**Supplementary Material A**

**Interview guide for non-rancher stakeholders (e.g. Environmental NGO People)**

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|  | **Can environment market services mitigate human-wolf conflict in WA State?** |
| **Purpose** | To contribute to improving coexistence between humans and wolves in eastern WA State |
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| **Goal** | Provide mechanisms to reduce economic loss due to wolves in WA State. |

**Introduction:** This research aims to investigate the feasibility of an economy based on wolves in Washington State. The research design is to ask the ranchers the measures they think will offset economic costs to wolves, and then investigate the avenues, and willingness to pay for those measures by the public, and the means of implementing such measures that will ensure that the wolf economy is a feasible mitigation measure.

In interviewing the conservation people we seek to learn the following:

1. The NGOs/ department’s current involvement in economic offsets for ranchers’ losses to wolves.
2. Their plans and/or recommendations for such offsets.
3. Their opinion of suggested economic measures to offset for losses to wolves.
4. How best can the offsets be implemented to protect ranchers’ livelihoods

***Ranchers: How do [*Non-rancher Stakeholders*] officials feel about ranchers?***

1. What do you think the return of wolves means for ranchers in Washington State?
	* What impacts do ranchers’ and other rural dwellers in wolf country are facing as a result of wolves?
2. How are you currently involved in issues of mitigating human-wolf conflict for ranchers?
	* What is the organization’s experience in working with ranchers?
	* How effective do you feel your organization is at resolving carnivore conflict with the ranchers?

***Economics: How do [*Non-rancher Stakeholders*]* *feel about economic programs for ranchers to coexist with wolves and their feasibility?***

1. What do you think about economic programs to help ranchers pay for increased costs from wolves?
2. What such economic programs are you currently involved in?
	* What does your organization/ department suggest about protecting the livelihoods of ranchers?
	* Which measures work, and why? Which don’t work and why?
	* Do you think there is more that can be done to reduce ranchers’ economic losses to wolves?
	* What future plans do you have in addressing issues of rancher-wolf interactions?
3. How can the urban counties, which are typically less affected by wolves, help offsets for rancher’s costs and to share the burden of wolves to ranchers? (aim: wolf-free urban counties i.e. King, Pierce, Snohomish, Kitsap as a source of funds)
	* Collect funds in form of licenses
	* Donations
	* Wolf plates
	* Supporting wolf agri-tourism
	* Paying premiums for Washington-produced ranch products
4. How do you feel the money collected should be used?
* Besides the research that WSU on mitigation measures, how else more can such money be used to offset costs of wolves to ranchers?
* How can the collected funds be used to provide alternative supplementary sources of income for ranchers in order to protect their livelihoods from threat by predators specifically wolves? (*listen out for options in 8)*
1. What do you think would be the most effective avenue for the collected funds to reach the ranchers in order to offset wolf costs?
* How do you think your organization and others like yours can work with ranchers to ensure that these funds are effectively covering costs for wolves?
* A lot of the ranchers expressed distrust in conservation NGOs and the science behind wolf reintroduction, what do you think about that?
1. We have been talking with ranchers about several economic options that the funds collected from the urban areas could be used to protect rancher’s livelihoods. What do you feel about the following? *(ask about options that are not mentioned in 6 above)*
	* Agri-tourism (viewing wolves and wolf habitat)
	* Seasonal hunting of wolves as a game animal when sustainable numbers are reached
	* Certification of their ranches
	* Premium beef certification e.g. predator friendly beef
	* Range riding (trained, facilitated and wages paid from the fund)
	* Community services e.g. College scholarships to students in communities coexisting with wolves
	* Annual check to ranchers to use towards offsetting costs for wolves (in order to protect the rancher, who btw lives off a very small profit margin from his ranch, from incurring extra operating costs as a result of wolves)?
2. What do you think can be done to strengthen existing economic programs?
* For example, the Land Use agreements with the WDFW seem like a working deal, why are they opposed by most ranchers?
* What can be done to make them work?
* How else could economic programs be initiated, implemented and supported?

