

Potential Environmental Risks of Shooting Ranges & Proposed Measures to Minimize Them: A Conservation Awareness Study



Julia F. Nelson - julia.nelson@ufl.edu
University of Florida



Context & Positionality

- Recent implementation of environmental regulations in the European firearm industry
- Focus on lead ammunition contamination
- Examination of economic, political, and social factors within the environmental context
- Commitment to the sustained viability of the shooting sports
- Aim to encourage shooting ranges to proactively address potential environmental risks

Objectives

- Enhanced understanding of the perceptions and knowledge of stakeholders in the sport regarding the sustainability of shooting ranges
- Determine the environmental considerations of the Umbriaverde Shooting Range improve upon current practices through the development of an environmental stewardship plan
- Disseminate results and conclusions to national and international federations to support ranges in sustainable operations

Methods

Quantitative Survey: Employed volunteer and convenience sampling via QR codes, email, and word of mouth. English survey received 109 responses and Italian survey garnered 42 for a total of 151 responses.

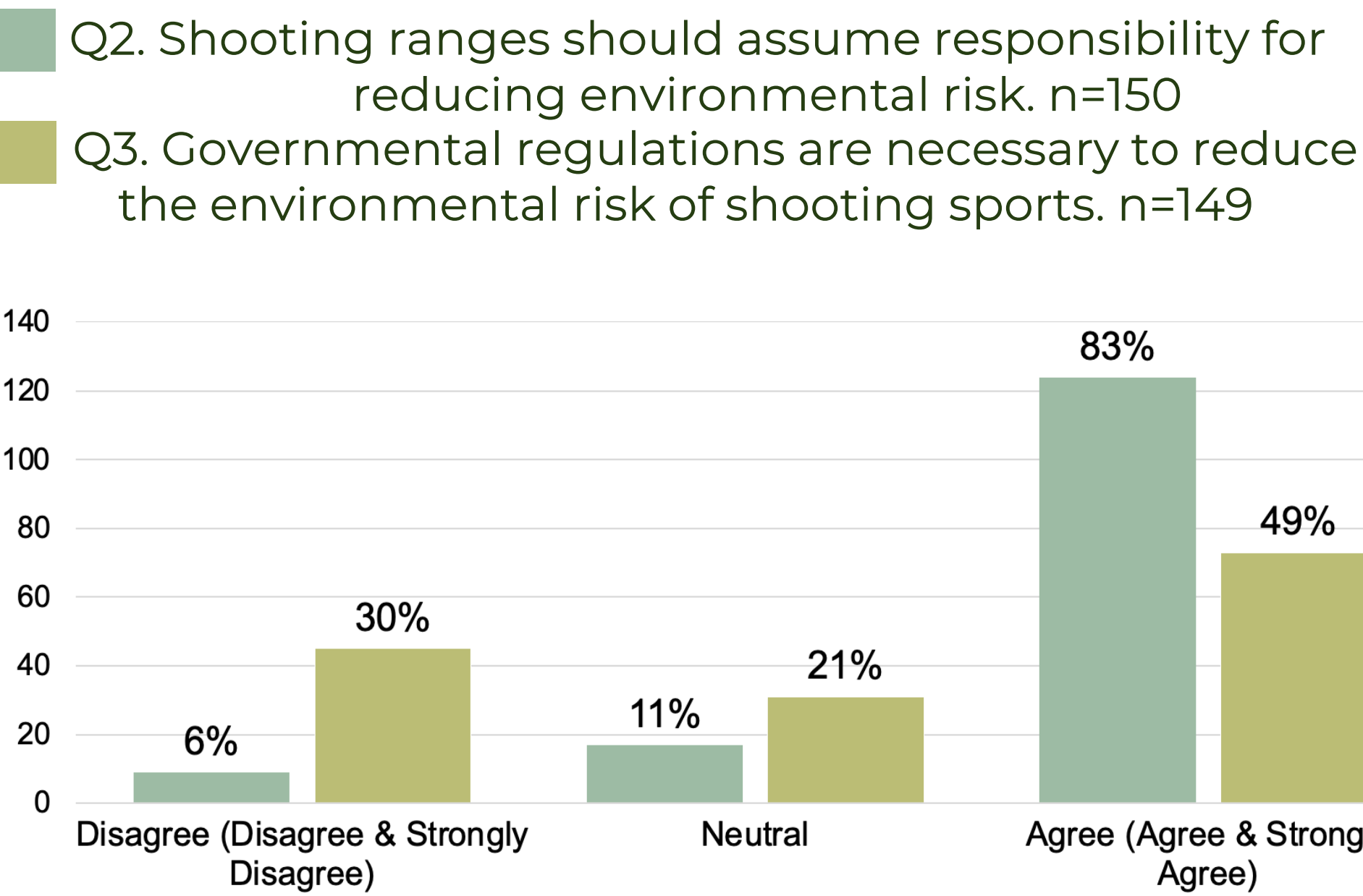
Semi-Structured Interviews: Utilized volunteer sampling from survey respondents. Conducted 10 interviews in Italian and 25 in English.

