ENVIRONMENTALISM WITHOUT LAW: MODERN CONSERVATION EFFORTS IN THE SHADOW OF OFFICIAL ACTION

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This Note explores the role of economic theories in advancing conservation efforts, particularly through the lens of the Northern Jaguar Project ("NJP") and its initiatives in the United States and northern Mexico. With the mounting need for more effective conservation in the United States, this Note illuminates how non-governmental organizations ("NGOs") can be a complementary addition to government efforts by employing private conservation strategies to safeguard endangered species, notably jaguars. Central to this analysis is the application of Coasean bargaining theory, which explains how the NJP has successfully navigated negotiations with ranchers to protect jaguars, demonstrating a nuanced application of economic principles to environmental conservation.

By framing the NJP's conservation strategy as a model of private bargaining, this Note argues for the effectiveness of leveraging economic theories to achieve environmental goals. It highlights the efficiency of such approaches in creating mutually beneficial outcomes between conservationists and local stakeholders, emphasizing the potential for economic theory to guide practical conservation efforts.

Moreover, this Note critiques certain governmental actions, like the construction of the U.S.–Mexico border wall, for their adverse effects on wildlife conservation. It suggests that such initiatives overlook the intricate balance achieved through private conservation efforts, underscoring the importance of integrating economic insights into environmental policymaking.

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In conclusion, this Note advocates for a more collaborative approach between the public and private sectors in conservation and suggests that economic theories like Coasean bargaining offer a robust framework for addressing contemporary environmental challenges. By tapping into the synergy between economic theory and conservation practice, it posits a future where environmental efforts are both effective and adaptive, guided by the principles of mutual benefit and collaborative engagement.

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INTRODUCTION

Historically, the United States has been a global leader in conservation.[1] However, in recent years, the government's conservation efforts no longer exceed—and often lag behind—the efforts of other countries' governments.[2] In response, the private sector, including not-for-profit environmental protection organizations, has supplemented, if not replaced, federal and state government action.

A prime example is The Nature Conservancy ("TNC"), which was founded in 1951 and has grown into one of the most effective environmental organizations in the world.[3] As a not-for-profit organization, TNC highlights the value of leveraging private conservation efforts to, at a minimum, complement the U.S. government's conservation efforts. Likewise, the Northern Jaguar Project ("NJP"), with a much narrower focus, embraces strategies similar to those employed by TNC. NJP's objective is to protect the jaguar[4] (*Panthera onca*) population in northern Mexico in hopes of re-establishing the population that once roamed the southwestern

1. Ryan Richards, *Measuring Conservation Progress in North America*, CTR. FOR AM. PROGRESS (Dec. 4, 2018), https://www.americanprogress.org/article/measuring-conservation-progress-north-america/ [https://perma.cc/RZ86-BUBP].

2. *Id.*

3. The Nature Conservancy, *Who We Are*, NATURE, https://www.nature.org/en-us/about-us/who-we-are [https://perma.cc/TBM4-KL9W] (last visited Nov. 2023).

4. The term "northern jaguar" may also be used to describe jaguars inhabiting the northernmost extent of the species' range, primarily in the Sonoran Desert of northern Mexico and the southwestern United States. However, this term does not denote a distinct genetic lineage or subspecies of *Panthera onca*. Notably, due to ecological differences, these jaguars tend to be smaller than those in more tropical habitats.

United States. Private and public conservation efforts to protect the jaguar species provide a salient, albeit specific, example of the efficacy of private conservation efforts.

Metrics on the history of the jaguar population, specifically in the United States, are generally underreported. However, the International Union for Conservation of Nature ("IUCN") conducts extensive environmental research on species around the globe, including the jaguar, to provide accurate metrics that inform policy decisions and assist in effective conservation efforts.[5] One tool developed by the IUCN is the IUCN Red List of Threatened Species ("Red List"),[6] which is the most comprehensive source of information about the extinction risk of animals.[7] The Red List serves as a tool to monitor the populations of species around the globe and to inform conservation actions aimed at preserving habitats and protecting the world's biodiversity.[8]

To assess the extinction risk of animals, the IUCN uses a scale with seven different classifications: least concern (LC), near threatened (NT), vulnerable (VU), endangered (EN), critically endangered (CR), extinct in the wild (EW), and extinct (EX).[9] The IUCN's first assessment of the jaguar species in 1982 concluded the species was "vulnerable,"[10] meaning that "the best available evidence indicates that it meets any of the criteria[11] . . . for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild."[12] The subsequent four assessments between 1982 and 1990 all concluded that jaguars remained vulnerable; in 1996, however, the IUCN's assessment changed the jaguar's classification to "Lower Risk/near threatened" and in 2002 it changed the classification to the "Near Threatened" category,[13] which reflects that the species no longer qualified for vulnerable, but remained close to qualifying for, or is likely to qualify for, a threatened category in the near future.[14] The IUCN's most recent assessment of the jaguar was in 2016,[15] and that version concluded that not only was the species near

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5. *See generally WHO WE ARE: A powerful Union*, IUCN, https://iucn.org/ [https://perma.cc/QA79-EUHS] (last visited Dec. 2, 2023).

6. *Summary Statistics*, IUCN RED LIST, https://www.iucnredlist.org/resources/summary-statistics [https://perma.cc/B3DQ-TZA4] (last visited Dec. 3, 2023).

7. *Frequently Asked Questions*, IUCN RED LIST, https://www.iucnredlist.org/about/faqs [https://perma.cc/NA6H-24V6] (last visited Dec. 3, 2023).

8. *IUCN Red List of Threatened Species*, IUCN, https://iucn.org/resources/conservation-tool/iucn-red-list-threatened-species [https://perma.cc/2D5U-J7HU] (last visited Dec. 2, 2023).

9. *The IUCN Red List Categories and Criteria*, IUCN RED LIST, https://www.iucnredlist.org/ [https://perma.cc/ H2YB-7QPR] (last visited Dec. 3, 2023).

10. H. Quigley et al., Jaguar: *Panthera onca*, IUCN RED LIST (2017), https://www.iucnredlist.org/species/15953/123791436 [https://perma.cc/N64H-S43H].

11. The IUCN criteria include factors such as the rate of population decline, the geographic range of the species, the current population size, whether the species lives in a restricted area, and whether a quantitative analysis indicates a high probability of extinction. Holly Dublin, *IUCN Red List of Threatened Species*, ENCYC. BRITANNICA (2024).

12. *The IUCN Red List Categories and Criteria*, *supra* note 9.

13. Quigley, *supra* note 10.

14. *The IUCN Red List Categories and Criteria*, *supra* note 9.

15. *See generally* Quigley, *supra* note 10.

threatened, but threats to the jaguar population had also continued to intensify since its previous assessment in 2008.[16] Currently, the IUCN reports that the jaguar population is severely fragmented and decreasing.[17]

The two U.S. government agencies primarily involved in the conservation of species are the Environmental Protection Agency ("EPA") and the U.S. Fish and Wildlife Service ("USFWS" or "Service"). Between 2010 and 2023, the average annual enacted budget for the EPA was approximately $8.8 billion.[18] For fiscal year 2022, the EPA allocated $3.4 billion, about 30.5% of its budget, to "Environmental Programs & Management."[19] Additionally, in 2023, the USFWS boasted an annual budget of approximately $3.8 billion.[20] USFWS's resources particularly relevant to conservation are in the Cooperative Endangered Species Conservation Fund, which amounted to $23.7 million for fiscal year 2023.[21] Despite this substantial funding, the government's conservation efforts still fall short. In some cases, the courts have stymied the White House and administrative agencies from carrying out conservation plans by limiting judicial deference toward agency action.[22] In others, the federal government's approach is simply not effective.[23] As of this decade, federal government initiatives have not effectively protected, let alone re-established, the jaguar population.

This Note discusses how private cross-border conservation efforts have filled the gaps created by ineffective government activity. It does so by leveraging well-known lessons from the applied law and microeconomic literature, namely the concept of the optimal Coasean bargaining solution.[24] The story of the NJP and the jaguar is similar to the account of "order without law" that Professor Robert Ellickson observed in Shasta County, California, and memorably advanced in a book

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16. *Id.*

17. *Jaguar Population*, IUCN RED LIST, https://www.iucnredlist.org/species/15953/123791436#population [https://perma.cc/55WY-XWYG] (last visited Mar. 7, 2024).

18. *EPA's Budget and Spending*, EPA (Mar. 15, 2024), https://www.epa.gov/planandbudget/budget [https://perma.cc/DY9A-UZGV].

