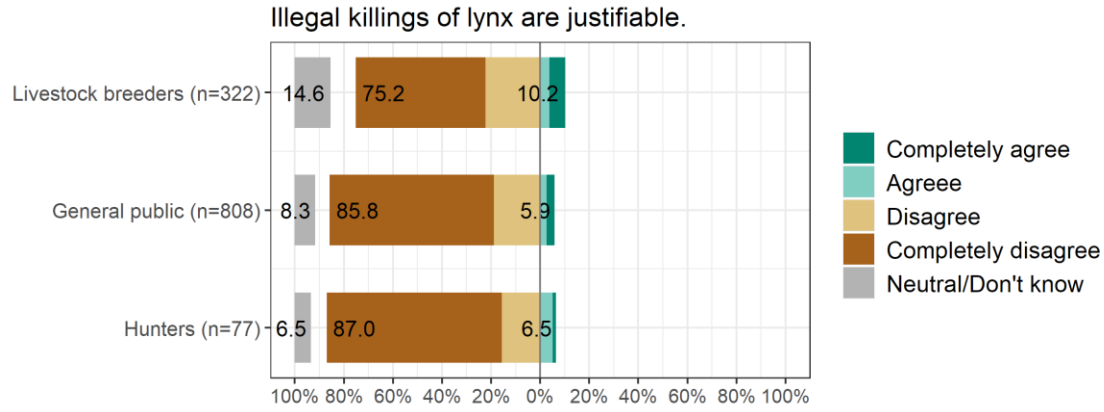


Figure 17

Lynx population management – size and status of the population

General public by country

Public perceptions about the species abundance play an important role in shaping public support or opposition to different management measures. We have used a series of statements to assess

these perceptions. Most of our respondents, especially in Slovenia and Croatia, did not believe lynx population is in good condition. In Italy, 55% of the respondents chose neutral answer (Figure 18). In addition, the respondents have mostly agreed that the population is close to extinction (Figure 19).

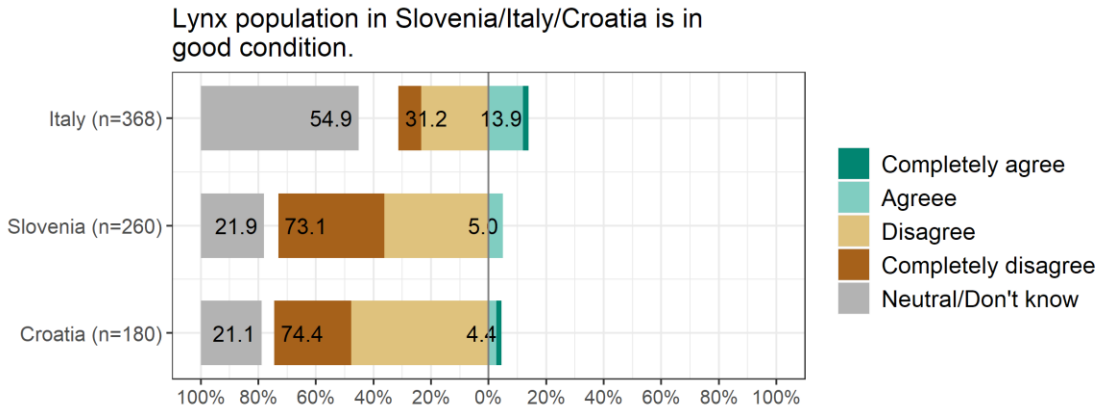


Figure 18

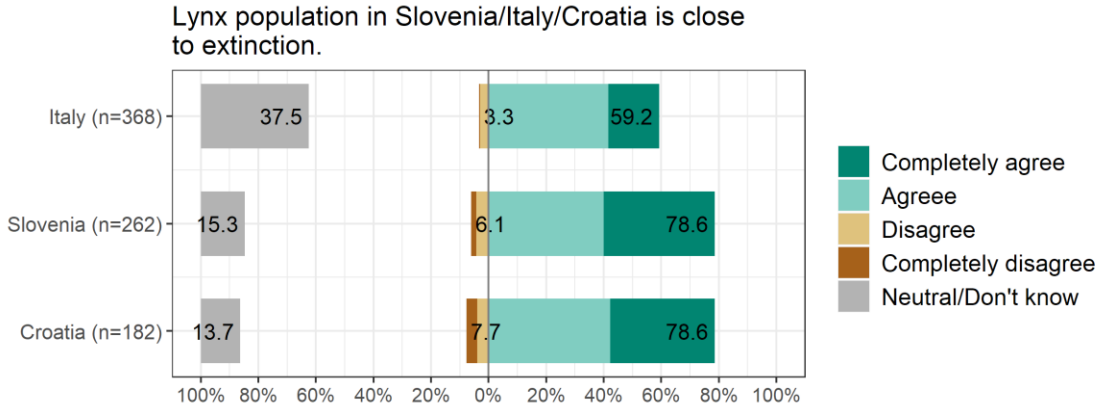


Figure 19

Prevalent support to increasing the number of lynx in their respective countries was documented in all three countries (Figure 20) as well as the opposition to hunting lynx (Figure 21 and Figure 22).

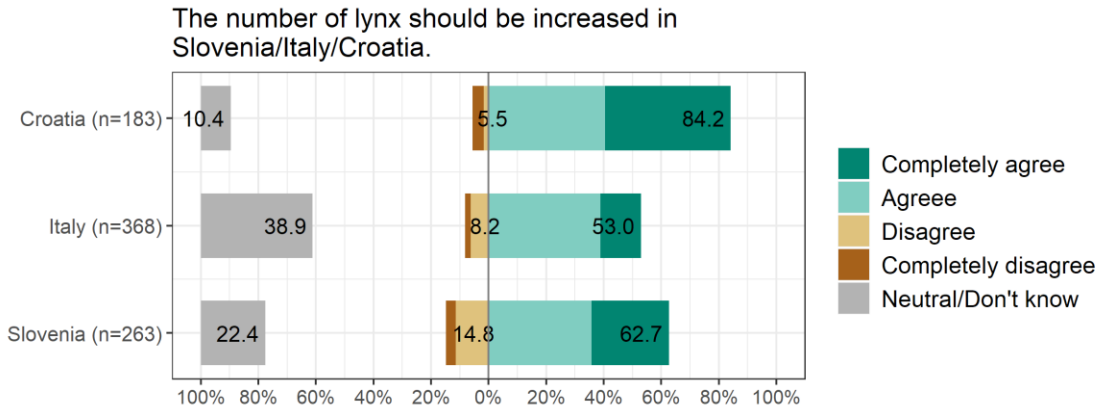
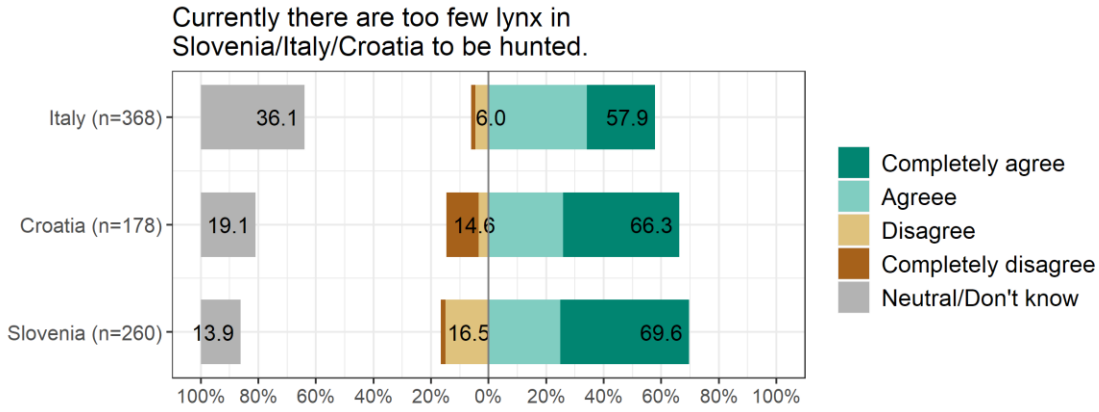


Figure 20



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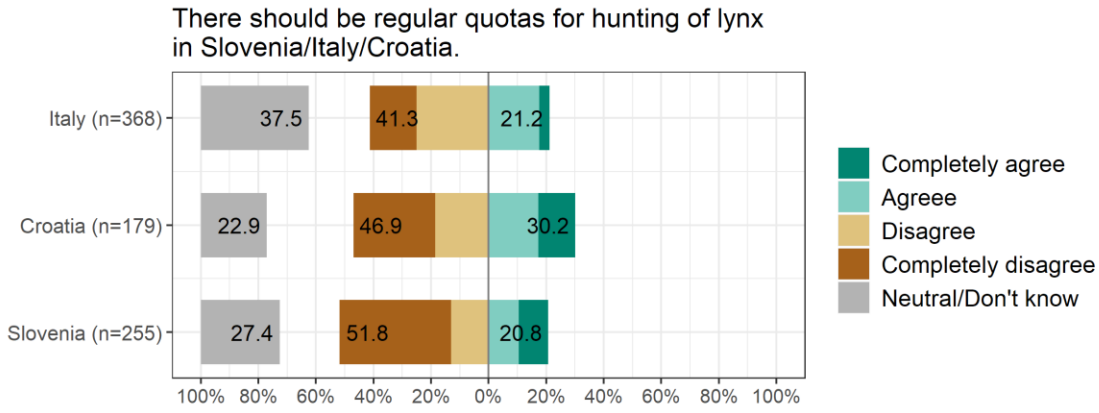
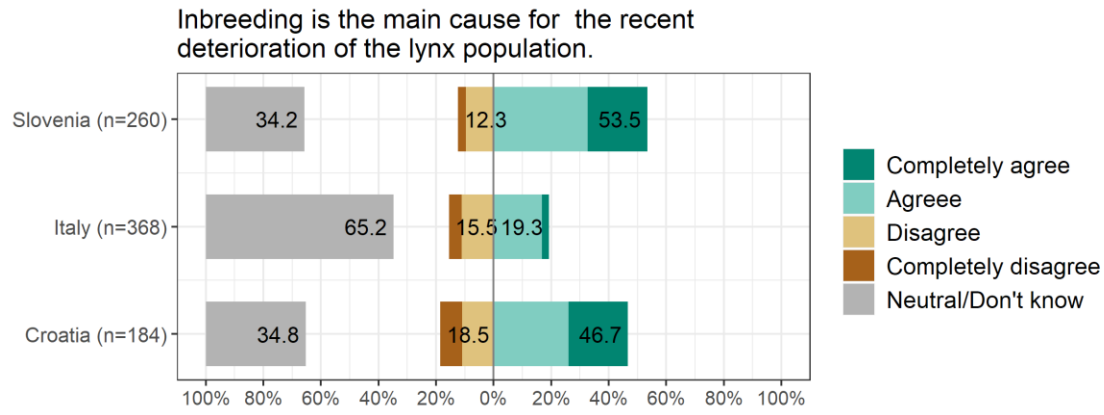


Figure 22

Over the years, several possible causes for lynx population deterioration were identified. Genetic analysis has confirmed that inbreeding depression was most likely the leading cause. Respondents from Slovenia survey have correctly identified this cause as the leading one (Figure

23), while respondents from Italy and Croatia ranked illegal killings as the main cause of deterioration of the population (Figure 26).



