**Local stakeholder knowledge and experiences informing Eurasian lynx conservation**

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Supplementary Material 1: Informed Consent Statement

Before starting the interview, we shared a document explaining the study objectives and provided our contact information for any additional questions. We confirmed with all participants that they understood the study goals, as well as the funding source (CIRM - Interdisciplinary Research Center on Mountains). We explained that participation in the study involved an interview and that their participation in the interview was voluntary. They were free to withdraw from the interview at any time.

We explained that any information provided would be primarily used for the preparation of a research report and scientific publication, as well as related presentations. We assured them that the handling of their individual responses would remain strictly confidential and anonymous. This means that personal information collected, such as names or residential locations, would not be disclosed.

Supplementary Table 1: Questionnaire translated into English for Interview-Based Occupancy Survey

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| **Interview-Based Occupancy Survey**  Begin the interview by providing detailed information about consent procedures, as well as outlining how we will ensure confidentiality and address other ethical considerations.  **Species Identification Verification**  Present the interviewee with photos of a set of species and ask them to comment if they have seen these species in the area. Take the opportunity to see if they correctly identify the lynx, the European wildcat, the red fox, the grey wolf. Some questions will be asked to deepen the knowledge of the species (e.g., does the number of species increase/decrease, what is the lynx's main diet, does the lynx live alone or in packs, how did the lynx come to this region?)  **Relevant Information**   1. Interview number 2. Date 3. Gender (M/F) 4. Age: 18-20 / 21-30 / 31-40 / 41-50 / 51-60 / 61-70 / 71-80 / 81-90 5. Municipality (where the respondent lives) 6. Latitude and longitude (dd.dd) of the interview location  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Lynx Detections for Occupancy Analysis**   1. Do you know if there are lynxes in this municipality?    1. If yes, is the lynx considered "resident" or "passing through"? Have there been any evidence of reproduction? 2. Have you seen them or observed indirect evidence of their presence (such as camera trap images), tracks or confirmed kill sites over the past 40 years? 3. When (year and month of observation) 4. Map direct/indirect observation areas.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Year of Detection | Month/Season of Sighting | Where (site/valley/are name, **draw in map**) | Confirmation of species (Camera trap, photo etc.) | Comment (i.e., confirmed reproduction or presence of resident adult females) | | 1 |  |  |  |  | | 2 |  |  |  |  | | 3 |  |  |  |  | | 4 |  |  |  |  | | **…** |  |  |  |  |  1. Are they aware of any threats being faced by the lynx? (i.e. direct killing, poisoning, trapping, natural prey reduction, grassland degradation, livestock displacement, traffic accidents) 2. Direct experience of these threats? Describe.   **Knowledge attributes for Occupancy Analysis**   1. How long have you had your hunting license/been a farmer(owned livestock or herded livestock)? 2. What species do you hunt? 3. Last year, how much time did you spend in the field or in pastures? (months per year) 4. In which areas did you hunt? What areas do you cover in your farming/herding activity? (Mark the knowledge area on the map with seasonal accuracy) 5. What other occupation do you have (protected area guard, farmer, herder, beekeeper etc.)? (Is farming your main or ancillary source of income). | |  | |

Supplementary Table 2: Questionnaire translated into English for assessing respondent values and motivations (Part 1) and lynx impact assessment (Part 2)