19. ENV'T PROT. AGENCY, EPA-190-R-21-003, FY 2022 EPA BUDGET IN BRIEF 19 (2021).

20. U.S. FISH AND WILDLIFE SERV., FISCAL YEAR 2023 BUREAU HIGHLIGHTS, at FSW-1 (2023).

21. *Id.* at FSW-4.

22. *See generally* Loper Bright Enterprises v. Raimondo, 603 U.S. 369 (2024) (holding that, under the Administrative Procedures Act, courts may not defer to an agency's interpretation of the law on the basis that the law is ambiguous); West Virginia v. Env't Prot. Agency, 597 U.S. 697 (2022) (holding that the EPA did not have the authority to regulate a fundamental sector of the economy without a clear authorizing statement from Congress).

23. *See infra* Part I; *see also* Joni Adamson, *Encounter with a Mexican Jaguar: Nature, NAFTA, Militarization, and Ranching in the U.S.-Mexico Borderlands*, *in* GLOBALIZATION ON THE LINE: CULTURE, CAPITAL, AND CITIZENSHIP AT U.S. BORDERS 221, 224 (Claudia Sadowski-Smith ed., 2002).

24. The Coase Theorem posits that negotiations between private parties can bring a socially optimal outcome when property rights are well-defined, and there is costless bargaining. *See* JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY (5th ed. 2015).

of the same name.[25] In this Note, I apply these frameworks both to explain the NJP's successful campaign and to show how government action might disrupt the delicate balance of private ordering.

The story of the NJP demonstrates how a private cross-border conservation effort allows environmentalists interested in preserving jaguars and their habitat to bargain with ranchers who need to protect their livestock from a natural predator. Bargaining stemmed from negotiations between the two conflicting sides to allocate the "entitlement": the jaguar's life. The resulting negotiations about how to preserve both the jaguar and the ranchers' livestock resulted in the entitlement passing to the party who valued it the most. In part, because transaction costs between the parties were relatively low, they could engage in Coasean bargaining and convert economic theory into mutually beneficial practice. The environmentalists realized they could offset the monetary cost of lost livestock to achieve their primary interest (keeping jaguars alive), thereby protecting the ranchers' financial interests. This Note's first contribution is telling the story of the NJP through a Coasean lens.

Its second contribution is showing how government action can, even unwittingly, upset private-sector ordering. Although the National Environmental Policy Act ("NEPA") requires the federal government to consider the effects of building new roads, erecting a border wall, or shifting the rights and zoning to government land, [26] it does so imperfectly—and in some cases, native wildlife pays the price. Although private entities often seek to mitigate government activity's negative impact, the bargaining that created a viable solution for protecting jaguars is threatened whenever transaction costs increase. In fact, bargaining generally cannot take place unless the transaction costs remain relatively low.[27] Unfortunately, not only does government activity, like building roads through the natural habitat of the jaguars along the border, directly threaten wildlife, but it also indirectly threatens the species. Road construction, for example, increased the cost of traveling across the border and maintaining the cameras used to monitor jaguar activity on ranchers' land in Mexico.[28]

This Note discusses how and why private ordering around conservation efforts can lead to efficient pro-environmental outcomes, as well as how unintended (or even unknowing) government interference disrupts those efforts. Part I presents the history of the jaguar population in the United States. Part II provides an overview of the NJP, its mission, and its operations. Part III then discusses Coasean bargaining and concepts related to private ordering in the absence of formal laws. Shifting from general economics concepts to a concrete example, Part IV discusses the NJP to demonstrate how Coasean bargaining operates in the environmental space. Part V

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25. *See generally* ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES (1991).

26. 42 U.S.C. § 4332(C)(ii) (providing that "a detailed statement by the responsible official" is required on "any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented").

27. *See id.* at 180–90 (discussing that norms allocating the costs of boundary fences reduce the transaction costs associated with bargaining over fence improvements).

28. Interview with Roberto A. Wolf Webels, Executive Director, N. Jaguar Project, in Tucson, Ariz. (Mar. 7, 2025).

explores the impact of government action on the efforts of private conservation efforts. Finally, this Note proposes solutions on how to enhance conservation efforts by leveraging the different resources of each entity involved in conserving the jaguar population and its habitat: the federal government, environmentalists, and ranchers. A brief conclusion follows.

I. EFFORTS TO CONSERVE THE JAGUAR POPULATION IN THE UNITED STATES

The population of jaguars once flourished across the Americas. In the United States, jaguars used to inhabit extensive areas in Arizona and New Mexico, reaching as far north as the Grand Canyon.[29] Illegal predator control, unlawful hunting, depletion of their natural prey species, and habitat degradation are some of the primary culprits for the jaguar population decline.[30] By the twentieth century, poachers effectively exterminated the U.S. population of North America's only big cat species.[31] The Arizona Game and Fish Department reports that by 1990, jaguars were functionally eliminated from the United States, but that changed in 1996 when two separate male jaguars were photographed in southwestern Arizona and New Mexico.[32] Since then, conservationists continue to monitor jaguars that roam north of the U.S.–Mexico border.[33]

In 1973, the Convention on International Trade in Endangered Species of Wild Fauna and Flora ("Convention") recognized the threat of international trade to the jaguar population and added them to Appendix I,[34] which lists species threatened by extinction that are either currently or expected to be affected by trade.[35] Article III of the Convention, "Regulation of trade in specimens of species listed in Appendix I," created permitting requirements for species listed in Appendix I—here, the most relevant provision, among other requirements, is that a state will only grant an export permit after a "Scientific Authority of the State" determines that

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29. Douglas Main, *Why a New Jaguar Sighting Near the Arizona-Mexico Border Gives Experts Hope*, NAT'L GEOGRAPHIC (Mar. 23, 2021), https://www.nationalgeographic.com/animals/article/jaguar-near-arizona-border-wall-mexico [https://perma.cc/CH3R-EETQ].

30. Octavio C. Rosas-Rosas & Raul Valdez, *The Role of Landowners in Jaguar Conservation in Sonora, Mexico*, 24 CONSERVATION BIOLOGY 336, 366 (2010).

31. Main, *supra* note 29.

32. David E. Brown & Carlos A. Lopez Gonzalez, *Notes on the Occurrences of Jaguars in Arizona and New Mexico*, 45 THE SW. NATURALIST 537, 537 (2000).

33. *See, e.g.*, *Who We Are*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/about [https://perma.cc/E5L3-9JUX] (last visited Jan. 31, 2024); *Jaguar Population*, *supra* note 17.

34. *Jaguar Panthera Onca Fact Sheet*, PANTHERA, https://panthera.org/sites/default/files/NEW_Jaguar_Fact_Sheet.pdf [https://perma.cc/65F9-F84R] (last visited Mar. 16, 2025).

35. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1979, 993 U.N.T.S. 243. CITES "is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species." *What is CITES?*, CITES, https://cites.org/eng/disc/what.php [https://perma.cc/X4WX-GVD6] (last visited Feb. 2, 2024).

"such export will not be detrimental to the survival of that species."[36] Functionally, this requirement helped bring the jaguar pelt trade to a near halt; nevertheless, people continue to hunt jaguars today, largely because of their predation on livestock.[37]

As an apex predator, jaguars have a prominent role within the ecosystem where they belong; they maintain balance in the food chain by controlling the populations of other species.[38] Habitat loss continues to be one of the leading threats to the preservation efforts of the jaguar species in the United States.[39] The extinction risk of a species heavily depends on its population size.[40] When populations are small or isolated, their extinction risk increases, specifically due to their vulnerability to:

> (1) [D]emographic fluctuation due to random variation in birth and death rates and sex ratio, (2) environmental fluctuation in resource or habitat availability, predation, competitive interactions, and catastrophes, (3) reduction in co-operative interactions and subsequent decline in fertility and survival . . . (4) inbreeding depression reducing reproductive fitness, and (5) loss of genetic diversity reducing the ability to evolve and cope with environmental change.[41]

Indeed, the U.S. government has taken seriously the loss of jaguars in the United States.[42] However, the USFWS established a recovery plan for the jaguar and designated critical habitat land in the southwestern United States only after the Center for Biological Diversity ("Center") brought multiple lawsuits against the Service over the course of twenty years.[43] First in 1994, and again in 2007, the Center filed suit against the USFWS for failing to list the jaguar species under the

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36. Convention on International Trade in Endangered Species of Wild Fauna and Flora, *supra* note 35.

37. *Jaguar Panthera Onca Fact Sheet*, *supra* note 34.

38. Ganesh Marin & John Koprowski, *Jaguars Could Return to the US Southwest – But Only if they Have Pathways to Move North*, THE CONVERSATION: ENV'T + ENERGY, https://theconversation.com/jaguars-could-return-to-the-us-southwest-but-only-if-they-have-pathways-to-move-north-177990 [https://perma.cc/RG66-6F4M] (last visited Feb. 1, 2024); *Why Jaguars Are So Important*, WWF, https://www.wwf.org.uk/learn/wildlife/jaguars [https://perma.cc/AQ29-CHYQ] (last visited Feb. 2, 2024).