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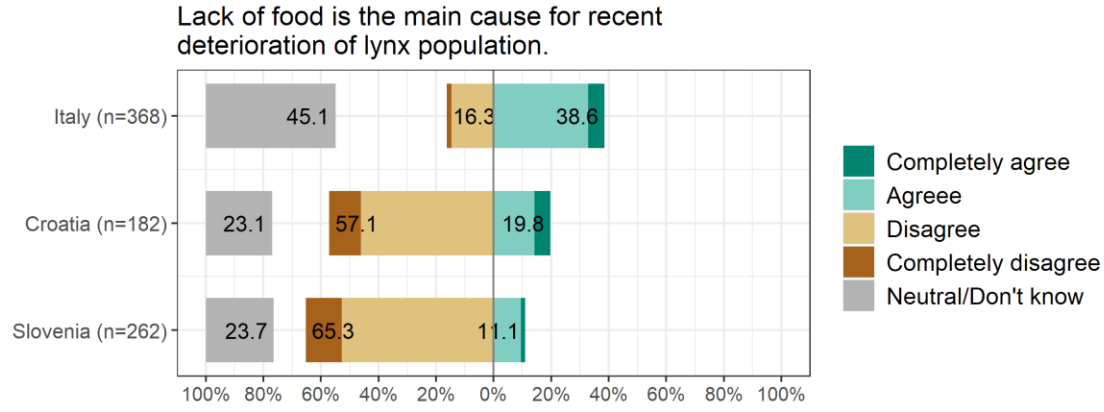

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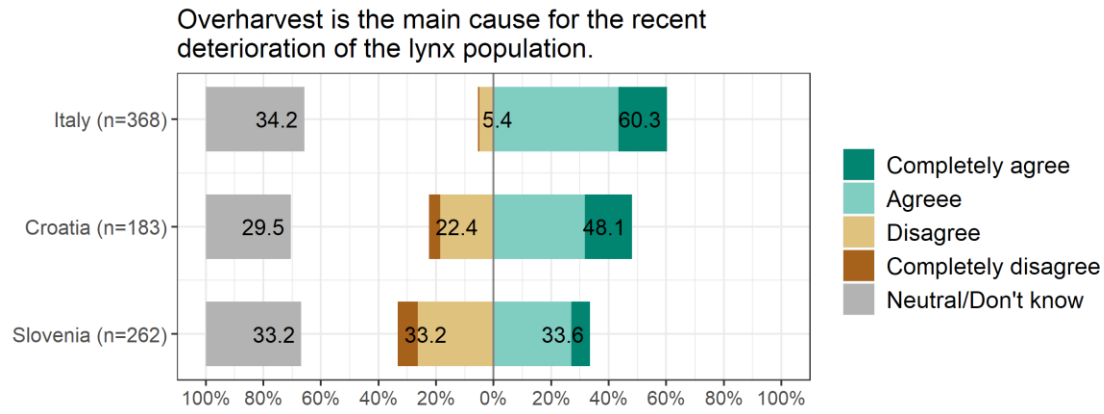

Figure 25

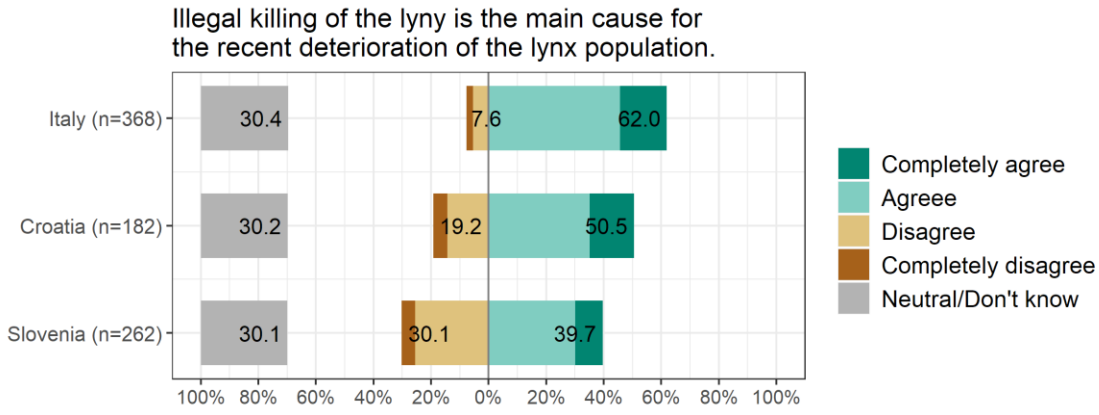

Figure 26

Results by stakeholder group

All three interest groups have correctly assessed population status of the lynx as critical (Figure 27 and Figure 28). However, the increase of the number of lynx is clearly supported by the general public and those that are hunters. Approximately equal shares of livestock owners support and oppose increase in lynx number (Figure 29).

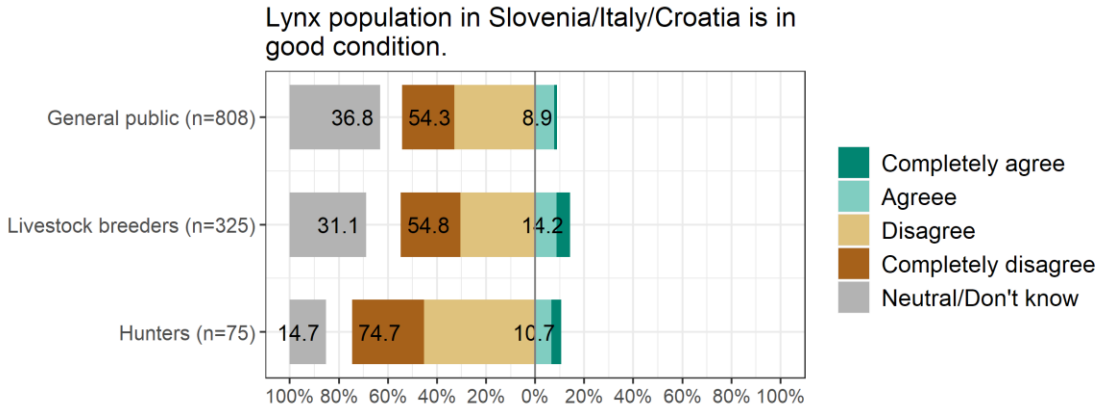

Figure 27

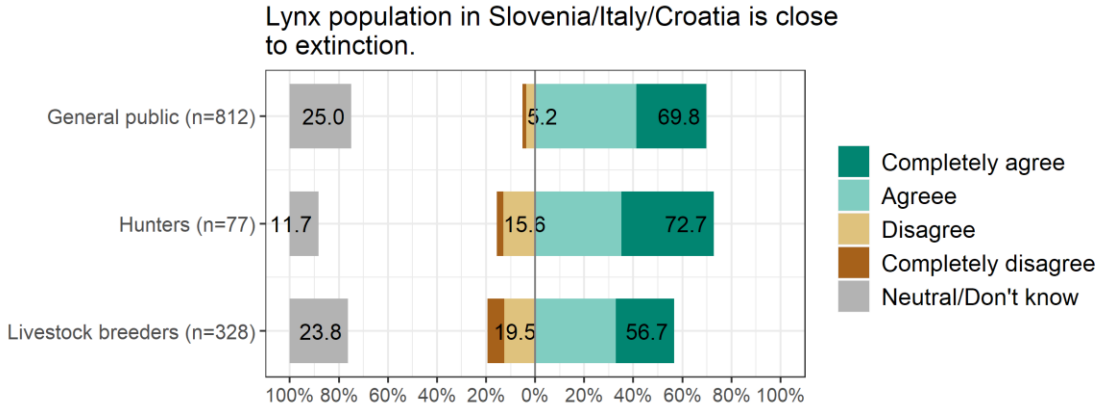

Figure 28

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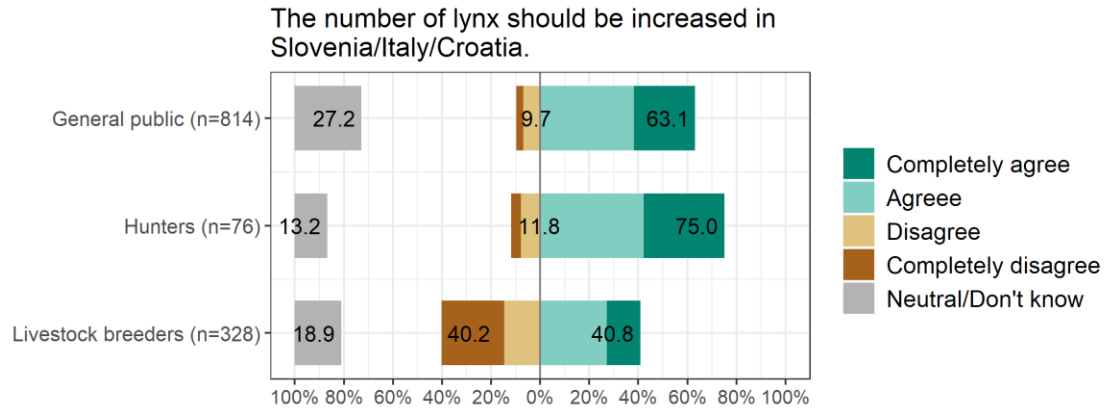

Figure 29

Respondents from all stakeholder groups mostly support the notion that there are too few lynx to be hunted (Figure 30).