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| **Part 1: Cultural, Relationnel, and Instrumental Values**   1. How do you hunt (group, individual, with dogs)? Which species do you prioritize? / Describe your farming/livestock activity (species, numbers, dairy/cheese production). 2. Is hunting/farming important to you (explore cultural, relational, and utilitarian values; current and future values)?    1. Values to consider for hunting: culture, recreational, community, mental health, challenges, connection with nature, wildlife observation, food, habitat management, improving wildlife habitat.    2. Values to consider for farming: economic, leisure with animals, landscape and biodiversity preservation (preventing overgrowth of pastures, enhancing pasture flowers and their pollinators, cultural heritage - sustaining rural life, societal role, producing food for humans, sustaining Savoyard culture). 3. Which specific areas are important for hunting the different species you hunt (red deer, wild boar, roe deer, chamois, birds...) / livestock farming in this landscape? Why? During which seasons?    1. Note geographical and seasonal dimensions.   **Part 2: Experienced and expected impact of the lynx**   1. Does the presence of the lynx have an impact on hunting/farming?    1. For each value mentioned in part 1       1. Positive, negative, no impact?       2. What type of impact?       3. Differentiate between species hunted.    2. Show me the locations of impacts on the map (Map). 2. When the lynx is present in the region, how do you think it could impact hunting/farming?    1. For each value mentioned in part 1       1. Positive, negative, no impact?       2. What type of impact?       3. Differentiate between huntable species.    2. b. Show me on the map the possible impact locations. 3. Explore how the lynx could impact other concerns (e.g., other wildlife species especially endangered species, habitat, leisure, human well-being, livelihoods).   **Part 3: Vision of the future**   1. What are the future challenges/opportunities you see regarding the presence of the lynx in the landscape?    1. What is the role of reserves (hunting reserves or nature reserves)? 2. What can be done to promote coexistence between the lynx and human activities, particularly hunting or livestock farming?    1. Possible livestock responses: compensation, prevention, electric enclosures, improved herding, keeping pastures away from forest environments, overnight livestock penning, use of herding dogs, lethal lynx control, individual relocations, etc.    2. Possible hunting responses: implementation of hunting quota systems (population managed through hunting), leased hunting (reduced lease tax when their hunting grounds are in lynx-friendly habitat), frightening shots (aimed at scaring the individual away), etc. 3. Are the current management/conservation measures available (compensation, prevention for farmers, nothing for hunters) sufficient? If not, what improvements do you think are needed?   **Part 4: Impact of other factors**   1. Do you think other recent changes (tourism, increased extreme sports, domestic animals, forest management) could have an impact on the lynx? 2. Has the presence of other species had an impact on hunting/farming (e.g., wolf, vultures, eagles)? Positive, negative, no impact? What type of impact? 3. Show me on the map the locations of impacts. |

Supplementary Table 3: Original French-Language Questionnaire for Interview-Based Occupancy Survey

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| **Interview-Based Occupancy Survey (FR)**  Nous prendrons les mesures pour assurer la confidentialité des réponses données aux interviews et autres considérations éthiques.  **Vérification de l'identification des espèces**  Présentez à la personne interrogée des photos d'un ensemble d'espèces et demandez-lui de commenter si elle a vu ces espèces dans la région. Profitez-en pour voir si elle identifie correctement le lynx, le chat sauvage européen, le renard, le loup. Quelques questions seront posées pour approfondir la connaissance de l’espèce (ex. le nombre d'espèces augmente/diminue, quel est le régime alimentaire principal du lynx, est-ce que le lynx vit seul ou en meute, comment le lynx est-il parvenu dans cette région?)  **Information pertinentes**   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 1. Interview n° 2. Date 3. Sexe (H/F) 4. Âge : 18-20/ 21-30/ 31-40/ 41-50/51-60/61-70/71-80/ 81-90 5. Commune (où habite le répondant) 6. Latitude et longitude (dd.dd) du lieu de l’interview   **Détections de lynx pour l'analyse de l'occupation**   1. Savez-vous si il y a des lynx dans cette commune?    1. Si oui, le lynx est il considéré comme « résident » ou « de passage ». Y a-t-il eu des preuves de reproduction? 2. Les avez-vous vus ou avez-vous trouvés des indices indirects tels que des images (pièges-photos, caméras), proies sauvages ou domestiques, traces au cours des 40 dernières années? 3. Quand (année et mois d’observation) 4. Cartographier les zones d’observations directes/indirectes.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Année de détection | Mois d'observation | Où (nom du site/de la vallée/de la région, **Indiquer sur la carte**) | Confirmation des espèces (piège photographique, photo etc.) | Commentaire (i.e. Une reproduction confirmée ou la présence de femelles adultes résidentes) | | 1 |  |  |  |  | | 2 |  |  |  |  | | 3 |  |  |  |  | | 4 |  |  |  |  | | **…** |  |  |  |  |  1. Que pensez-vous sont les menaces principales auxquelles est confronté le lynx ? (C.-à-d. abattage direct, empoisonnement, piégeage, réduction des proies naturelles, dégradation des prairies, déplacement du bétail, collisions) 2. Avez-vous une expérience directe confirmant ces menaces ? Décrivez.   **Domaine de connaissances pour l'analyse de l'occupation**   1. Depuis quand avez-vous votre permis de chasse/ depuis quand êtes-vous éleveur ? 2. Quelles espèces chassez-vous? 3. L’année dernière, combien de temps avez-vous passé sur le terrain ou dans les pâturages?(mois par année) 4. Dans quels secteurs avez-vous chassé ? Quels secteurs couvrez-vous dans votre activité d’éleveur ?(Marque de la zone de connaissance sur la carte avec précision saisonnière) 5. Quelle autre occupation avez-vous (garde-chasse, agriculteur, etc.) ? (est-ce-que l'élevage constitue votre revenu principal ou accessoire). | |