39. Marin & Koprowski, *supra* note 38.

40. Lochran W. Traill et al., *Pragmatic Population Viability Targets in a Rapidly Changing World*, 143 BIOLOGICAL CONSERVATION 28, 28 (2009).

41. *Id.* (internal citation omitted).

42. Although it was removed in 1980, pursuant to the Endangered Species Conservation Act of 1969, the USFWS first acknowledged the severity of the jaguar population's circumstances when it classified the jaguar as endangered in 1972. Endangered and Threatened Wildlife and Plants; Jaguar Draft Recovery Plan, 81 Fed. Reg. 92845 (Dec. 20, 2016).

43. Richard Mahler, *The Tenuous Fate of the Southwest's Last Jaguars*, HIGHCOUNTRYNEWS (Mar. 1, 2024), https://www.hcn.org/issues/48.9/the-tenuous-fate-of-the-southwests-last-jaguars [https://perma.cc/QJT2-LVJ6]; *Action Timeline*, CENTER FOR BIOLOGICAL DIVERSITY https://www.biologicaldiversity.org/species/mammals/jaguar/action_timeline [https://perma.cc/W6W3-TDK8] (last visited Mar. 1, 2024).

Endangered Species Act ("ESA").[44] By filing suit, the Center, joined by the Defenders of Wildlife, sought to compel USFWS to create a recovery plan and designate land across Arizona and New Mexico as critical habitat for the jaguar population.[45] Again, in 2010, the Center filed a formal notice of intent to sue USFWS for issuing a permit to the Arizona Game and Fish Department that authorized the "incidental 'take' of endangered jaguars through setting traps and snares."[46] Moreover, USFWS generally utilizes its jaguar-related funds to support studies in the United States and some limited conservation efforts in Sonora, Mexico.[47]

Unfortunately, the last female jaguar in the United States was killed 200 kilometers north of the U.S.–Mexico border in 1963.[48] Until recently, jaguars only lived south of the U.S.–Mexico border, apart from an occasional male seen crossing the border in search of a mate.[49] Even after USFWS classified the jaguar as endangered, jaguars have not successfully re-established their numbers in the United States, in part because the jaguar population remains threatened by ranchers in Mexico and in part due to ineffective preservation efforts and mounting pressure from habitat loss.[50]

Since the last female was killed, some jaguars have roamed across the border, including two that conservationists continue to track: "El Jefe" and "Macho B."[51] Environmentalists recognize the need to protect the remaining jaguar population in northern Mexico to preserve the possibility of jaguars re-establishing their presence north of the border in the future.[52] In contrast to the United States, which recognizes jaguars as an endangered species, significant political, economic, and social challenges in Mexico unfortunately preclude the establishment of an adequate system to protect areas for wildlife.[53] Although laws in Mexico prohibit hunting and killing jaguars, violators are rarely prosecuted.[54] Consequently,

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44. *Action Timeline*, *supra* note 43.

45. *Id.*

46. *Id.*

47. Mahler, *supra* note 43.

48. *See* DAVID E. BROWN & CARLOS A. LOPEZ GONZALEZ, BORDERLAND JAGUARS: TIGRES DE LA FRONTERA (2001).

49. Marina Koren, *The Lonely Jaguar of the United States*, ATLANTIC (Feb. 3, 2016), https://www.theatlantic.com/national/archive/2016/02/one-is-the-loneliest-number/459828/ [https://perma.cc/SMN2-3X5X].

50. Gerardo Ceballos et al., *Beyond Words: From Jaguar Population Trends to Conservation and Public Policy in Mexico*, PLOS ONE (Oct. 6, 2021), https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0255555 [https://perma. cc/C3UK-9LMJ].

51. Koren, *supra* note 49.

52. Kendal Blust, *Protecting the Northern Jaguar*, KJZZ (June 13, 2019), https://www.kjzz.org/2019-06-12/content-1000231-protecting-northern-jaguar [https://perma.cc/KY35-ZRDN].

53. Rosas-Rosas & Valdez, *supra* note 30, at 369.

54. Mahler, *supra* note 43; Jenny Isaacs, *Seeking Justice for Corazón: Jaguar Killings Test the Conservation Movement in Mexico*, MONGABAY (July 31, 2014), https://news.mongabay.com/2014/07/seeking-justice-for-corazon-jaguar-killings-test-the-conservation-movement-in-mexico/ [https://perma.cc/845H-8G2L]. *See generally* Rosas-

ranchers in Mexico can effectively kill jaguars on their property at their discretion with impunity.

Jaguars primarily inhabit tropical lowland forests, followed by dry tropical forests, xeric—very dry—habitats, and arable lowland pastures.[55] In Mexico, grasslands, or arable lowland pastures, are one of the many habitats native to the jaguar species.[56] In northern Mexico, cattle ranchers own much of the grassland habitat because grasslands serve as the primary feed base for grazing livestock.[57] Naturally, ranchers allow their cattle to roam on their grasslands, and jaguars roam across the same grasslands, given the limited habitat native to their species in northern Mexico and the southwestern United States. Allowing jaguars, apex predators, to roam freely significantly threatens ranchers' livestock. Consequently, to protect their livestock and livelihoods, historically, ranchers often instructed their *vaqueros*—herdsmen and cowboys—to kill any jaguars they saw on the property.[58]

II. THE NORTHERN JAGUAR PROJECT

In the late 1990s, a group of conservationists in Mexico and the southwestern United States formed the NJP to purchase and safeguard what is known today as the Northern Jaguar Reserve ("Reserve").[59] The group of conservationists, initially led by jaguar expert Carlos López González, formed the NJP as a not-for-profit 501(c)(3) organization.[60] Since its inception, the NJP has increased its community presence, expanded the Reserve, and added more people to its team to accommodate the expansion.[61]

Today, NJP's mission is to preserve and recover "the world's northernmost population of the jaguar, its unique natural habitats, and native wildlife under its protection as a flagship, keystone, and umbrella species."[62] The organization relies on a variety of contributors: biologists, ecologists, veterinarians, field and database

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Rosas & Valdez, *supra* note 30 (discussing the efficacy of a program where proceeds from a hunting program in the area were used to compensate ranchers in Mexico for cattle lost due to jaguar predation).

55. Quigley, *supra* note 10, at 7.

56. *Natural History*, CTR. FOR BIOLOGICAL DIVERSITY, https://www.biologicaldiversity.org/species/mammals/jaguar/natural_history.html [https:// Unicode: U+200C, UTF-8: E2 80 8C perma.cc/2GQV-KPYU] (last visited Dec. 2, 2023).

57. ERIC P. PERRAMOND, POLITICAL ECOLOGIES OF CATTLE RANCHING IN NORTHERN MEXICO: PRIVATE RESOLUTIONS 10, 14 (Andrew Kirby & Janice Monk eds., 2010); *see also* M. Boval & R. M. Dixon, *The Importance of Grasslands for Animal Production and Other Functions: A Review on Management and Methodological Progress in the Tropics*, 6 ANIMAL 748, 748 (2012). *See generally* Rosas-Rosas & Valdez, *supra* note 30.

58. *Viviendo con Felinos*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/viviendo-con-felinos/ [https://perma.cc/D7X3-5V98] (last visited Jan. 31, 2024); *see also* Rosas-Rosas & Valdez, *supra* note 30, at 367–68.

59. *Who We Are*, *supra* note 33.

60. *Id.*

61. *News*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/ news/ [https://perma.cc/4SF9-MRVV] (last visited Jan. 31, 2024).

62. *Who We Are*, *supra* note 33.

technicians, and environmental educators.[63] The NJP's efforts aim to resolve the tension between environmentalists and ranchers, both of whom have an interest in the same land and jaguars' presence on it.