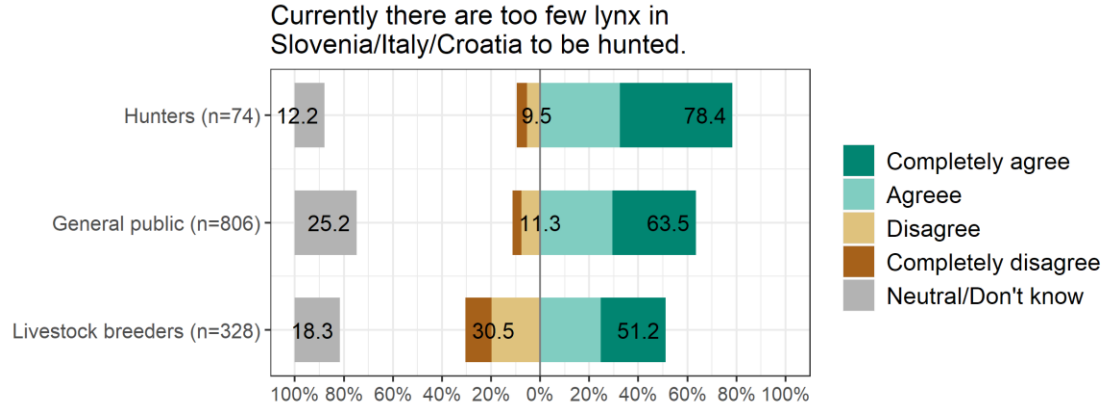

Figure 30

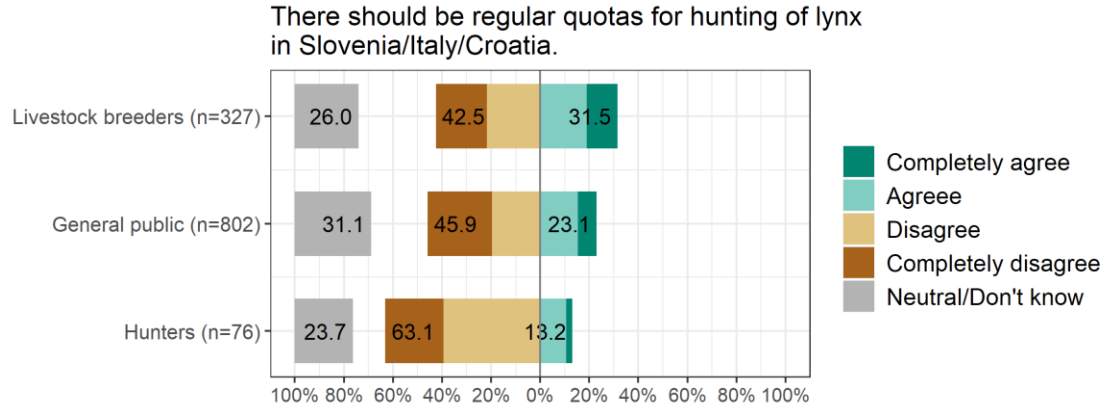

Figure 31

Livestock breeders and especially hunters seem to be much more familiar with the causes of lynx population deterioration than the general public. General public respondents identified overharvesting and illegal killings as the main cause, while hunters and livestock breeders

primarily ranked inbreeding as the main cause for the recent deterioration of the lynx population.

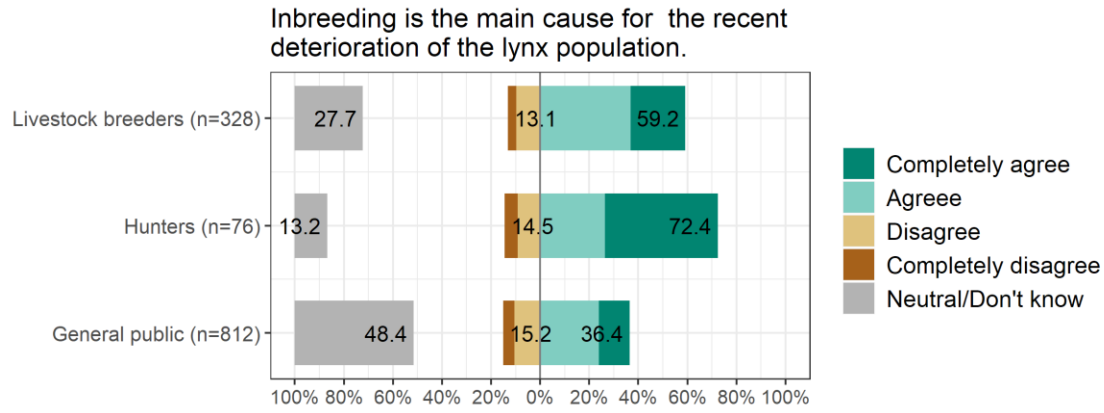

Figure 32

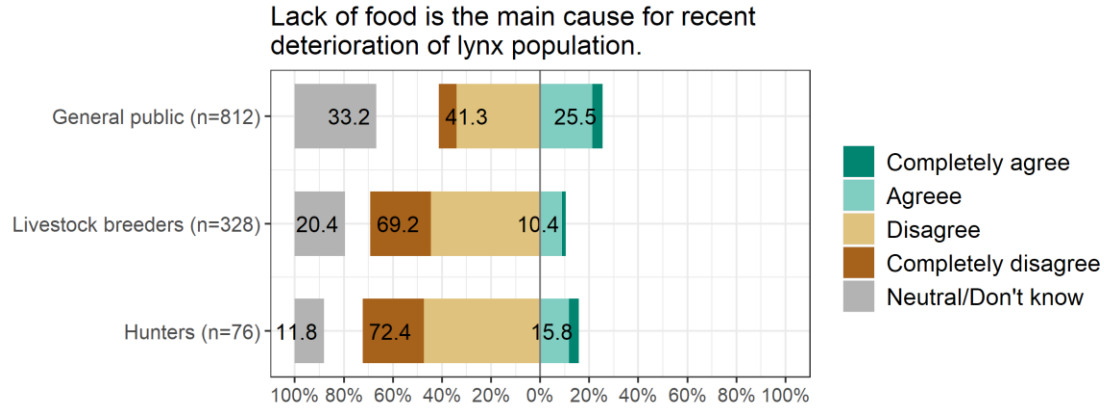

Figure 33

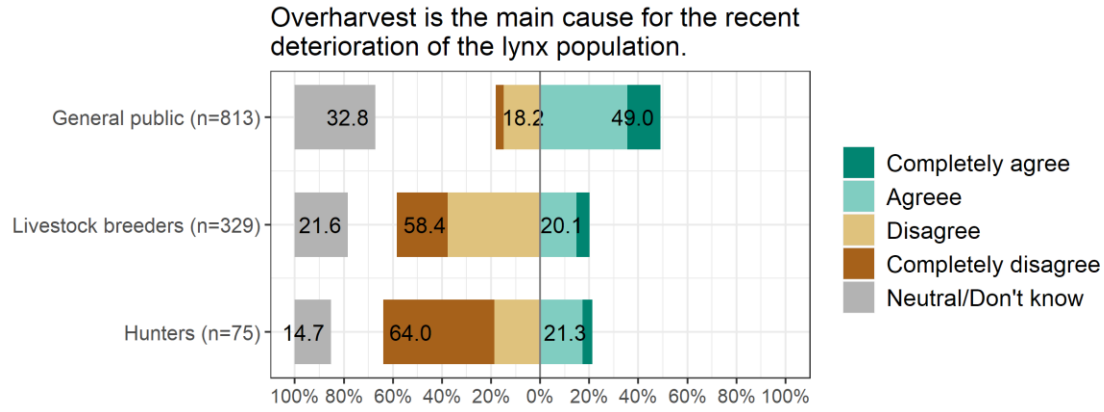

Figure 34

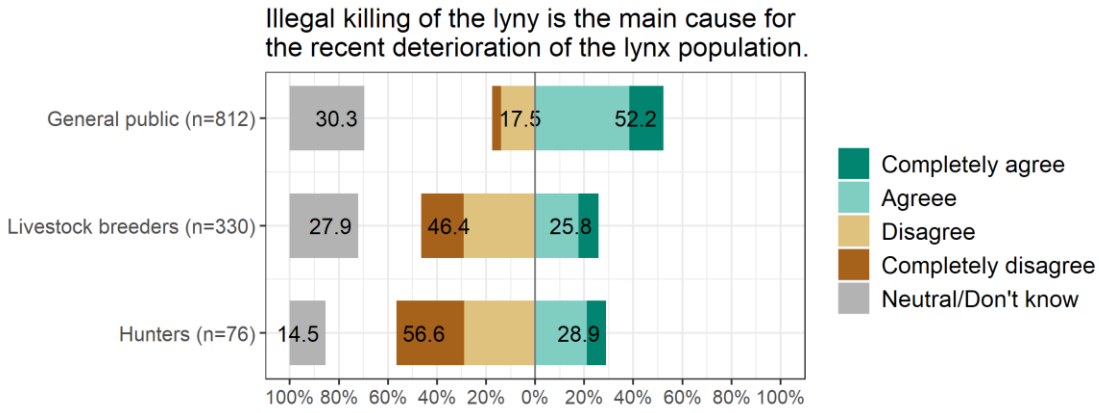

Figure 35

Lynx population management – Population reinforcement

General public by country

The only plausible way of addressing high inbreeding levels in the short term in the Dinaric lynx population is to bring new, unrelated animals to the population. Public support of this action is crucial for maintaining the positive attitudes toward lynx. General public in all three countries supports population reinforcement (Figure 36).