Supplementary Table 4: French Language Questionnaire for values and motivations (Part 1) and lynx impact assessment (Part 2)

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| **Partie 1: les valeurs culturelles, relationnelles et relatives à l’approvisionnement**   1. Comment chassez-vous (groupe, individuelle, chien)? Quelle espèces privilégiez-vous?/ Décrivez nous votre activité d’élevage (espèces, nombres, produit lait/fromage). 2. La chasse/l'élevage est-elle/il important(e) pour vous (explorer les valeurs culturelles, relationnelles et utilitaires; valeurs actuelles et futures) ?    1. Valeurs à retenir pour la chasse : culture, récréatif, communauté, santé mentale, défis, connexion avec la nature, observation de la faune, nourriture, gestionnaires de milieux, améliorer l’habitat de la faune.    2. Valeurs à retenir pour l’élevage : économie, loisirs en compagnie de leurs animaux, préservation du paysage et de la biodiversité (empêcher l’embroussaillement des pâturages, valorisation des fleurs des pâturages et leurs pollinisateurs ,, patrimoine culturel - faire vivre la campagne, rôle sociétal, produire de la nourriture pour les hommes, faire vivre la culture savoyarde. 3. Quelles zones particulières sont importantes pour la chasse des différentes espèces que vous chassez (cerf, sanglier, chevreuil, chamois, oiseaux…) / l’élevage de petit bétail dans ce paysage ? Pourquoi ? En quelles saisons?    1. Dimension géographique et saisonnière.   **Partie 2: Impact vécu et attendu du lynx**   1. La présence du lynx a-t-elle un impact sur la chasse/l'élevage?    1. Pour chaque valeur mentionnée en partie 1       1. Positif, négatif, pas d'impact?       2. Quel type d’impact?       3. Différentier entre les espèces chassables    2. Montrez-moi le lieu des impacts sur la carte (Cartographier) 2. Lorsque le lynx sera présent dans la région, comment pensez-vous qu'il pourrait avoir un impact sur la chasse/l'élevage ?    1. Pour chaque valeur mentionnée en partie 1       1. Positif, négatif, pas d'impact ?       2. Quel type d’impact ?       3. Différentier entre les espèces chassables    2. Montrez- moi sur la carte le lieu des impacts possibles. 3. Explorer comment le lynx pourrait avoir un impact sur d'autres domaines préoccupants (par exemple, d'autres espèces d’animaux sauvages en particulier des espèces menacées, l'habitat, les loisirs, le bien-être humain, les moyens de subsistance).   **Partie 3 : Vision du futur**   1. Quel sont les futurs défis/opportunité que vous voyez au sujet de la présence du lynx dans le paysage?    1. Quel est le rôle des réserves (réserves de chasse ou réserves naturelles) ? 2. Qu'est-ce que l'on peut faire pour favoriser la cohabitation entre le lynx et les activités humaines en particulier la chasse ou l'élevage du bétail?    1. Réponses possibles élevage: compensation, prévention, enclos électriques, berger, éloignement des pâtures des milieux forestiers, parcage des moutons la nuit, utilisation de chiens de troupeau, contrôle létal du lynx, déplacements d’individus, etc.    2. Réponses possibles chasse: mise en place de systèmes de quotas de chasse (population est gérée par la chasse), chasse affermée (réduction de taxe d’affermage lorsque leur terrain de chasse se trouve dans un secteur où l’habitat est favorable au lynx), tirs d’effarouchement (tirs ayant pour objectif de faire peur à l’individu et de l’éloigner), etc. 3. Est-ce que les moyens de gestion/conservation mis à disposition actuellement (indemnisation, prévention pour les éleveurs, rien pour les chasseurs) sont suffisants? Si non qu'est-ce qu'il faudrait améliorer selon vous?   **Partie 4 : Impact d’autres facteurs**   1. Pensez-vous que d’autres changements récents (tourisme, sport extrêmes plus de dérangements, animaux domestiques, la gestion de la forêt) pourraient avoir un impact sur le lynx? 2. La présence d ‘autres espèces a-t-elle eu un impact sur la chasse/l'élevage (ex. loup, gypaète, aigle)? Positif, négatif, pas d'impact ? Quel type d’impact? 3. Montrez- moi sur la carte le lieu des impacts. |