As mentioned above, the land that provides jaguars with their native habitat is also the same land many ranchers rely on to house their livestock and allow their cattle to graze.[64] A primary consideration for preserving the jaguar population is protecting its natural habitat, which is crucial for long-term survival.[65] The northernmost suitable habitat for jaguars is the Sierra Madre Occidental and Sierra Madre Oriental, respectively in northwestern and northeastern Mexico.[66] The NJP's long-term hope is that by protecting and increasing the jaguar population in Mexico, the population will roam across the border into its native habitat in the southwestern United States and re-establish a self-sustaining population there.[67]

The Reserve, operated by the NJP, is protected land located about 125 miles south of the U.S.–Mexico border in the foothills of the Sierra Madre Occidental.[68] The Reserve marks the convergence of foothills thornscrub, desert vegetation, tropical deciduous forest, and oak woodlands.[69] Given the Reserve's very diverse habitat and plentiful water sources, it is an ideal location for the jaguars to live and roam.[70] As its primary focus, the NJP photographed more than 80 jaguars on the Reserve and surrounding ranches, the highest number of jaguar sightings in recent years.[71]

In 2007, the NJP created the *Viviendo con Felinos*[72] program to extend protection for jaguars onto private property (ranches) that surround the Reserve because while some jaguars remain on the Reserve, most roam throughout and beyond the Reserve.[73] The program actively engages ranchers in conservation efforts by incentivizing them to take affirmative action to protect jaguars. The NJP provides a monetary reward to ranchers when motion-triggered cameras document a jaguar on the ranchers' property.[74] This system creates an incentive for ranchers to not kill the jaguars, *and* the payments offset the cost of any livestock that jaguars may kill while roaming on the ranchers' land.[75] By partnering with ranchers whose

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63. *Team*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/team/ [https://perma.cc/SX7T-3ZH4] (last visited Nov. 22, 2023).

64. *See* Boval & Dixon, *supra* note 57.

65. *Supra* Part I.

66. Rosas-Rosas & Valdez, *supra* note 30, at 367–68.

67. *See Northern Jaguar Reserve*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/northern-jaguar-reserve/ [perma.cc/X65F-DP4C] (last visited Nov. 22, 2023).

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.*

72. Translated into English, this phrase means "Living with Felines."

73. *Northern Jaguar Reserve*, *supra* note 67.

74. *Viviendo con Felinos*, *supra* note 58.

75. *Id.* Similar to the NJP, Carlos López González worked with the Malpai Borderlands Group, which created a fund that compensates ranchers, some of whom

land abuts the Reserve, jaguars enjoy protection not only on the Reserve, but also on the private ranches surrounding the Reserve. In a sense, the NJP "pays the way" for jaguars that wander off the Reserve. This program and its arrangements between the NJP and ranchers in Mexico are prime examples of Coasean bargaining.

III. A PRIMER ON BARGAINING THEORY

This Part outlines the basics of a concept from economic theory known as "Coasean bargaining."[76] Bargaining theory is an offshoot of contract theory, which examines the conditions that two or more parties will reach a mutually beneficial agreement over a "thing" of interest.[77] This Note borrows key insights from Coasean bargaining to help explain why the NJP has generated the conservation successes described above.[78]

The Coasean bargaining framework begins with the notion of an "entitlement"—something of mutually recognized value—and the fact that two or more parties seek to possess it. In work that earned him a Nobel Prize in Economic Sciences,[79] Ronald Coase showed in a rigorous model that when entities are assigned entitlements as a matter of law and allowed to create a market, "as long as transaction costs are low enough, people will bargain, and the [entitlement] will be allocated to the person who values it the most."[80] Although bargaining parties often care about which party initially holds an entitlement as a matter of law, when there aren't any transaction costs, the ultimate result of the bargain is the entitlement being held by the party who values it the most.[81] Stated differently, absent any "transaction costs," parties will bargain and create agreements regardless of who holds the entitlement as a matter of law.[82]

Bargaining requires these so-called transaction costs to be low or, ideally, absent altogether.[83] Generally, transaction costs are "all the costs that arise in an

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participate in the *Viviendos* project, for the cost of livestock on their property that are killed by jaguars roaming through their property. *Science and Nature*, *Jaguar*, MALPAI BORDERLANDS GRP., https://www.malpai.org/jaguar [https://perma.cc/56BZ-WQ8N] (last visited Apr. 22, 2024); *see also* Bill McDonald, *The Formation and History of the Malpai Borderlands Group*, MALPAI BORDERLANDS GRP., https://www.malpai.org/history [https://perma.cc/X5MZ-NQD7] (last visited Apr. 22, 2024).

76. *See generally* Stewart J. Schwab, *Collective Bargaining and the Coase Theorem*, 72 CORNELL L. REV. 245 (1987); Aleksandar D. Slaev & Marcus Collier, *Managing natural resources: Coasean bargaining versus Ostromian rules of common governance*, 85 ENVT'L SCI. & POL'Y 47 (2018); R.H. Coase, *The Coase Theorem and the Empty Core: A Comment*, 24 J.L. & ECON. 183 (1981).

77. *See generally* PATRICK BOLTON & MATHIAS DEWATRIPONT, CONTRACT THEORY 45–129 (2005).

78. *Supra* Part II.

79. *A Nobel Winner*, UNIV. OF CHI. https://www.law.uchicago.edu/lawecon/coaseinmemoriam/nobel [https://perma.cc/MB35-8WW5] (last visited Nov. 11, 2024).

80. Daniele Bertolini, *The Economics of (Public and Private) Rulemaking*, 77 IL POLITICO, 39, 44 (2012).

81. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 8 (1960).

82. *See* ELLICKSON, *supra* note 25.

83. *See generally* Schwab, *supra* note 76.

exchange."[84] More specifically, "[t]ransaction costs are the resources used to establish and maintain [an entitlement]."[85] There are a variety of transaction costs that might be associated with bargaining—for example, communication barriers or difficulties, information collation, contract drafting and negotiation, and ambiguities of entitlements or rights that could be traded.[86] The theory of transaction costs assumes that efforts are constantly made to reduce them[87] and that bargaining structures at any point in time are the result of successful past attempts to minimize these costs.[88]

To illustrate bargaining between two parties where, as a matter of law, one party would be liable to the other for infringing a legally cognizable right, Coase, in fact, used the example of a rancher and a farmer.[89] In this toy model, the rancher wants to maximize their profit from selling cattle, and the farmer aims to protect their crops to maximize the profit from cultivating their land.[90] Coase uses the following facts to demonstrate his theory: (1) the rancher will be liable to the farmer if the rancher's cattle wander onto the farmer's property and damage the crops; (2) the annual cost to the rancher of maintaining fencing between the two properties is $9 per year; and (3) the price that the farmer's crops garner on the market is $1 per ton.[91] Note that the first condition indicates that the farmer possesses the entitlement to decide how many crops will be grown and sold, free from outside interference. That entitlement allows the farmer to rightfully collect damages when the rancher's activities upset the farmer's plans for their cultivated land.

Using the same numbers Coase used—($y = 0.5x^2 + 0.5x$)—assume the annual crop loss (y) caused by the number of steers in the herd (x) is as follows in Figure 1 below.

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84. Douglas W. Allen, *What Are Transaction Costs?*, 14 RSCH. L. & ECON. 1, 3 (1991).

85. *Id.* at 3.

86. *Id.* at 2.

87. Peter J. Buckley & Malcolm Chapman, *The Perception and Measurement of Transaction Costs*, 21 CAMBRIDGE J. ECONOMICS 127, 127 (1997).

88. *Id.*

89. Coase, *supra* note 81, at 8.

90. *Id.* at 2–3.

91. *Id.* at 3.

FIGURE 1

RANCHER–FARMER EXAMPLE OF COASEAN BARGAINING

Number in Herd (Steers) (*x*)	Annual Crop Loss ($) (*y*)	Crop Loss Value Per Additional Steer ($)
1	1	1
2	3	2
3	6	3
4	10	4
5	15	5
6	21	6

Logically, the rancher will not increase the size of her herd unless the value of the meat produced exceeds the costs of adding an additional steer.[92] With one, two, or three steers, the annual crop loss to the farmer costs $1, $3, or $6, respectively. In this example, once the rancher's herd increases to four steers, the cost of crop loss caused by the rancher's herd is $10. If the rancher intends to maintain a herd of three or fewer steers, then the rancher will likely choose to pay for the damage to the farmer's crops rather than maintain a fence to corral the herd. The reason is simply that the cost of maintaining the fence ($9 per year) exceeds the amount of the farmer's damages up to three steers. However, once a fourth steer joins the herd, the farmer's damages rise to $10, which is greater than the cost of fencing. Thus, any herd size greater than or equal to four will incentivize the rancher to pay $9 and maintain a fence.