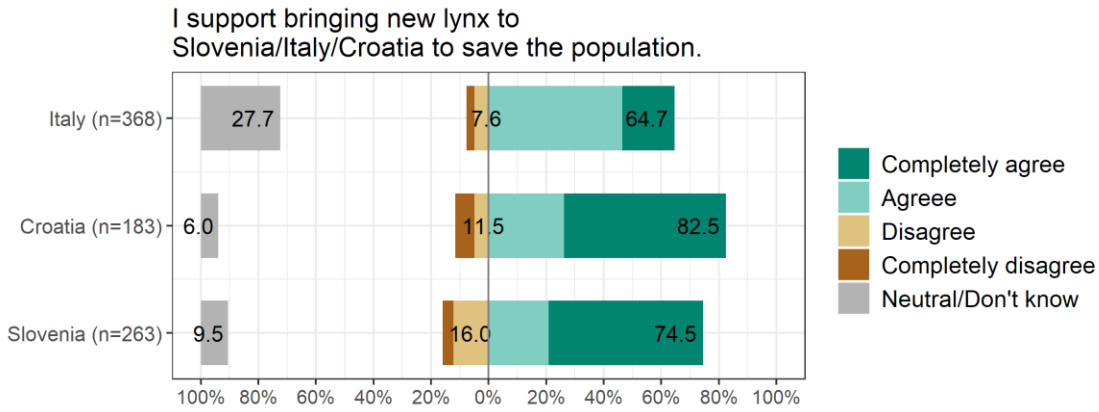

Figure 36

During the preparation phase of the LIFE Lynx project, there was a debate on suitability of animals from different European lynx populations for reinforcement in Slovenia and Croatia. Apart from the Carpathian population, which is in fact being used as a source population, lynx from Switzerland and lynx from the Balkan population were mentioned as alternatives. We have explored public opinions regarding the suitability of the different potential source populations. The commonality of opinions in all three countries was a high percentage of neutral answers indicating that general public is not familiar with the issue. Overall, the Carpathian population is believed to be the most appropriate for reinforcement, while the Balkan population was generally believed to be the least appropriate (Figure 37,Figure 38 and Figure 39).

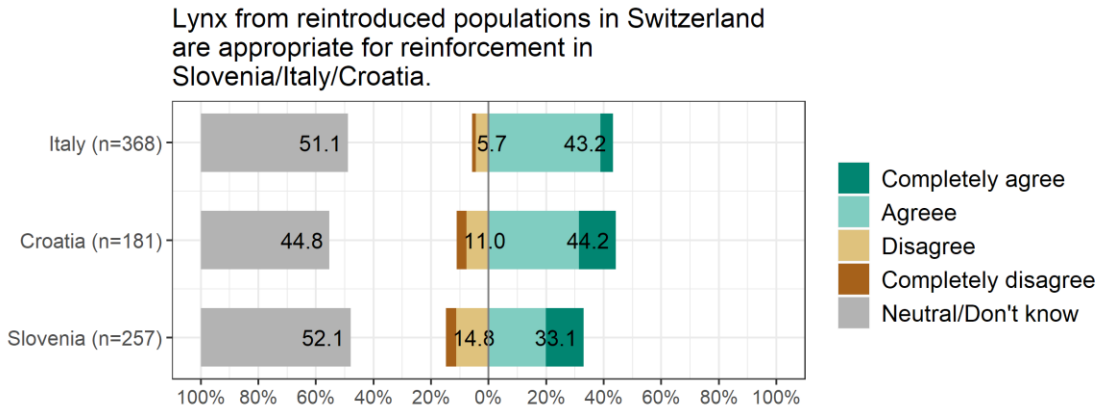

Figure 37

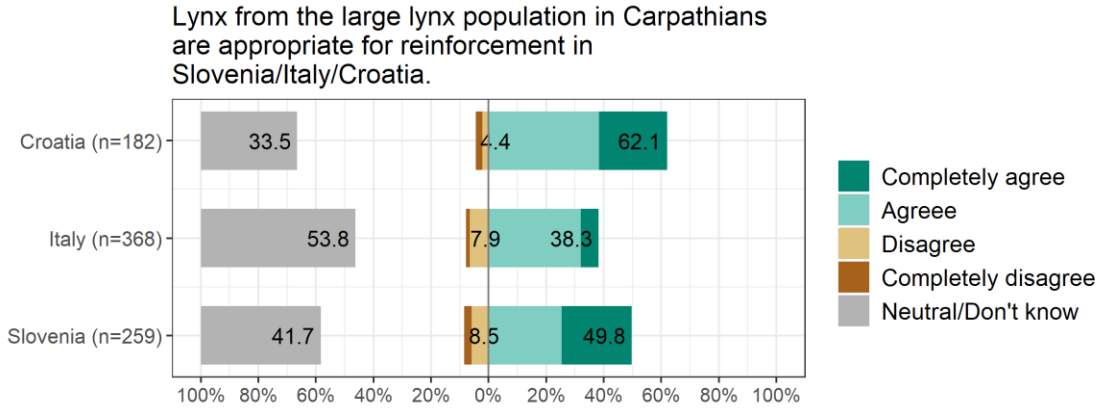

Figure 38

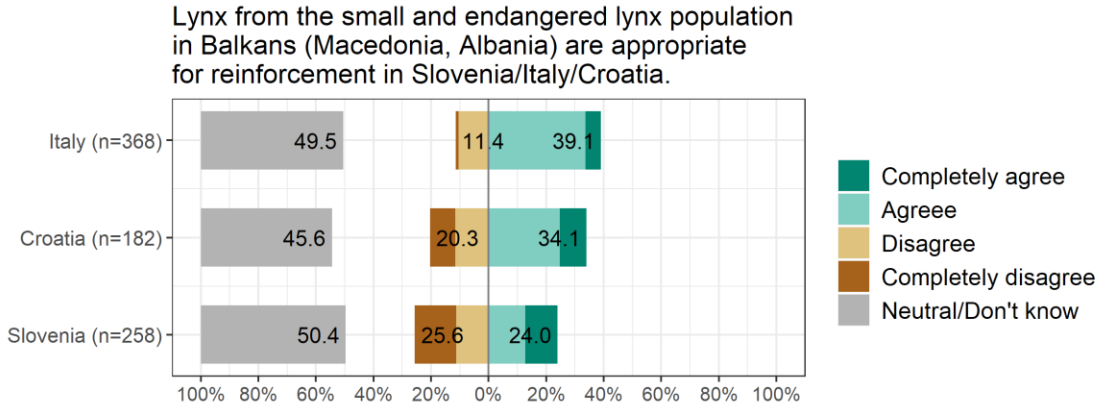

Figure 39

Results by stakeholder group

Opposition to bringing new lynx to Slovenia/Croatia/Italy was documented primarily among livestock breeders and as project continues to translocate new animals, this opposition will likely become more vocal

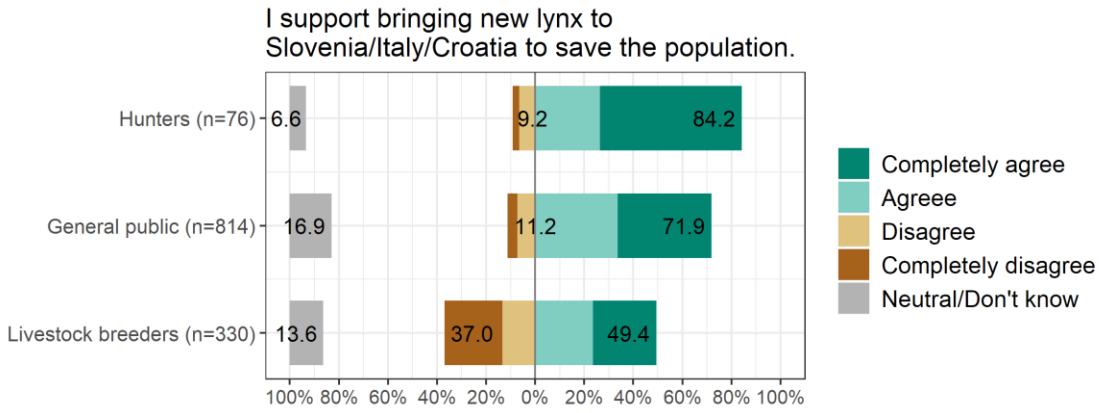

Figure 40

Similarly to general public, also hunters and livestock breeders had problems choosing which potential source population would be suitable for reinforcement. Even though initially there were concerns regarding public support for the different options, it seems that this is not a crucial issue as seen by public. Nevertheless, all three groups preferred Carpathian population as the most appropriate one.