Supplementary TABLE 5: Interview-Based Analysis of Hunter and Pastoral Motivation Themes, and Lynx Impact Themes

**Table 5A: Hunter Motivation Themes Identified from Interviews and Coded using Atlas.ti**

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| **Theme** | **Description** |
| Community | Motivations rooted in the sense of camaraderie and belonging within hunting communities. |
| Connection with Nature | Motivations driven by a deep desire to immerse oneself in the natural world while hunting. |
| Culture | Motivations inspired by cultural traditions woven into hunting. |
| Challenge | Motivations fuelled by the thrill of overcoming obstacles and testing one's skills in the hunt. |
| Management | Motivations focused on responsibly stewarding wildlife populations and habitats during hunting. |
| Sustenance | Motivations stemming from the desire to provide sustenance and resources through hunting (i.e. meat) |
| Observing Wildlife | Motivations centred around the joy and wonder of observing wildlife in their natural habitat. |
| Recreational | Motivations driven by the enjoyment and relaxation found in the pursuit of hunting activities. |
| Mental Health | Motivations related to the mental and emotional well-being gained through the practice of hunting. |
| Family Tradition | Motivations tied to the customs and legacies passed down through generations of hunters. |
| Working with Dogs | Motivations involving the unique bond and enjoyment of "working with dogs" formed with dogs in hunting. |

**Table 5B: Pastoral Motivation Themes Identified from Interviews and Coded using Atlas.ti**

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| **Theme** | **Description** |
| Economic Benefits | Motivations guided by the economics and livelihoods sustained through pastoralism. |
| Recreational Benefits | Motivations driven by the enjoyment and leisure found in pastoral activities and lifestyles. |
| Connection with animals | Motivations rooted in the bond and relationship with the animals nurtured through pastoralism. |
| Landscape Conservation | Motivations focused on preserving and safeguarding landscapes and ecosystems through pastoral practices. |
| Cultural Heritage | Motivations influenced by the cultural heritage and traditions ingrained in pastoral lifestyles |
| Role in Society | Motivations tied to the role and status within society attributed to pastoral communities. |
| Human Food Production | Motivations centered around the essential role in producing food resources through pastoral activities. |

**Table 5C: Context Analysis of Lynx Impact Themes Derived from Interviews and Coded using Content Analysis**

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| **Theme** | **Description** |
| Tolerance towards Lynx Presence | Indicating a tolerant attitude towards the presence of lynx in the valley. Not negatively or positively impacted. |
| Low Lynx Population Impact | The current lynx population is insufficient to significantly impact hunting or pastoralist activities and values. |
| Potential Impact on Game Species | Lynx may potentially affect the population dynamics of game species. |
| Minimal Lynx Impact Compared to Wolves | The perceived minor impact of lynx compared to the more significant impact of the return of the grey wolf. |
| Other | Responses that do not fit into the above categories include mixed perspectives on lynx impact, ranging from its attraction to tourists and its combined threat with wolves, potentially impacting both livestock and pastoralism viability. |