Moreover, the farmer will only cultivate her tract of land when the proceeds from selling crops are greater than the value of the damaged crops.[93] Consider a new example in which we assume that the farmer sells her viable crops for a total of $12 and profits $2 from the sale of these crops because the cost of cultivation is $10. Now, assume the damage from the neighboring cattle rancher's herd (one steer) is $1.[94] Here, the farmer will still net $2 in profit from cultivating her land; she receives $1 (on net) from the sale of her crops (after considering the $1 loss from cattle roaming) and another $1 from the rancher paying damages (to offset the cost of the damage to the farmer's crops).[95] However, if the rancher decides to increase her herd to two steers (assuming the profit from the additional meat exceeds the additional $2 in damage to the farmer's crops), the damage to the farmer's crops costs the rancher $3.[96] At this point, the net benefit to the farmer is still $2 (-$3 for crop loss from the cattle and +$3 in damages from the rancher, leaving a net of $2 from the sale of the crops). Importantly, with the additional steer in the herd, the cost of

92. *Id.*
93. *Id.* at 4.
94. *Id.*
95. *Id.*
96. *Id.*

damage to the farmer's crops ($3) exceeds the profits from the sale of undamaged crops ($2). Accordingly, the rancher benefits from paying the farmer anything less than $3 to abandon cultivating their land, and the farmer benefits from receiving any amount more than $2.[97] Here, the cattle rancher and farmer can enter into a mutually beneficial agreement where the farmer agrees to stop cultivating her land, and the rancher agrees to compensate the farmer for some amount between $2 and $3.[98]

Assuming transaction costs are low, the same bargaining may occur even when neither party is liable for damages, i.e., when there is no pre-determined entitlement.[99] To illustrate this scenario, Coase returns to the example of the rancher and the farmer.[100] For this example, Coase assumes that the rancher will not be liable to the farmer for any crop loss that the rancher's steers cause.[101] Assuming the rancher maintains a herd of three steers, which causes $6 of damage to the farmer's crops, the farmer would pay the rancher $3 to decrease the herd to two steers and $5 to decrease the herd to one steer.[102] Therefore, if the rancher chooses to maintain a herd of three steers, the rancher foregoes the $3 the farmer would have paid for the rancher to keep the herd at two steers.[103] Consequently, whether the rancher *must pay* the farmer an additional $3 for having a third steer in the herd[104] or the rancher forgoes the sum of money the farmer would pay the rancher to maintain the herd at two steers, the final result is the same.[105] In both situations, the cost of adding the third steer remains the same: $3.[106] The Coasean theory, when applied to various circumstances beyond this example, supports the proposition that "close-knit groups are usually capable of spontaneously generating informal rules that serve to promote cooperative (that is, cost-minimizing) outcomes among the group's members."[107]

In his seminal book, *Order Without Law*, legal scholar Robert Ellickson explained private ordering among the cattle ranching community in Shasta County, California, using Coasean theory.[108] Despite the fact that transaction costs in Shasta County were certainly not zero, Ellickson observed norms that enabled members of the Shasta County community to resolve conflicts such as trespass in the shadow of

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97. *Id.*
98. *Id.*
99. *Id.* at 6.
100. *Id.*
101. *Id.*
102. In any scenario, the farmer is "out" $6. If the farmer does nothing, the rancher's herd will cause a $6 loss from the crops damaged by the steers. If the farmer pays the rancher $3 to decrease her herd from three steers to two steers, the farmer will spend $6 total ($3 paid to the rancher and $3 in damage to her crops from the rancher's two steers). Similarly, if the farmer pays the rancher $5 to decrease her herd by two steers, the farmer will pay $5 to the rancher and lose $1 for crop loss caused by the rancher's one remaining steer. These results are just the previous exercise in reverse. *Id.* at 6–7.
103. *Id.* at 6.
104. Demonstrated by the previous example where the rancher is liable to the farmer for any damage to the farmer's crops by the rancher's cattle. *Id.*
105. *Id.*
106. *Id.*
107. Robert C. Ellickson, *The Aim of Order Without Law*, 150 J. INSTITUTIONAL & THEORETICAL ECON. 97, 98 (1994).
108. ELLICKSON, *supra* note 25, at 157.

the law.[109] In contrast to laws, "norms are harder to verify because their enforcement is highly decentralized and no particular individuals have special authority to proclaim norms . . . ."[110] Although such norms may not be reflected in governmental laws, social forces still provide enforcement power via sanctions administered by a person's "friends, relatives, gossips, vigilantes, and other nonhierarchical third-party enforcers."[111] Certainly, some might consider a norm of cooperation among a community counterintuitive, because biologists and economists often rely on the assumption that people under pressure will maximize their own welfare at the expense of others.[112] However, that is not *always* the case; social scientists can and do observe cooperation in human behavior, such as the jointly beneficial approaches Ellickson witnessed among the cattle ranchers.

In Shasta County, cooperation was the norm.[113] Ellickson conducted interviews with legal specialists—e.g., attorneys and judges—and ordinary people in Shasta County, but no one demonstrated a comprehensive understanding of the formal laws of trespass.[114] Although formal trespass laws differ depending on whether an animal owner is in an open or closed range,[115] the prevailing notion that the community adhered to when asked about the difference between the two types of trespass was that cattlemen have the rights in open ranges and trespass victims have the rights in closed ranges.[116] More importantly, the particularized norm in Shasta County regarding trespass was that owners are responsible for the acts of their animals.[117] Ellickson also observed a norm of reciprocal restraint.[118] In practice, this norm encompassed the tendency of rural landowners to do two things: (1) tolerate minor damage sustained from isolated trespass incidents and (2) board one another's cattle should a stray steer trespass onto another landowner's property.[119] The landowners recognized that this conduct would ultimately save both parties time and money, mainly because of the expectation that the "favor" would be returned sometime in the future.[120]

Considering the norms within the Shasta County community, Ellickson first looked at the relationships between its members. Ellickson proposed that "when social conditions are close-knit, informal norms will encourage people in non-zero-sum situations to make choices that will conjoin to produce the maximum aggregate

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109. *Id.* at 52.
110. *Id.* at 130.
111. *Id.* at 131 n.21.
112. *Id.* at 8–9.
113. *Id.* at 8.
114. *Id.* at 49.
115. "An animal owner in open range, for example, is liable for intentional trespass, trespass through a lawful fence, or trespass by a goat . . . . In closed range, an animal owner is strictly liable for trespass damages." *Id.* at 50.
116. *Id.*
117. *Id.* at 53.
118. *Id.* at 54.
119. *Id.*
120. *See id.* at 54–55. The expectation of these kinds of interactions occurring between landowners in the future supports adherence to this "live and let live" norm because the future interactions will provide adequate opportunity to settle the score. *Id.* at 56.

objective payoff."[121] Ellickson defines a close-knit group or community as a group where "informal power is broadly distributed among group members and the information pertinent to informal control circulates easily among them."[122] Relevant here, a zero-sum situation, a term originating from game theory, is a circumstance where one person's gain is equivalent to another's loss, such that the net change in wealth or benefit is zero.[123] Ellickson's proposition, stated differently, is that in close-knit communities, informal norms incentivize community members to make choices that will produce the maximum benefit given the totality of the circumstances.[124] Essentially, the behavior of close-knit community members suggests an aptitude to operate less selfishly when compared to human behavior generally observed in arms-length bargaining (where people will make choices that maximize their personal benefit).

Economists employ concepts from game theory to investigate and explain when this cooperative behavior emerges.[125] The most fruitful spaces involve ongoing relationships, such as those between long-time neighbors. Game theorists refer to continuing relationships as "iterated games," where each encounter between two people is a "period of play."[126] When there is a continuing relationship, a "player" can develop a "strategy" that determines the player's choices in each period of play.[127] Game theory also relies on the so-called rational-actor model, which assumes that "each individual pursues self-interested goals and, second, that each individual rationally chooses among various means for achieving those goals."[128] Importantly, in close-knit communities, a group member's self-interested goal can be cooperation.[129] Ellickson specifically highlights the impact of *ongoing* interaction on present choices when parties anticipate further interactions.[130] Ellickson explains that there is inherent enforcement power in continuing relationships[131]:

> The prospect of a continuing multiplex relationship guarantees a rich menu of future opportunities to render self-help sanctions. In effect, a person who has enmeshed himself in a continuing multiplex

121. *Id.* at 167.
122. *Id.* at 177–78.
123. JOHN VON NEUMANN & OSKAR MORGANSTERN, THEORY OF GAMES AND ECONOMIC BEHAVIOR 84 (Sixtieth-Anniversary ed. 2004) (providing the mathematic proof to define "zero-sum" in game theory); *see also Zero-sum*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2003).
124. *See generally* ELLICKSON, *supra* note 25.
125. *Id.* at 8–9.
126. *Id.* at 164.
127. *Id.*
128. *Id.* at 156.
129. *See generally id.* at 167.
130. *Id.* at 164.
131. *Id.* at 179 n.44; *see also* Oliver E. Williamson, *Credible Commitments: Using Hostages to Support Exchange*, 73 AM. ECON. REV. 519, 530–38 (1983) (discussing how using hostages (or another assurance) in exchanges, especially in bilateral exchanges, can enforce agreements by increasing the incentive of each party to follow through on the commitment they made).