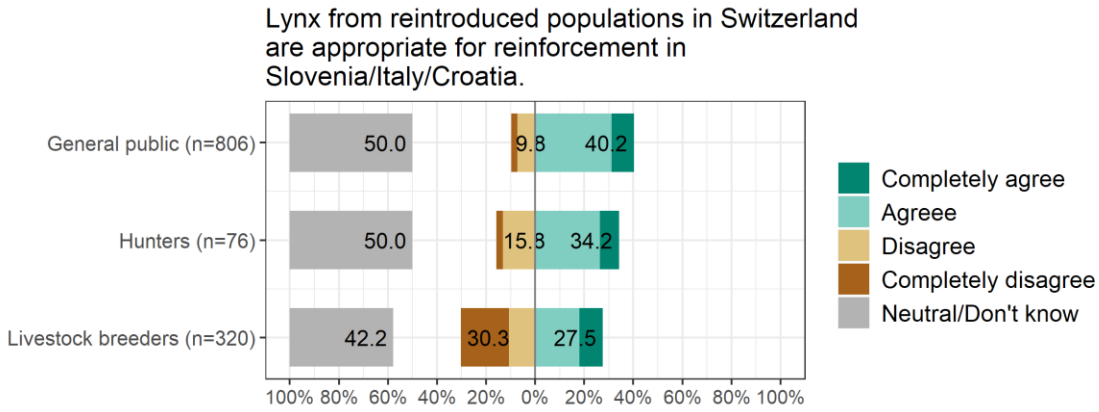

Figure 41

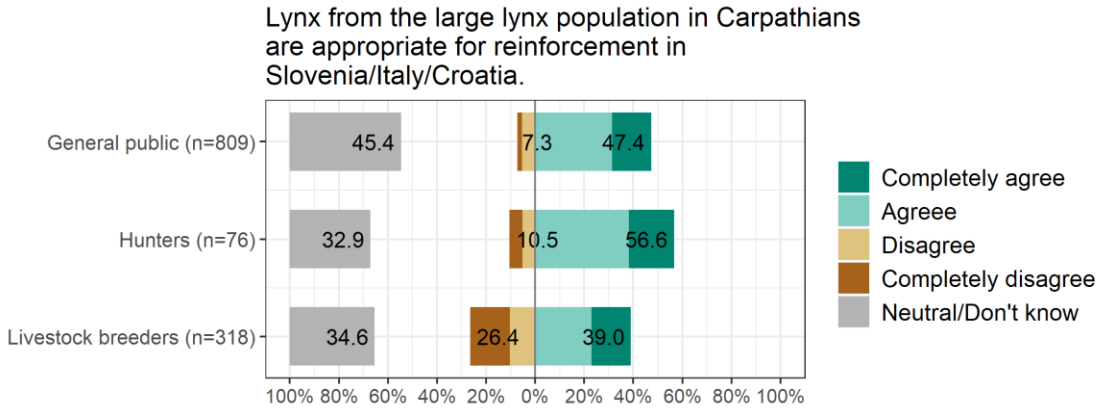

Figure 42

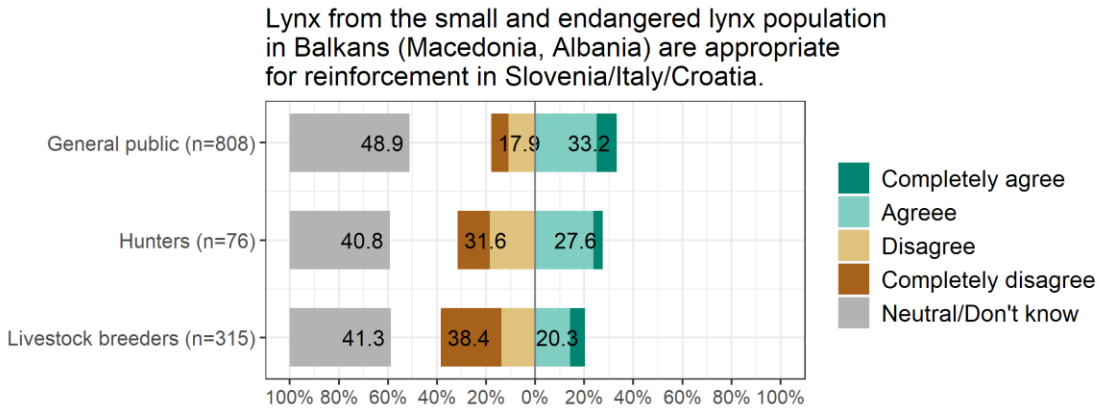

Figure 43

Damages and damage prevention

General public by country

Lynx belongs to the least damage-causing large carnivore species Nevertheless, there are concerns that increased lynx abundance could result with more damages it causes in the agriculture. Damages caused by lynx in all thee countries have been close to non-existing over the last decade. General public seems to be aware of this (Figure 44). Even so, in Italy almost a quarter of respondents thought domestic animals represent lynx's main food source in vicinity of pastures (Figure 45).

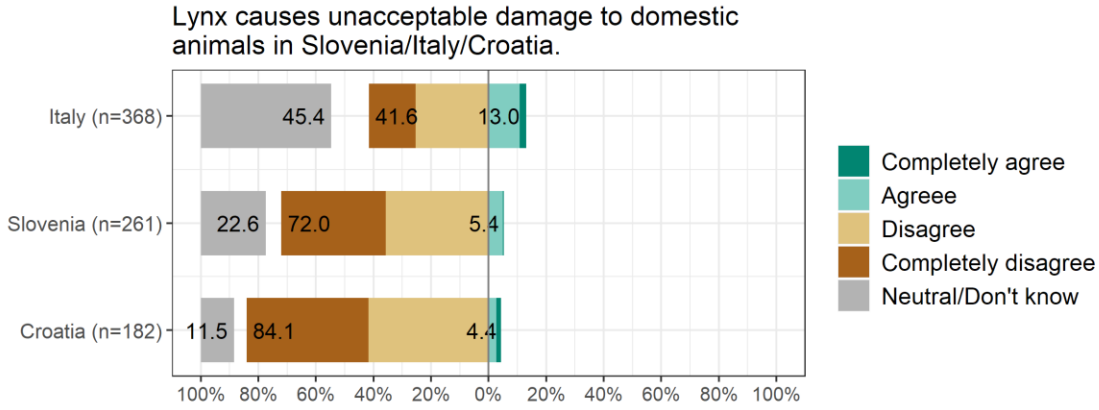

Figure 44

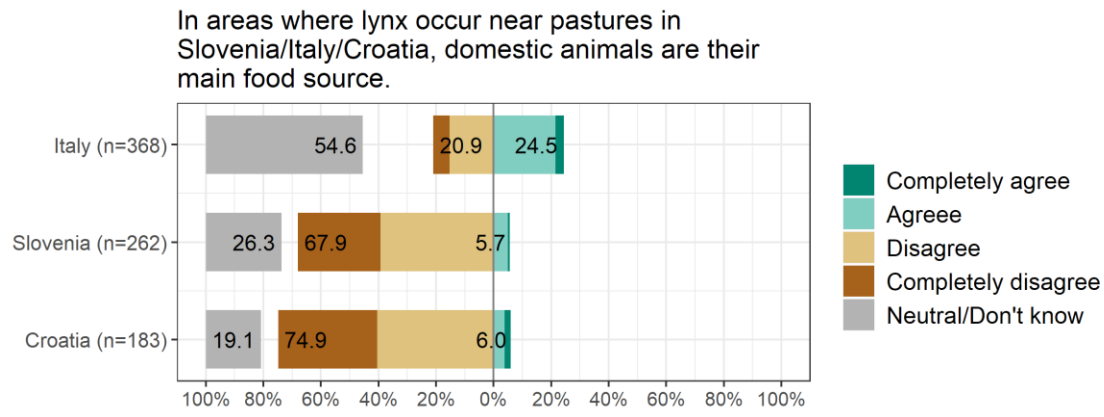

Figure 45

Among livestock guarding dogs, electric fences and removal of lynx, the respondents in Slovenia and Croatia chose livestock guarding dogs most often as an effective measure for preventing lynx attacks on livestock (Figure 46). In Italy, the electric fences were understood as the most effective measure for preventing lynx attacks on livestock (Figure 47). Removal of lynx as a damage control measure was opposed by most respondents in all three countries (Figure 48).