***Organizational issues: How do [*Non-rancher Stakeholders*] view the role of their agency/ office/ organization and its effectiveness in rancher-wolf coexistence?***

1. Can you tell us about some of your outreach efforts regarding wolf recovery?
	* Note: ranchers feel that outreach should be for the western side, who the ranchers feel are ignorant of the reality of living with wolves.
2. What are your organization’s goals for wolf recovery?

**Summary of issues raised (2 mins):**

**Ending Questions (5 mins):** *Can you please share with us anything that we should have talked about but missed during our conversation?*

**Concluding Remarks:** *Thank you for participating in this conversation, if you think there is anything that could help us with this study, please feel free to reach us by phone (425-628-4058), (352) 494-4125 or email:* *cbogezi@uw.edu*

**Supplementary Material B**: Interview Guide for ranchers:

**Can environment market services offset/mitigate for human-wolf conflict in WA State?**

Intro: *Many forms of human-wolf conflict have been documented (references). Our research focuses on the economic aspects.*

**Purpose:** to contribute to improving coexistence between humans and wolves in WA State.

**Goal:**  To investigate potential mechanisms to offset or lessen economic loss due to wolves in WA State.

**Objectives:**

1. To document the existing social and economic costs of coexisting with wolves that ranchers in WA State are incurring.
2. To document the realized and unrealized economic benefits of coexisting with wolves.
3. To determine the feasibility and constraints to offset costs with benefits of coexisting with wolves.

1. To present results on the practices and alternatives to reduce economic loss due to wolves, to citizens of Washington State, ranchers in WA State are using to mitigate against economic losses due to wolves.

**Recruitment of Ranchers as primary stakeholders:**

1. Word of mouth; [staff from wildlife agency] know some ranchers whom we shall approach first and then snowball to others.
2. Before approaching the ranchers in WA State, we shall contact and meet with ranchers in Montana to test this questionnaire to make it more relevant for the study.

**Ranchers (one-on-one interviews):**

**Personal intro (2 mins):** *My name is [researcher name]. I am part of a [institution mane] study investigating economic approaches that can be used to help offset economic losses due to wolves. I took on the position in this study so as to learn from farmers and ranchers here about the possibility of mitigating economic losses caused by wildlife. Back home we inherited a farm where we grow crops – tomatoes and corn; we have problem with vervet monkeys that destroy our crops. We are in the stages of trying to investigate how to protect our investment while protecting the wildlife. This study will greatly help to inform ways in which to mitigate economic losses due to wildlife and improve coexistence between humans and wildlife in my country and I hope in yours as well. We hope that through this research the opinion and ideas from ranchers will be documented, and considered for implementation.*

*This conversation has been approved by the IRB and all that we talk about here will be kept in strict confidentiality. We shall summarize the findings for the public and scientific community but your identity and ranch location will not be revealed unless you so desire. (GIVE CONSENT FORMS FOR SIGNING AT THIS POINT.*

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| **Theme: Current state of wolf conflict, benefits and emotions** |  |
| 1. What do you think/know/or hear about the recent return of wolves in WA State?
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| b. Describe, where they are, how many they are, where they came from, what you perceive them as; what others perceive them as. |  |
| c. How do you characterize your experience with wolves? |  |
| d. Firsthand experience? From friends and neighbors? From media, internet, press? Form culture such as childhood stories? |  |
| e. In what ways do wolves affect your livelihood? Directly or indirectly. |  |
| f. Do you think you are currently coexisting with wolves now? (Do you think you are having conflict with wolves? What level of conflict, if so? How much conflict?) |  |
| g. Do you anticipate your intention with wolves to change in the future? How? |  |
| h. What are some of the positives (and negatives) of living with wolves?  |  |

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| **Theme: Background info on the rancher and rancher experience** |  |
| 1. Can you please tell us about the ranching experience in your life?