> relationship has given over a part of his future welfare as a hostage to the other person.[132]

A multiplex relationship is one where there is an overlap of affiliations or exchanges in a social relationship.[133] A multiplex relationship provides more social control because the complexity of the relationship on multiple fronts guarantees the opportunity for future sanctions.[134] In Shasta County, group members interact in various circumstances like when they are repairing fences, working to control the water supply, planning controlled burns, and attending social events, among others.[135] Parties in a continuing relationship such as these experience pressure to comply with any terms to which they agreed; if one party fails to stick to the agreement, the complying party has recourse "built-in" by way of the parties' continued relationship.[136]

Ellickson proposes that Coasean theory, as applied to cattle ranching in Shasta County at least partially shows how social-control labor can be divided among an organized government, like a state, on one hand, and civil society, on the other hand.[137] Indeed, to varying degrees, formal laws are a system of social control; however, social control also results when sanctions enforce rules of normatively appropriate human behavior, even in the absence of formal laws.[138] Importantly, rewards to encourage prosocial behavior and punishments to discourage antisocial behavior both constitute "sanctions" in this context.[139] The expectation is that each member keeps a rough accounting of the outstanding credits and debts in each aspect of their relationships.[140] When there is a deviant member, landowners generally turn to informal enforcement measures such as self-help.[141] In Shasta County, self-help measures ranged from truthful, but negative, gossip to threatening (or actually using) stronger self-help mechanisms, such as herding the deviant's cattle into inconvenient places or threatening to kill an offending animal should it ever trespass again.[142]

Furthermore, Ellickson presents a hypothesis of "welfare-maximizing norms," that states "members of a close-knit group develop and maintain norms whose content serves to maximize the aggregate welfare that members obtain in

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132. ELLICKSON, *supra* note 25, at 179 n.44; *see also* Williamson, *supra* note 131 at 537.

133. Lois M. Verbugge, *Multiplexity in Adult Friendships*, 57 SOC. FORCES 1286, 1286 (1979).

134. *See* ELLICKSON, *supra* note 25, at 124–25.

135. *Id.* at 55.

136. *Id.*; *see* JOHN GRIFFITHS, *The Division of Labor in Social Control*, *in* TOWARD A GENERAL THEORY OF SOCIAL CONTROL 37, 37–70 (Donald Black ed.,1984); *see also* Robert M. Emerson, *Reflections on the Study of Informal Social Control*, 43 SOCIOLOGISK FORSKNING 71 (2006).

137. Ellickson, *supra* note 107, at 99.

138. ELLICKSON, *supra* note 25, at 124. *See generally* Emerson, *supra* note 136.

139. ELLICKSON, *supra* note 25, at 124–25.

140. *Id.* at 55.

141. *Id.* at 56–57.

142. *Id.* at 58.

their workday affairs with one another."[143] The hypothesis assumes that people inherently maximize their utility or satisfaction.[144] Essentially, Ellickson's analysis predicts that members of a social group will informally encourage one another to engage in cooperative behavior.[145] Such cooperative behavior is often the most beneficial because it lowers costs, such as the cost of formally contracting with one another.[146] Importantly, this hypothesis only applies to members of a *close-knit* social group and assumes that by nature, people want to maximize their individual "welfare functions."[147] Welfare is the objective value of the satisfaction of group members,[148] and welfare functions are one of the many tools used in economics to evaluate and compare societal outcomes based on individual well-being.[149] Ellickson notes that the hypothesis specifically employs "welfare maximization" rather than "utility maximization" to encompass the improvements people seek beyond materialistic needs like parenthood, leisure, good health, social status, and personal relationships.[150]

Ellickson highlights three areas of caution pertaining to his hypothesis and notes that the hypothesis should not be generally extended to suggest that social controllers in all situations should use norms as rules in all situations.[151] First, Ellickson distinguishes the close-knit social group in Shasta County from a general social environment like the airport; the hypothesis certainly does not predict that the norm-making process would lead to cooperation in a transient social environment like an airport or football stadium.[152] Second, he notes that norms that benefit the aggregate welfare of members in a certain group often impoverish outsiders of that group.[153] An example of this in another context would be the norm of neighborhood residents parking in a designated space directly in front of their house. In contrast to the neighborhood's residents, who can save time by parking so close to their house, visitors might have to walk a much farther distance because they will face limited parking options—e.g., the only available parking might be in a back lot or outside the neighborhood on a main street. Third, Ellickson highlights that welfare maximization is a goal of limited normative appeal because it is measured objectively.[154] Consider a tax policy that provides an added tax break for companies investing in green technologies. If it were significantly beneficial only to large corporations, the policy would pose questions about distributional fairness and equity even if it objectively maximized welfare by boosting the economy and encouraging sustainable practices. This example highlights an inherent challenge

143. *Id.* at 167.
144. *Id.* at 170.
145. *Id.* at 167.
146. *Id.* at 168.
147. *Id.* at 169–70.
148. *Id.* at 172.
149. *See* MATTHEW D. ADLER, MEASURING SOCIAL WELFARE: AN INTRODUCTION 4 (2019). For a study exploring individual welfare functions see Arie Kapteyn & Tom Wansbeek, *The Individual Welfare Function*, 6 J. ECON. PSYCH. 333 (1985).
150. ELLICKSON, *supra* note 25, at 170.
151. *Id.* at 169.
152. *Id.*
153. *Id.*
154. *Id.* at 169–70.

when objectively measuring the "best outcome" among group members.[155] To create rules that give rise to the most favorable aggregate result, the group members must agree on the costs and benefits of alternative options.[156]

When comparing the efficacy of government actions and not-for-profit organizations, it is worth distinguishing one from the other, specifically focusing on the entity that wields the most effective enforcement power. As previously discussed, a person is more likely to engage in socially cooperative behavior when they belong to a close-knit group and are, therefore, more likely to take action that maximizes the aggregate welfare of the group. It follows, then, that someone belonging to the same group as the ranchers[157] will be able to influence their behavior as effectively, if not more effectively, than applicable formal laws. It also follows that a not-for-profit organization like the NJP, whose representatives belong to the same close-knit groups as the ranchers,[158] is better positioned to bargain with the ranchers than are employees of government agencies. Specifically, members of the same close-knit group can more readily cooperate because the transaction costs of doing so are low and the social norms favor cooperative behavior. Generally, it is far more likely that not-for-profit employees are members of a close-knit group, which following Ellickson's observations, lowers the transaction costs of bargaining because negotiations between a not-for-profit employee and her rancher neighbor will maximize the aggregate welfare that members obtain in their workday affairs.

IV. THE NORTHERN JAGUAR PROJECT AS A SUCCESSFUL EXAMPLE OF COASEAN BARGAINING

This Part combines the brief history of the NJP in Part II with the applied economic theory of Part III to illustrate the value of allowing private parties to bargain over conservation efforts.

As discussed above,[159] the NJP bargained with ranchers in Mexico to protect jaguars that roam onto the ranchers' land. Like the rancher and the farmer in Coase's toy model, ranchers and environmentalists have divergent preferences over the jaguar population in northern Mexico. The program *Viviendo con Felinos* is an example of how the NJP created *order* between competing parties *without law*.

Environmentalists aim to increase and maintain the population of jaguars in Mexico, and to protect a corridor across the U.S.–Mexico border so the jaguar population can grow beyond the carrying capacity of the natural jaguar habitat in Mexico.[160] The carrying capacity of a habitat is "the maximum population . . . that

155. *Id.* at 169–72.

156. *Id.* at 170.

157. *See supra* Part III.

158. Interview with Roberto A. Wolf Webels, *supra* note 28 (explaining that, in fact, as of 2025, five of the NJP's board members and some of its staff are Mexican citizens, interacting with the ranchers often); *see also Our Team*, NORTHERN JAGUAR PROJECT, https://www.northernjaguarproject.org/team/ [https://perma.cc/8K5B-HY8Z] (last visited Apr. 27, 2024).

159. *See supra* Part II.