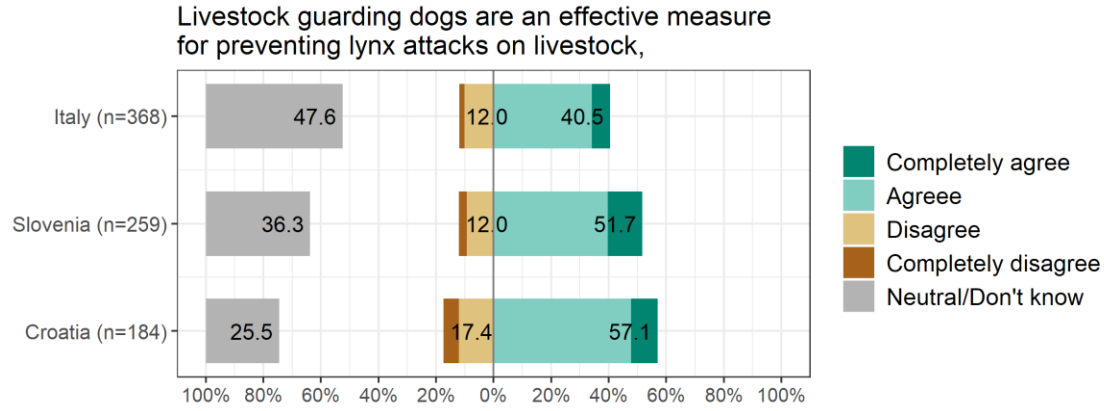

Figure 46

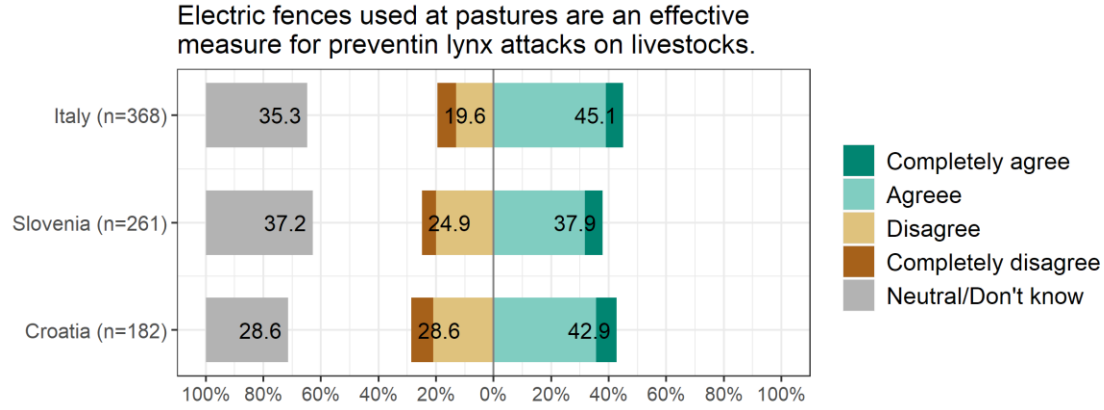

Figure 47

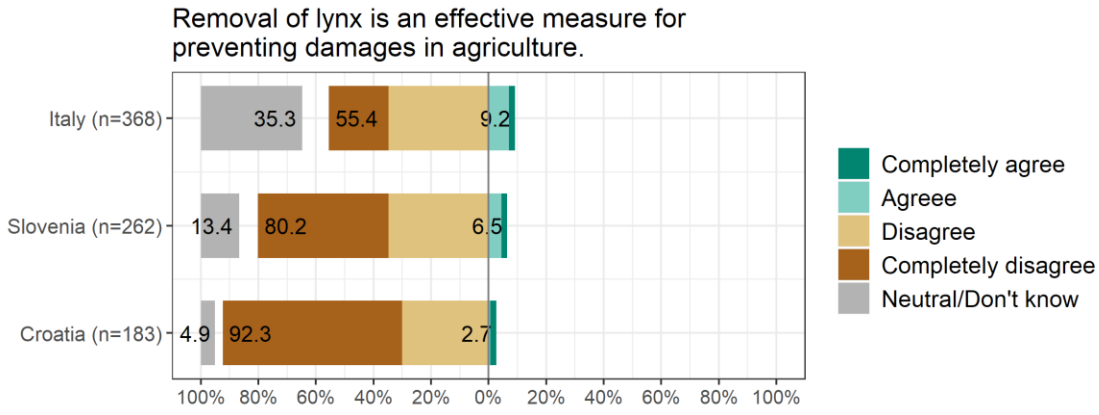

Figure 48

Results by stakeholder group

Close to 30% of livestock breeders thought that lynx causes unacceptable damage to domestic animals in their respective country even though the damages caused by lynx are practically non-existant in the last decade (Figure 49). This indicates a tendency of generalizing the experiences with other large carnivores – wolves and bears, or in other words, it is not important which large carnivore species is causing the damage.

All three groups mostly assessed livestock guarding dogs and electric fences as effective in preventing the damages. Removal of lynx to control the damages was to some degree supported only by livestock breeders.

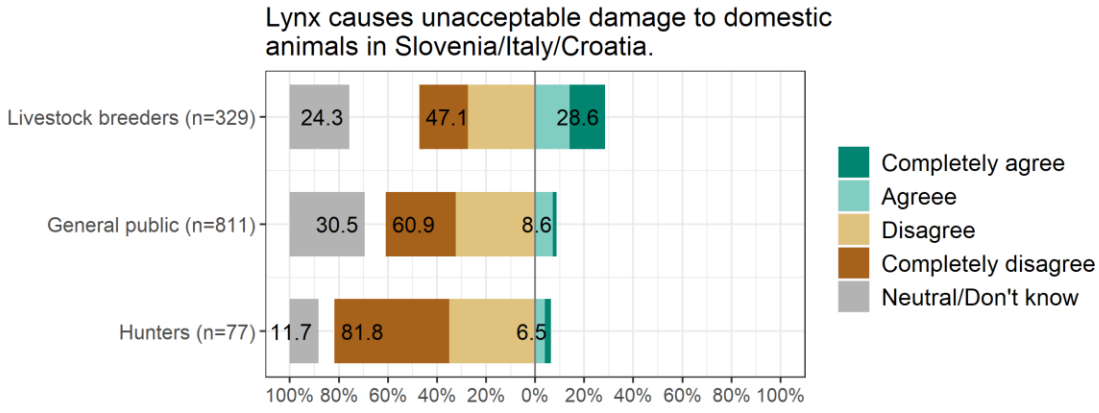

Figure 49

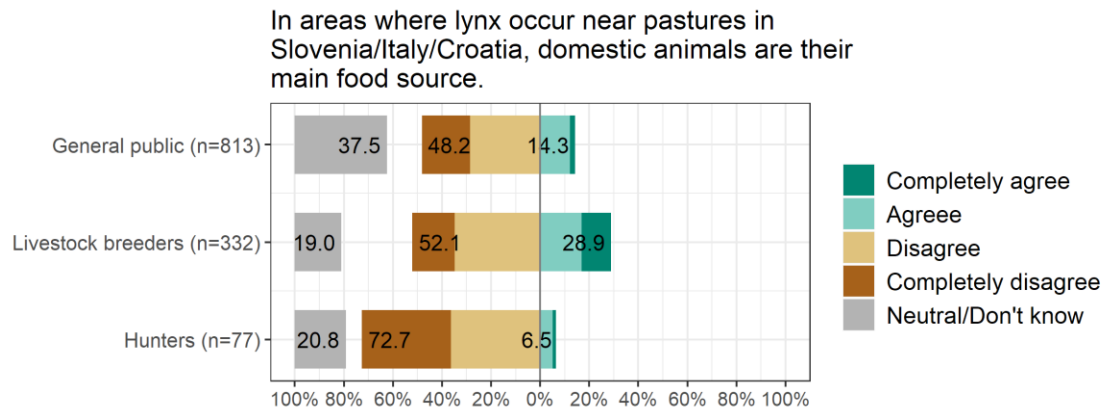

Figure 50

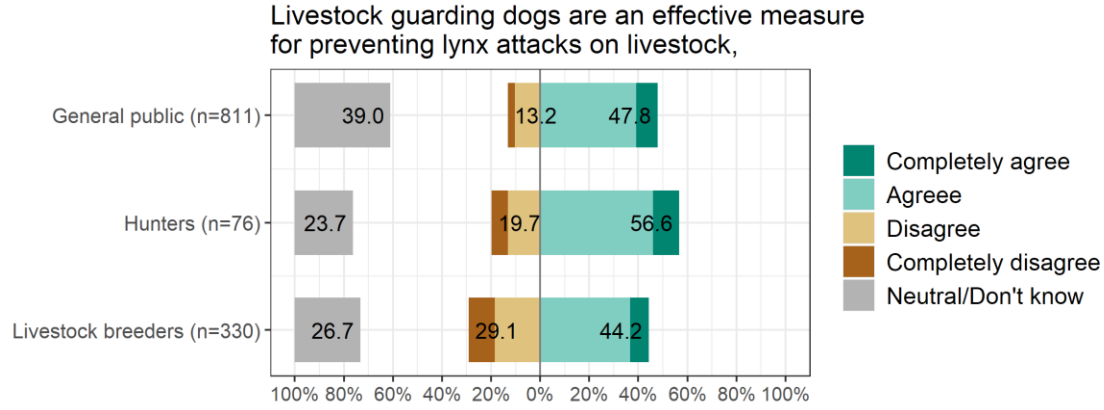

Figure 51

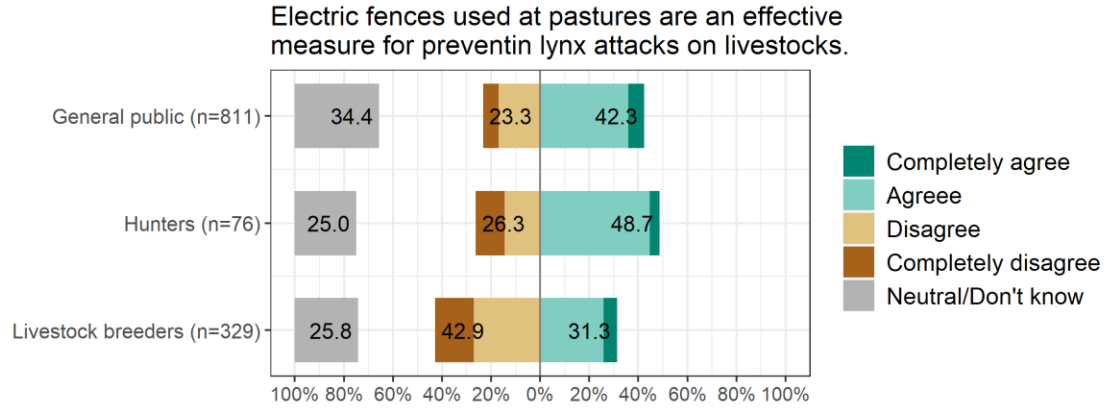

Figure 52

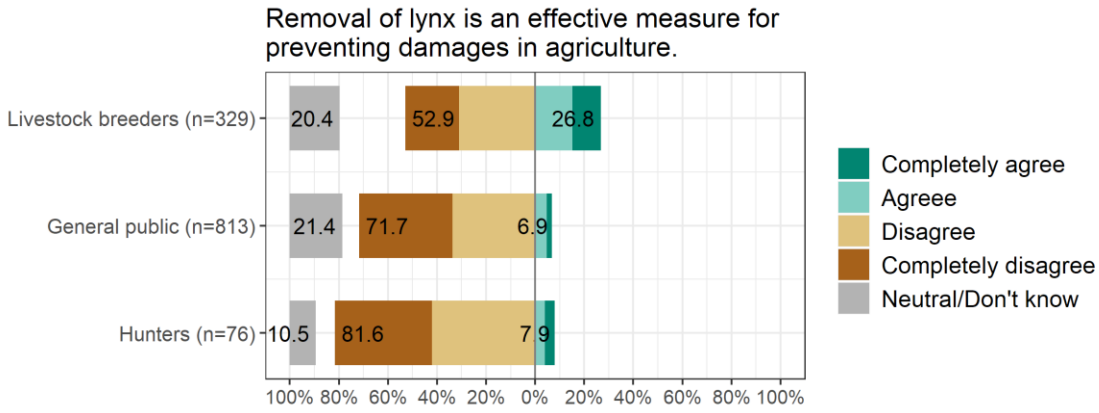

Figure 53

Hunting and beliefs regarding lynx impacts on game species

General public by country

The fact that lynx prey primarily on roe deer is often mentioned as a cause of lynx being disliked by hunters. We have assessed the extent of the issue by asking the respondents to answer to two questions – one regarding the lynx's role in controlling the roe deer population and the other one regarding the impact of lynx predation to hunting opportunities. The general public respondents were largely undecided regarding these questions, especially in Italy. Nonetheless, the respondents largely acknowledged the importance of lynx in regulating roe deer numbers and majority of Slovenian and Croatia respondents disagreed that lynx reduces opportunities to hunt ungulates (Figure 54and Figure 55).