(Aim to learn how long have you been in ranching? Generations? Recently bought? Inherited?) |  |
| b. Will your children take on the ranch and ranching? What do you think can keep the family/children ranching the land? |  |
| c. What is your product? (Mutton, beef, dairy, lambs, or wool?) |  |
| d. Which processes of the product-chain to you manage as a rancher? (Do you grow your pasture, grow your animals, slaughter, sell? Or breed and sell lambs only? Or grow sheep for wool only?)  |  |
| e. What are your thought on certification? Do you have any special certification for your products? Is there a local outlet for your product that can certify your product as organic or grass fed for example? |  |
| f. Are all your operations on your property or do you use lease some extra from BLM, or Forestry Services or private individual? How much do you lease? How long a year do your animals stay out in the leased land? (PS. We could get some of this info from BLM and/or Forest Services) |  |
| **Theme: Existing practices, known alternatives, limitations** |  |
| 1. How are you currently coexisting with wolves? What measures? How effective are they? What more would you do? What limits you from doing more?

Why do you think some other people have more conflict and negative experiences with wolves than others in the same region? |  |
| b. If negative; - What would make it impossible to coexist with wolves? Have you heard about some mitigations measures? What do you think about the measures? |  |
| c. Can you please tell us about the inconveniences you incur as a result of wolves? (These can be economical, social, etc. Aim for detail: no. of animals lost; how much extra operating costs? How much is lost in weight of beef animals? Try to quantify it to $$). (Are you bothered by wolves in anyway?) |  |
| d. Can any measures be used to mitigate these inconveniences without killing the wolves? (What limits using these? |  |
| e. Would you welcome assistance in implementing the measures mentioned in 3d? What forms of assistance? From whom would you accept this assistance?  |  |
| f. In what ways do you think the whole community can benefit from coexistence with wolves? E.g. through education opportunities, or information centres? |  |
| 1. **Theme: Alternative ideas for offsetting social and economic**
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| In order to offset for losses we have learnt of ideas of selling the products at a premium, or having additional income through wolf tourism; what other alternatives do you have to suggest? |  |
| % increase in price per pound of beef? |  |
| Certification considerations (e.g. predator friendly beef)? |  |
| Would they welcome tourism opportunities? |  |
| Social inconveniences? How can those be offset? |  |
| Wolf Fund for the community? |  |
| Designated Range-riders? |  |
| Wolf Hotline, and website maintenance? |  |

**Summary of issues raised (2 mins): Ending Questions (5 mins):** *Can you please share with us anything that we should have talked about but missed?*

**Concluding Remarks:** *Thank you for participating in this conversation, if you think there is anything that could help us with this study, please feel free to reach us by phone (xxx-xxx-xxxx) or email: xxxx*

**Supplementary Material C**

**Example of application of grounded theory to this study:**

*Interview question example*: What do you think about predator-friendly beef label as an incentive to help ranchers better coexist with wolves?

*Responses*: include several narratives about the question asked. For example, several stakeholders give responses about how the existing market for grass-fed beef inferred that the public market would purchase the beef labeled predator-friendly as well and that would provide extra income for ranchers to coexist with wolves. Other stakeholders responded that predator-friendly label would be similar to organic label on the market and that people would buy it hence providing ranchers extra income. A rancher stakeholder mentioned that making the non-ranchers pay extra for their beef would be a good thing that makes the non-ranchers realize that ranchers are making an effort to coexist with wolves.

*Constructs*: this is the deeper meaning that the researcher sees emerging from the narratives above. In this example two constructs arise from the positive narratives: one is that urban-dwellers value the predators like they value grass-fed and organic beef enough to pay a premium price for predator-friendly beef and hence ranchers will benefit from the predator-friendly label by getting more income from the premium price. The second construct is that the rancher stakeholder interprets that by non-ranchers paying extra for their predator-friendly beef, the non-ranchers is appreciating the ranchers’ efforts to raise livestock while coexisting with wolves.

*Theme(s)*: broad meaning of the construct which encompasses the narratives and can be compared to other similar themes in the existing literature. In this example two themes arose from the constructs: one is economic incentive – the income gained would make the ranchers participate in predator-friendly beef label. The second themes is the need for social acceptability or desirability that ranchers would like to get from the non—ranching public would make some ranchers participate in labeling their beef as predator-friendly.