160. *See id.*; *see also* Eric W. Sanderson et al., *A Systematic Review of Potential Habitat Suitability for the Jaguar Panthera Onca in Central Arizona and New Mexico, USA*, 56 ORYX 116 (2022); Marin & Koprowski, *supra* note 38.

an area of habitat can support without undergoing deterioration."[161] For example, the area that the USFWS has designated as the Northwestern Jaguar Recovery Unit has a carrying capacity of more than 3,400 jaguars over 226,000 square kilometers, according to its 2013 model.[162] Environmentalists anticipate that when the jaguars reach their carrying capacity on the southern side of the border, the population will travel north into Arizona and New Mexico, where the jaguar population will re-establish in the United States.[163]

In contrast to many environmentalists, ranchers generally have a different set of priorities, namely, to protect their livestock from predation. For ranchers along the U.S.–Mexico border, jaguars pose a threat to their cattle and other livestock, so they often kill jaguars that enter their property.[164] To promote the survival of the jaguar, both the U.S. and Mexico recognize its species as a protected one. So, relevant to the application of the Coase Theorem, technically speaking, the law does not assign the entitlement to "kill" jaguars to any party. Nonetheless, even though it is a federal offense to kill jaguars in Mexico, prosecutions and enforcement of the laws aimed at protecting the jaguar are rare.[165] Consequently, formal laws do not effectively dissuade ranchers and poachers alike from killing the animals. In contrast to poachers, ranchers are not interested in killing jaguars above and beyond protecting their financial investment in their livestock, both current and projected. Ultimately, leveraging the *informal* entitlement to kill jaguars protects their income. Indeed, the law does not assign any entitlement to the NJP related to the life of a jaguar, but they are willing to pay a price so that the Mexican ranchers will transfer their entitlement to the NJP.

The shared interest in the entitlement to kill jaguars puts the NJP and ranchers in a position to bargain over that entitlement. Recall from the Coasean example of ranchers and farmers that as long as there is a range of prices between those the parties are willing to pay or receive and transaction costs are low, there is room to bargain.[166] The NJP implicitly recognized that price spectrum and approached the ranchers to bargain. In that way, the NJP bridges the gap between ranchers, whose livelihood relies on the well-being of their livestock, and environmentalists working to preserve the natural habitat of jaguars and the jaguar population.

Functionally, the NJP bridged the gap by facilitating an agreement between the ranchers in Mexico and the NJP. First, the NJP identified the ranchers who owned land around the Reserve.[167] Then, representatives of the NJP traveled to

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161. *Carrying capacity*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2003). In this context, "deterioration" refers to the degradation or decline in the quality of the habitat. Essentially, if a population exceeds the ecosystem's capacity, the overuse of resources and stress on the environment can lead to a reduced ability for the habitat to function properly, ultimately compromising its overall health and, by extension, its ability to sustain wildlife.

162. U.S. FISH & WILDLIFE SERVICE, JAGUAR RECOVERY PLAN 37, 73 fig.3. (2018).

163. Sanderson et al., *supra* note 160, at 124–25.

164. Blust, *supra* note 52.

165. Mahler, *supra* note 43.

166. *See* Schwab, *supra* note 76. *See generally supra* Part III.

167. Interview with Roberto A. Wolf Webels, *supra* note 28. *See generally Viviendo con Felinos*, *supra* note 58; *Northern Jaguar Reserve*, *supra* note 67.

Mexico to meet ranchers and present the opportunity to collaborate in protecting the jaguars that may roam their land.[168] Essentially, "[p]articipating ranchers sign contracts not to hunt, poison, bait, trap, or disturb wildlife, including the area's four felines – bobcat, ocelot, mountain lion, and jaguar – and the deer and javelina they prey on."[169] In return, the NJP, "place motion-triggered cameras on [the ranchers'] properties, and [the ranchers] receive monetary awards for feline photographs."[170] After the program began in 2007, and in combination with other conservation efforts, the jaguar population in northern Mexico increased by approximately 20% between 2010 and 2018.[171]

V. IMPACT OF GOVERNMENT ACTION

The interdependence between private entities and the federal government in pursuing shared conservation goals is essential to understanding the disruption caused by government actions. More specifically, government action can frustrate the environmental goals and progress of private entities like the NJP because it can inadvertently impose constraints on their private initiatives. This Part discusses how government action impacts the jaguar population and how it undermines the feasibility of the NJP's bargaining and other conservation efforts.

To mitigate the negative impact of government actions on the environment, Congress enacted NEPA, which President Nixon signed into law in 1970.[172] NEPA requires federal agencies to assess the environmental impact of their proposed actions,[173] specifically whether and what adverse environmental impacts will follow their proposed course of action.[174] NEPA outlines a variety of steps ranging from completing an environmental assessment when environmental impact is uncertain to the completion of an environmental impact statement when significant environmental effects may be or are likely to occur.[175] Notably, the court clarified that to determine whether a major federal action is "significant," an agency should consider the adverse environmental effects that could occur above and beyond those created by the existing or current use of the area that the proposed action could impact.[176] Essentially, NEPA's basic policy ensures that all branches of government

168. Interview with Roberto A. Wolf Webels, *supra* note 28.

169. *Viviendo con Felinos*, *supra* note 58.

170. *Id.*

171. Gerardo Ceballos et al., *Beyond Words: From Jaguar Population Trends to Conservation and Public Policy in Mexico*, 16 PLOS ONE 15 (Stephen Aldrich ed. 2021); *see also Viviendo con Felinos*, *supra* note 58.

172. *Welcome*, NEPA.GOV, https://ceq.doe.gov/index.html [https://perma.cc/K3UJ-QK23] (last visited Mar. 21, 2024).

173. *What is the National Environmental Policy Act?*, EPA, https://www.epa.gov/nepa/what-national-environmental-policy-act [https://perma.cc/9KKC-2CD3] (last visited Dec. 2, 2023).

174. *The NEPA Process Flowchart*, USDA, https://www.fs.usda.gov/emc/nepa/revisions/includes/docs/NEPAProcessFlowchart-508.pdf [https://perma.cc/9KKC-2CD3] (last visited Mar. 21, 2024).

175. *Id.*

176. *See generally* Hanly v. Kleindienst, 471 F.2d 823 (2d Cir. 1972).

consider the environment before undertaking any major federal action that significantly and negatively affects it.[177]

Although federal law, specifically NEPA, requires a review of environmental impact prior to deploying plans for government action, government agencies do not always adhere to the law as intended. A recent example is the wall that the Department of Homeland Security ("DHS") constructed along the U.S.–Mexico border.[178]

There is no question that constructing a wall along the border would impact the environment to some degree. In fact, researchers believe that construction of the border wall devalued conservation investments and ongoing scientific research because of its impact on the habitat and migration of more than 50 different species.[179] For the jaguar population, the USFWS designated approximately 700,000 acres of critical habitat,[180] and the border wall cuts directly through this habitat, which lies within 50 miles of the U.S.–Mexico border.[181] Research also suggests that the border wall could "disconnect" the habitat of more than 50 species, including the jaguar, whose habitat lies along the U.S.–Mexico border such that the remaining populations would cover 20,000 square kilometers or less.[182] Importantly, a decrease this substantial could elevate the risk of extirpation of the species within the United States to the IUCN's Red List criteria.[183]

Certainly, this type of government activity would typically require an environmental impact statement before construction began because significant environmental effects were likely to occur. Nonetheless, the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 enabled the Trump Administration to circumvent the requirements of NEPA.[184] In fact, the Sierra Club, a reputable environmental organization, reports that the DHS waived almost 50 laws, including NEPA, to construct the border wall.[185]

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177. *Summary of the National Environmental Policy Act*, EPA, https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act [https://perma.cc/4VBN-VFGU] (last visited Aug. 1, 2024). The National Environmental Policy Act is codified in 42 U.S.C. § 4321 (1969).

178. Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended, 84 Fed. Reg. 2897, 2897 (Feb. 8, 2019).

179. *See generally* Robert Peters et al., *Nature Divided, Scientists United: US–Mexico Border Wall Threatens Biodiversity and Binational Conservation*, 68 BIOSCIENCE 740 (2018).

180. NOAH GREENWALD ET AL., A WALL IN THE WILD, THE DISASTROUS IMPACTS OF TRUMP'S BORDER WALL ON WILDLIFE 11 tbl.2 (2017).

181. *Id.* at 12 fig.1.

182. Peters et al., *supra* note 179, at 741.

183. *Id.* See the *Introduction* for an explanation of this red-list criteria.

184. Determination Pursuant to Section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as Amended, 84 Fed. Reg. 2897, 2897 (Feb. 8, 2019). Whether the wall should or should not have been erected is outside the scope of this Note.

185. *Real ID Waiver Authority Compromises Our Borderlands*, SIERRA CLUB (Mar. 1, 2024), https://www.sierraclub.org/borderlands/real-id-waiver-authority-compromises-our-borderlands [https://perma.cc/4JTJ-YSJB].

This loophole demonstrates how federal policies can be insufficient to prevent negative environmental impacts of government action or, at a minimum, take them into account prior to beginning an activity. The wall stands as both a literal and figurative barrier between the NJP's conservation goals and their realization. Because the wall prohibits jaguars from roaming across the border, it undercuts the foundation of the NJP's conservation strategy.[186] More importantly, the wall, as constructed, prevents jaguars from crossing the border, which negates NJP's goal of recovering the jaguar population in northern Mexico to a size large enough to allow cross-border roaming and re-establishment of their population in the southwestern United States. The wall, therefore, eliminates NJP's motivation to bargain with the ranchers, and the investment in the ranchers is no longer sustainable long-term.