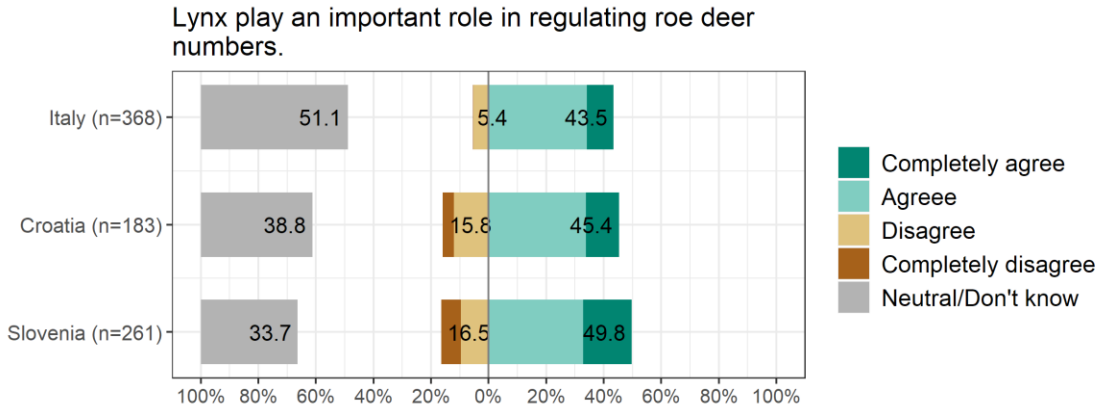

Figure 54

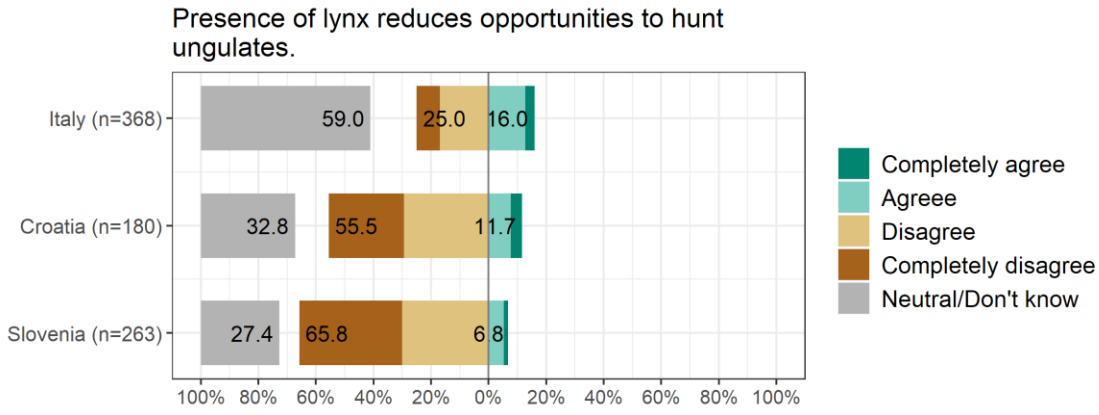

Figure 55

Results by stakeholder group

Large majority of hunters acknowledged the lynx role in regulating roe deer numbers (Figure 56). In addition, close to 30% of hunters thought presence of lynx reduces their opportunities to hunt ungulates (Figure 57).

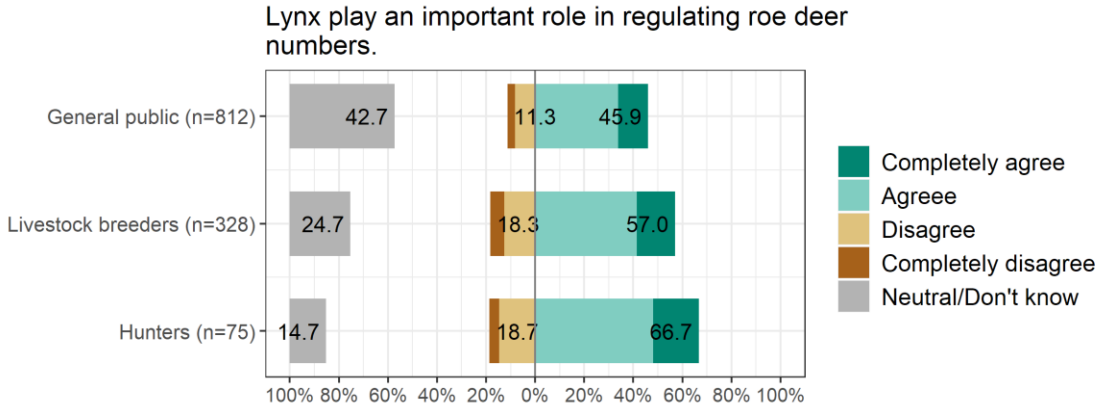

Figure 56

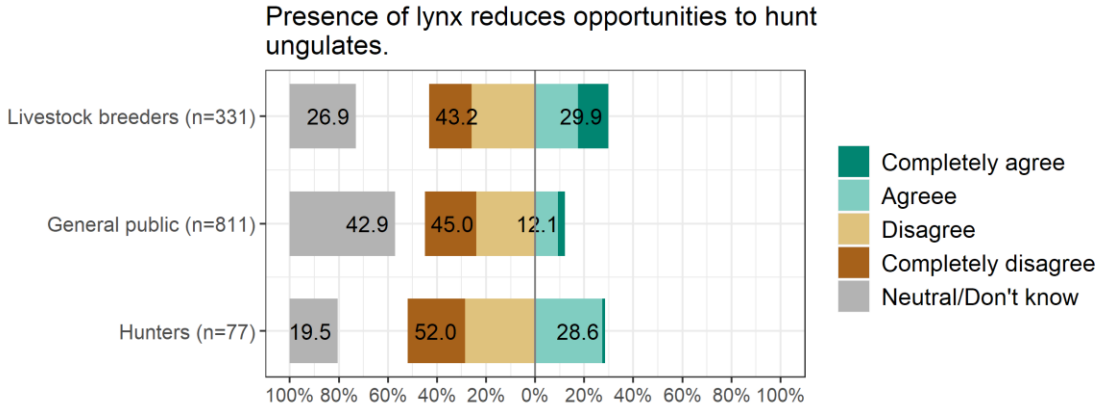

Figure 57

Value of lynx

Apart from the standard 5-point Likert scale which measures degrees of respondent's agreement/disagreement to a statement, in the section designed to investigate the value of lynx to society, we've used semantic differential scale in order to better assess connotative meaning of lynx characteristics as perceived by society. Respondents were asked to rate their perception of lynx on a scale with opposite adjectives at each end (e.g. beautiful vs. ugly). The results shown in Figure 58 show that all groups on average preferred positive adjectives to describe lynx. The pattern of results across the multiple points in the scale is the same in all groups. Adjectives "beautiful" and "interesting" had the highest ranks in all groups indicating high aesthetic and educational values of the lynx. This result ought to be used by those wishing to successfully promote conservation of lynx.

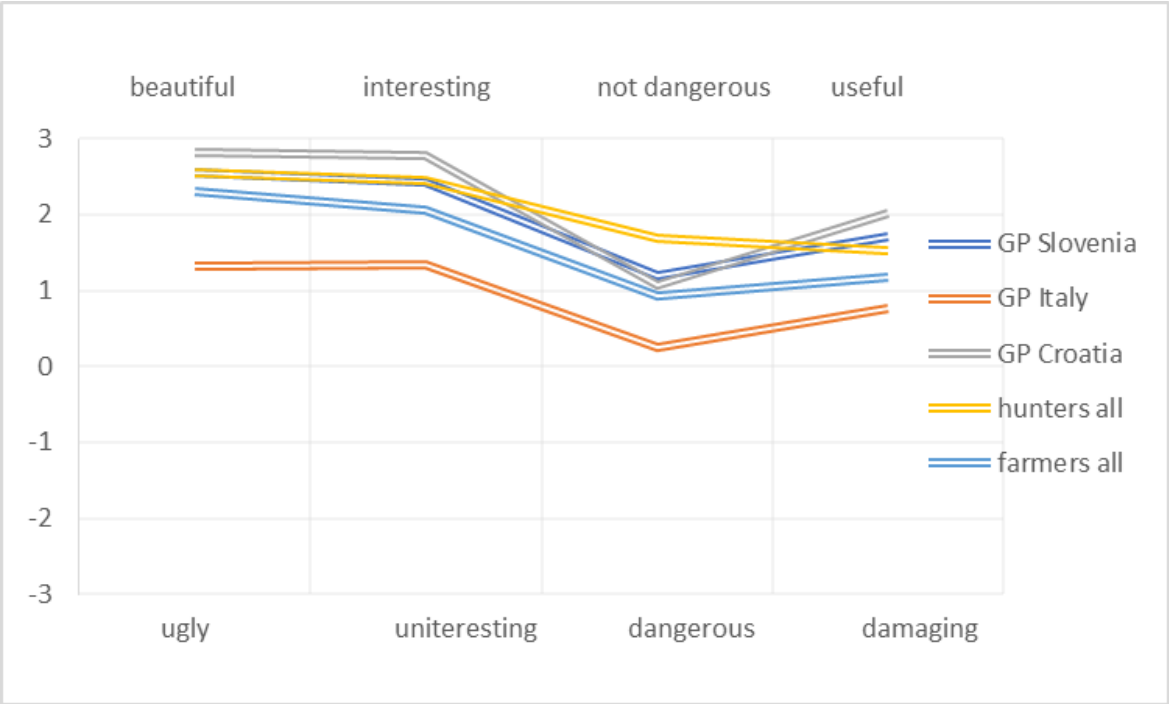

Figure 58: Average values by groups on a semantic differential 7-point scale describing the different characteristics of lynx (GP= general public).