Data collection and analysis tools: Qualtrics, Otter.ai, and Microsoft Excel



History lesson on pollution abatement at the Umbriaverde Shooting Range

Survey Comparison



Interview Quotes

"We need cooperation to follow the reasonable rules, but not over-regulate to the point of preventing shooting."

"The club is responsible to mitigate risk, but it needs to be shared by its users because it is the shooters who fire the lead. It should be a co-responsibility."

"Investments for a shooting range are expensive. Certainly, there would be an increase in the cost of rounds and ammo."

"We have the everlasting argument about lead versus steel. Personally, I don't care what we use, so long as it breaks the clays."

Results

- Studies reveal a nuanced foundation of environmental awareness and varying degrees of knowledge of Best Available Techniques
- Deep-seated respect for environmental stewardship and conservation efforts
- Concern of financial viability of shooting ranges within the political landscape
- Preference for environmentally responsible ranges, decreased willingness to pay for additional costs associated with Best Available Techniques
- Conflicting views regarding governmental intervention with respondents typically favoring local range autonomy
- Desire to learn possible long-term consequences of inaction; suggests an information gap amongst stakeholders
- Advised collaboration between ranges, manufacturers, international federations, and industry associations
- Request for accessible and scalable solutions applicable to all venues from "backyard" ranges to Olympic stadiums

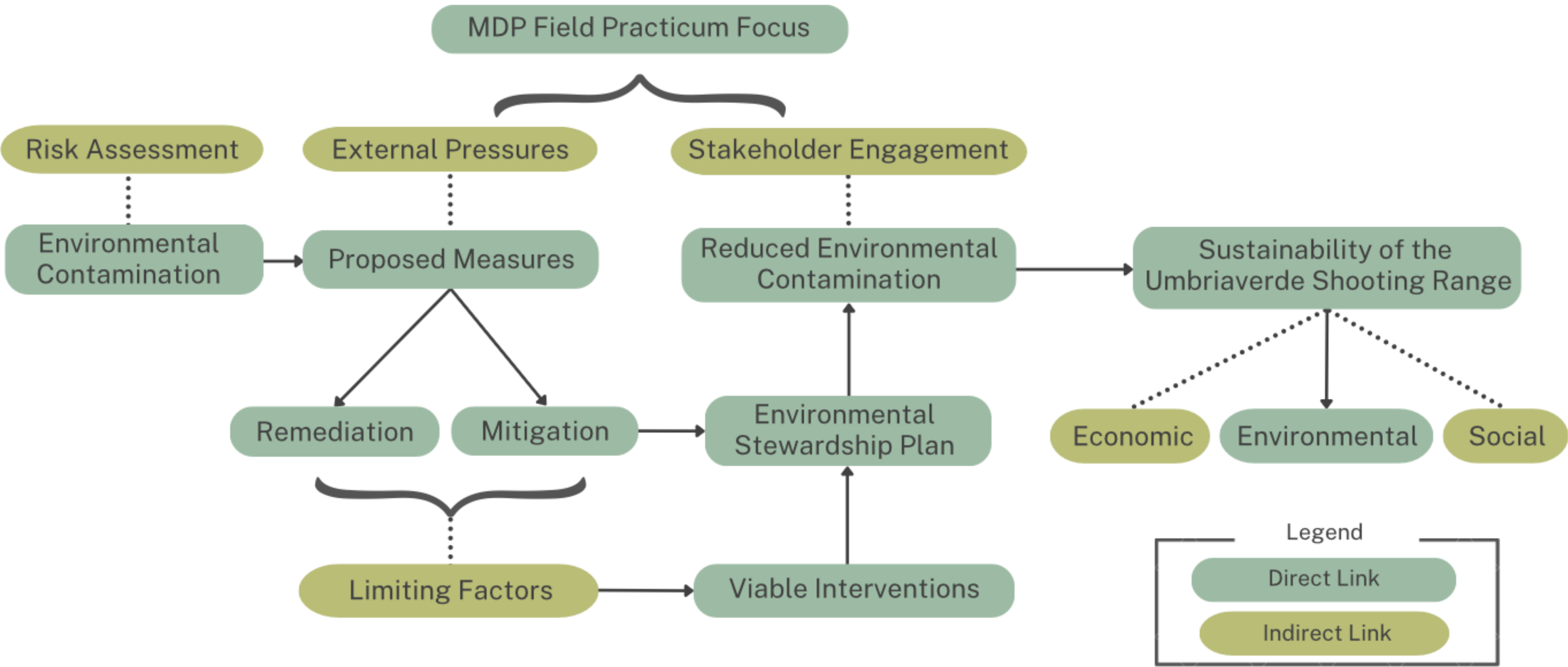
Recommendations

- Develop education and awareness campaigns among range managers emphasizing importance of environmental stewardship
- Connect ranges with financial support and create incentives stimulating investment in Best Available Techniques
- Facilitate a multi-stakeholder platform to share knowledge and resources within the industry
- Invest in research and development to identify innovative solutions for the environmental challenges
- Advocate for policies that support environmental conservation while respecting the autonomy of local ranges
- Establish industry standards and certification programs that improve the surrounding ecosystems and range reputation

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Conceptual-Contextual Framework



Backstop berm at the Umbriaverde Shooting Range collects shotfall and reduces lead migration

Lead Ammunition Exposure Pathways