Thus, the border wall serves as a stark illustration of how, even with well-intended laws like NEPA, government action can result in significant transaction costs that hinder private conservation efforts.[187]

VI. SOLUTIONS

Unfortunately, the specter of government failure in environmental conservation is an ever-present reality, driven by an array of inevitable factors such as budgetary constraints, personnel turnover, and fluctuating political agendas across administrations.[188] These elements coalesce to form a backdrop of uncertainty that can inadvertently reverse or frustrate private conservation efforts like those of the NJP.[189] Moreover, when the government proceeds with its plans pursuant to waivers under regulatory frameworks like NEPA or ESA, the impacts on conservation can be profound.

To mitigate the impact of government activities, including waivers issued under NEPA, there must be rigorous preplanning, pre-implementation surveys, and active mitigation to minimize harm. Certainly, some scientists invested in the conservation of the jaguar species would argue that the U.S. government should cease issuing waivers that bypass NEPA or ESA requirements and instead engage in comprehensive environmental assessments before any such disruptive actions are taken.[190] Yet the legislative history of acts like NEPA[191] suggests that removing

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186. *See* Press Release, Ctr. for Biological Diversity, Trump's Border Wall Would End Jaguar Recovery, Bulldoze Sky Island Mountains (May 14, 2020), https://biologicaldiversity.org/w/news/press-releases/trumps-border-wall-would-end-jaguar-recovery-bulldoze-sky-island-mountains-2020-05-14/ [https://perma.cc/84LK-9QT2].

187. Another example of this kind of action, at the state level, which is outside the scope of this Note, is the Arizona governor stacking shipping containers along the border in 2022. Anita Snow & Ross D. Franklin, *Arizona Gov. Ducey Stacks Containers on Border at Term's End*, AP (Dec. 11, 2022), https://apnews.com/article/politics-arizona-doug-ducey-united-states-government-katie-hobbs-4e5730c50ba665b51a6d6afaf99c46ee [https://perma.cc/SN2R-SH7T].

188. *See* Barton H. Thompson, Jr., *Conservation Options: Toward a Greater Private Role*, 21 VA. ENV'T L.J., 245, 262–69 (2002).

189. *See generally id.* at 251–62.

190. Peters et al., *supra* note 179, at 740.

191. *Legislative History of NEPA*, NEPA.GOV, https://ceq.doe.gov/laws-regulations/nepa_legislative_history.html [https://perma.cc/6NQA-DAVG] (last visited Mar. 21, 2024).

regulatory loopholes is not a straightforward task. Consequently, the question arises: how can we effectively reduce the detrimental impact of government action on conservation efforts?

One promising avenue may be to channel government funding towards not-for-profit organizations like the NJP because they are adept at engaging relevant parties and facilitating bargains for conservation. Generally, not-for-profits can negotiate effective conservation agreements where the transaction costs remain low by leveraging the combination of social-control and private funding.

First, considering the social control of the close-knit groups (often non-profits, land trusts, or other local cooperatives), to which environmentalists and ranchers belong, the potential for collaboration between ranchers and organizations like the NJP is greater than ever. Historically, the relationship between ranchers and environmental groups has been fraught, centered on the use and designation of land for endangered species and the prevention of overgrazing.[192] However, a paradigm shift is underway; as ranchers increasingly view themselves as stewards of the land—recognizing the reciprocal relationship between their livelihoods and the health of the ecosystems they inhabit—the potential for partnership with conservation organizations has markedly improved.[193] This shift underscores how organizations like the NJP are uniquely positioned to engage relevant stakeholders and facilitate bargains that serve both ecological and economic interests. Applying an Ellicksonian perspective, one might even say that following the rancher paradigm shift, local not-for-profit organizations have a degree of social control and trust that is more prevalent than that of government agencies. The reason is that they are generally geographically closer, and their representatives may "run in" the same circles as the parties with whom they're bargaining.

Given ranchers' changing perspectives, it is plausible that organizations like the NJP will find more willingness to engage from those with whom they seek to partner. With representatives often hailing from within the very communities they serve, these not-for-profits can facilitate discussions and agreements where the transaction costs of negotiating and implementing agreements remain manageable and grounded in mutual interest and understanding.[194]

Second, unlike public conservation efforts bound by the slow mechanics of policy and law, not-for-profits can nimbly leverage private funding to bargain and create agreements operating in the shadow of the law.[195] By leveraging private funding and the social capital inherent within local communities, not-for-profit

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192. *See, e.g.*, Kirk Siegler, *In Rural New Mexico, Ranchers Wage Their Battle Through the Courts*, NPR: NAT'L (Feb. 8, 2018), https://www.npr.org/2018/02/08/584104201/in-rural-new-mexico-ranchers-wage-their-battle-through-the-courts [https://perma.cc/CJV4-M8T8].

193. *Id. See generally* Lisa Held, *Farmers and Ranchers Sign on to Support the Green New Deal*, CIV. EATS (Sept. 19, 2019), https://civileats.com/2019/09/19/farmers-and-ranchers-sign-on-to-support-the-green-new-deal/ [https://perma.cc/32W3-P8PA].

194. *See generally* ELLICKSON, *supra* note 25.

195. Hee Soun Jang & Richard C. Feiock, *Public Versus Private Funding of Nonprofit Organizations: Implications for Collaboration*, 31 PUB. PERFORMANCE & MGMT. REV. 174, 178–79 (2007). *See generally* Thompson, *supra* note 188.

organizations can circumvent the labyrinth of "red tape" that often accompanies governmental efforts.[196] Such organizations can more ably initiate and sustain conservation initiatives that resonate with local needs and values.[197]

However, this raises a crucial point: the NJP's approach relies on a low transaction cost landscape, a precondition for the kind of bargaining that underpins its conservation strategy.[198] Government activity, particularly when it imposes significant barriers as the border wall did, threatens this landscape and can potentially unravel the fabric of the bargain that the NJP has carefully woven with local ranchers.[199] Hence, directing government funding towards reducing transaction costs for organizations like the NJP would likely have a more pronounced impact on species preservation than allocations to agency-led efforts.[200] Such a reallocation of resources would not only bolster the NJP's initiatives but could also provide a sustainable model for how the government might engage with private actors in conservation efforts.

In sum, the NJP's experience with bargaining outside the confines of formal law offers a glimpse into how solutions to complex environmental problems may be crafted through private ordering.

CONCLUSION

Bargaining that arises from private efforts to protect and preserve the jaguar highlights the meaningful impact of legal-economic theories proposed by scholars such as Coase and Ellickson. At its core, the NJP embodies the practical application of theoretical constructs from Coase and Ellickson, affirming their continued relevance in today's environmental context. These frameworks, once abstract economic and legal constructs, are now instrumental in navigating the NJP's conservation terrain, demonstrating that the ideals of private bargaining are still potent in the modern day. The NJP's method—bargaining within the context of potential litigation and without explicit statutory guidance—heralds a proactive way to resolve complex environmental issues, issues that transcend traditional legal paradigms and enter the realm of collective societal problem-solving.

The private ordering that Ellickson observed in Shasta County provides the framework for analyzing the private ordering in other close-knit communities. The NJP's work shows how the same social control and creation of order in the shadow of enacted laws can occur in the environmental space.

Moreover, in contrast to the private ordering Ellickson observed in Shasta County, this bargaining transcends the transaction costs of being on opposite sides of the U.S.–Mexico border. In some regards, the two groups on each side of the border, the ranchers in Mexico and the NJP in the United States, comprise two

196. *See* Mary K. Feeney & Hal G. Rainey, *Personnel Flexibility and Red Tape in Public and Nonprofit Organizations: Distinctions Due to Institutional and Political Accountability*, 20 J. PUB. ADMIN. RSCH. THEORY 801 (2009); Jang & Feiock, *supra* note 195, at 178–79.

197. *See* Jang & Feiock, *supra* note 195, at 179.

198. *See* Coase, *supra* note 81, at 8.

199. *See generally* Peters et al., *supra* note 179.

200. *See* Jang & Feiock, *supra* note 195, at 178–79.

separate close-knit groups. However, with frequent site visits and an active presence in the northern Mexico community, the NJP's representatives have not only transcended otherwise high transaction costs, but they have also, in part, enabled all parties involved to create a close-knit group that arguably exists beyond their geographical locations. If anything, this shows that the ordering Ellickson observed in Shasta County may not be as heavily dependent on physical location as one might believe at first glance. This provides a promising example of the power that private conservation endeavors hold—an approach that favors greater collaboration between public and private efforts in the future.