In line with the results described above is also overwhelming agreement by the respondents to the statement "Lynx represents a symbol of preserved nature" (Figure 59) and to some degree to the statement "Presence of lynx in Slovenia/Italy/Croatia is beneficial for tourism" (Figure 61). Hunters among the three groups seem to have the highest appreciation of lynx as a natural heritage.

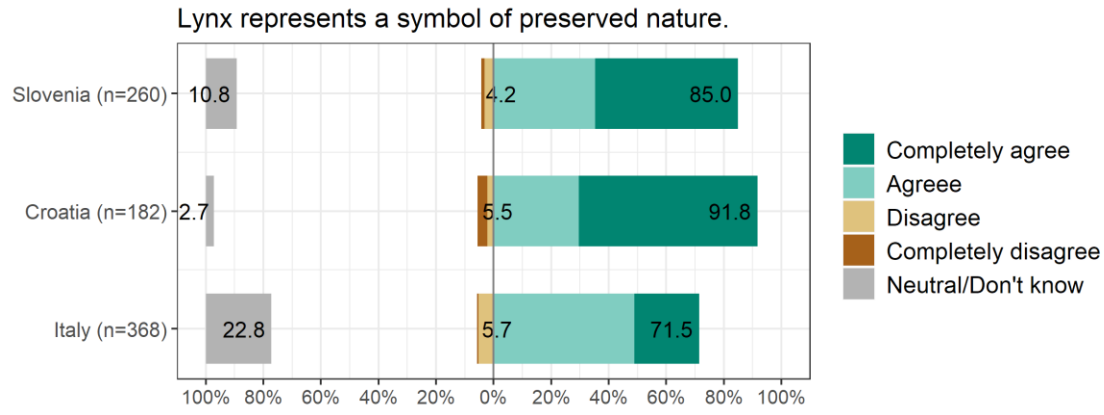

Figure 59

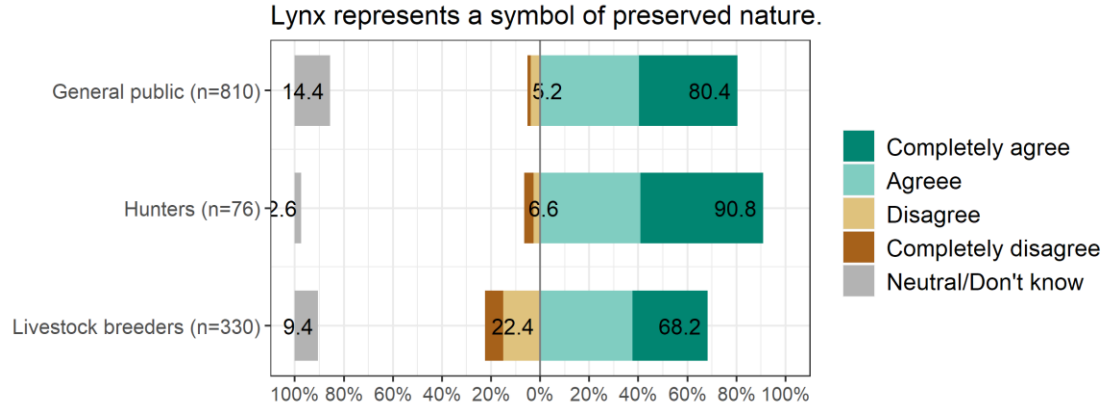

Figure 60

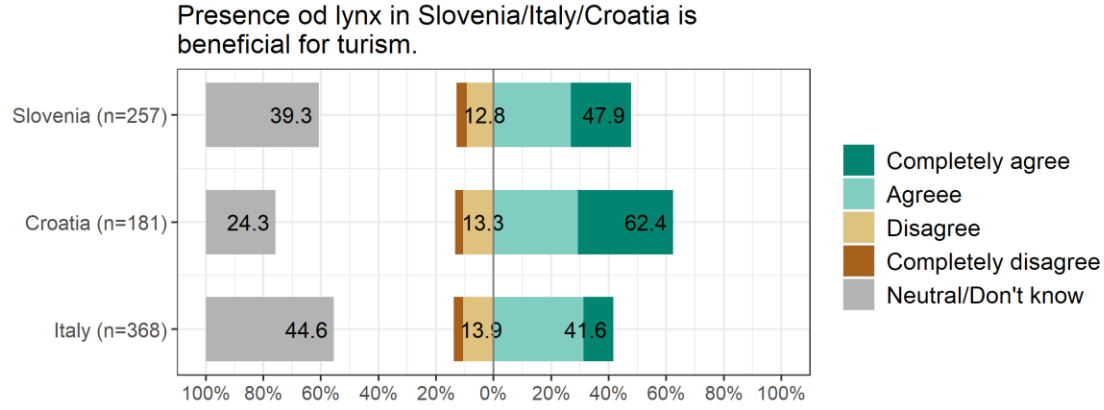

Figure 61

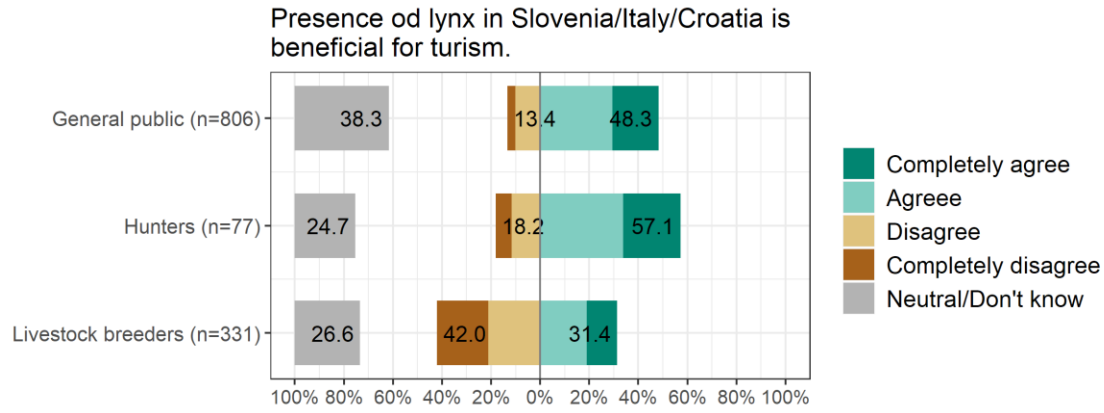

Figure 62

Conclusions

In all three countries majority of respondents described themselves as being in favour of lynx and support its conservation. In Italy, where the lynx is scarcest, the share of respondents that do not have a formed opinion about an issue was much higher than in other two countries. Only livestock breeders were not so overwhelmingly in favour of lynx, as approximately quarter of them described themselves as being against lynx.

Large carnivores invoke strong feelings in people, those often include admiration, hatred but also fear. Lynx avoid people and are not considered to be dangerous to them, which respondents from Slovenia and Croatia seem to be well aware of, while Italian respondents were not so sure about that. Overall fear of lynx seems to be to some degree an issue among the general public and livestock breeders.

Among stakeholder groups, livestock owners are the ones concerned about the potential of economic damage caused by lynx. Nevertheless, they still overwhelmingly disagreed to extermination or illegal killings of lynx.

Public perceptions about the species abundance play an important role in shaping public support or opposition to different management measures. Most of our respondents, especially in Slovenia and Croatia, did not believe the lynx population is in good condition. In addition, the respondents have mostly agreed that the population is close to extinction.

Prevalent support to increasing the number of lynx in their respective countries was documented among general public respondents in all three countries as well as the opposition to hunting lynx. In addition hunters (but not livestock owners) also clearly supported increase of the number of lynx.

Livestock breeders and especially hunters seem to be much more familiar with the causes of lynx population deterioration than the general public. General public respondents identified overharvesting and illegal killings as the main cause, while hunters and livestock breeders primarily ranked inbreeding as the main cause for the recent deterioration of the lynx population.

The only plausible way of addressing high inbreeding levels in the short term in the Dinaric lynx population is to bring new, unrelated animals to the population which is also the main goal of the LIFE Lynx project. Public support of this action is crucial for maintaining the positive attitudes toward lynx. General public in all three countries supports population reinforcement. Opposition to bringing new lynx to Slovenia/Croatia/Italy was documented primarily among livestock breeders and as project continues to translocate new animals, this opposition will likely become more vocal

During the preparation phase of the LIFE Lynx project, there was a debate on suitability of animals from different European lynx populations for reinforcement in Slovenia and Croatia. Apart from the Carpathian population, which is in fact being used as a source population, lynx from Switzerland and lynx from the Balkan population were mentioned as alternatives. We have explored public opinions regarding the suitability of the different potential source populations. The commonality of opinions in all three countries was a high percentage of neutral answers indicating that general public is not familiar with the issue. Similarly to general public, also hunters and livestock breeders had problems choosing which potential source population would be suitable for reinforcement. Even though initially there were concerns regarding public support for the different options, it seems that this is not a crucial issue as seen by public. Nevertheless, all three groups preferred Carpathian population as the most appropriate one.

Lynx belongs to the least damage-causing large carnivore species Nevertheless, there are concerns that increased lynx abundance could result with more damages it causes in the agriculture. Damages caused by lynx in all three countries have been close to non-existing over the last decade. General public and hunters seem to be aware of this while close to 30% of livestock breeders thought that lynx causes unacceptable damage to domestic animals in their respective country. This indicates a tendency of generalizing the experiences with other large carnivores – wolves and bears, or in other words, to the farmer, it is not important which large carnivore species is causing the damage. All three groups overall assessed livestock guarding dogs and electric fences as effective in preventing the damages. Removal of lynx to control the damages was to some degree supported only by livestock breeders.

The fact that lynx prey primarily on roe deer is often mentioned as a cause of lynx being disliked by hunters. Large majority of hunters acknowledged the lynx role in regulating roe deer numbers. In addition, close to 30% of hunters thought presence of lynx reduces their opportunities to hunt ungulates confirming the existence of the concerns.

All groups attributed high aesthetic and educational values to the lynx. Hunters among the three groups seem to have the highest appreciation of lynx as a natural heritage.