E-PARCC
COLLABORATIVE GOVERNANCE INITIATIVE
Syracuse University
Maxwell School of Citizenship and Public Affairs
Program for the Advancement of Research on Conflict and Collaboration

Gray Wolf: Fairness and Justice in Collaborative Governance

Note to Students

This negotiation is based on facts and figures related to a proposed wolf-hunting season in northern Minnesota. It is meant to portray a realistic collaborative effort to manage wolf populations with a small degree of fictionalization. The stakeholders in this negotiation represent diametrically opposing views; however, there is room in the issues and options agreed upon to find a distributively fair and procedurally just solution for all members.

Scenario

The issues at stake in this negotiation simulation involve details regarding the planning and implementation of a new gray wolf hunting season for the purpose of population control and recreation rather than solely for depredation management. On January 27th of this year, the U.S. Fish & Wildlife Service delisted the gray wolf (*Canis lupus*) from the Endangered Species List and management of the species has shifted to state control under the State Department of Natural Resources. The population of nearly 3,000 gray wolves in this state is the largest in the lower 48 states.[1] In the 1950s the population was fewer than 750, but with Endangered Species Act (ESA) protection since 1974, the population numbers have been stable over the previous decade.

Less than a year after the delisting, the State Department of Natural Resources has decided to implement a new two-stage wolf-hunting season starting on November 3rd with late-season hunting to begin on November 24th.[2] The original management plan developed during the late 1990s through 2001 included a 5-year moratorium on wolf hunting after the species was delisted; however, this moratorium was removed from the management plan by the State Legislature last year.[1] Its removal is a point of contention for conservation groups, who argue that there needs to be more time to study how wolf population will change after the species has been delisted.[3]

This simulation was a first place winner in E-PARCC's 2012-13 "Collaborative Public Management, Collaborative Governance, and Collaborative Problem Solving" teaching case and simulation competition. It was double-blind peer reviewed by a committee of academics and practitioners. It was written by Lauren Elizabeth Colwell and Steve Smutko of the Haub School of Environment and Natural Resources, University of Wyoming. This simulation is intended for classroom discussion and is not intended to suggest either effective or ineffective handling of the situation depicted. It is brought to you by E-PARCC, part of the Maxwell School of Syracuse University's Collaborative Governance Initiative, a subset of the Program for the Advancement of Research on Conflict and Collaboration (PARCC).

The decision to allow wolf hunting is one of the first in the country and other state governments will likely be watching closely. Despite the fact that the largest wolf population numbers are in this state, there is a substantial amount of opposition to any wolf hunting. In September of this year, several conservation groups sued the Department of Natural Resources for not including adequate public input when putting together the rules for the hunting season.[3] The Department of Natural Resources considered an online public survey to be a sufficient arena for public comment; this survey showed significant opposition to wolf hunting, with 79% of the public (5,809 responses) opposed to hunting. Simultaneously, 81.9% of respondents who favor wolf hunting (1,357 responses) supported the DNR proposed season structure for the fall hunting season.[1]

Compensation to cattle ranchers related to wolf predation has increased substantially in recent years due to the growing wolf population. The State's Department of Agriculture paid out $154,136 for 111 claims this year, up from $72,895 for 71 claims in 2006.[4] The wolf hunt is not expected to decrease livestock predation significantly, indeed there will always be some level of wolf-human interaction and conflict, but the revenue from hunting licenses could be used to offset costs of hiring professional trappers for cattlemen.

The wolf population has increased steadily since the 1970s (Fig. 1), and the population of 3,000 wolves in the northern part of the state is the largest wolf population in the contiguous U.S. with a relatively large core range (Fig. 2). These numbers represent estimates of mid-winter numbers, and during the spring the population may be as high as 5,000 including newborn pups. Despite these high numbers, some stakeholders are concerned that legalizing recreational wolf hunting will decimate the population and cause them to be re-listed under the ESA. Other groups are motivated by the opportunity to raise revenue for the state through license fees, while others are interested in decreasing property loss from wolves or advocating for certain hunting rules and regulations.

This negotiation will decide for the first time the size and location of hunting areas, the methods of hunting, the number of licenses and maximum harvest allowed, and the scope of further scientific studies. The six central stakeholders in this negotiation include representatives from conservation groups, hunters and trappers, the State Cattlemen's Association, the State Department of Agriculture, the State Department of Natural Resources, and the Native American Fish and Game Agency. These groups have met before and will likely work together again in the future, and thus an important part of the negotiation is ensuring that the stakeholders preserve a good working relationship.

The Director of the Division of Wildlife from the Department of Natural Resources must listen carefully to the arguments from all sides and hold a series of three votes until a consensus (or near-consensus) decision is reached. If an agreement is not reached, the Director will make the ultimate decision regarding wolf management and it is likely that certain groups will not be satisfied with the terms. There are no existing laws affecting this issue, which makes this decision by the DNR exponentially more influential and contentious because it will be a model for future plans in other states.

Participants

Conservation Groups
These conservation groups do not want the DNR to implement a wolf-hunting season because it is too soon after the species was delisted to begin hunting. They believe that depredation control hunting by landowners should be the only form of hunting, that only humane forms of trapping should be allowed, and they argue that we do not know enough about how the wolf packs function to determine an allowable harvest figure. These groups are concerned primarily with the importance of the wolves' role within the ecosystem.

State Cattlemen's Association (CA)
Currently, cattle ranchers are legally allowed to kill a wolf if there is an "imminent threat" to their pets or livestock as part of depredation control. This year, there were 111 depredation claims and roughly $150,000 paid as compensation to livestock owners. Cattlemen fear the compensation fund may run out before the end of the fiscal year. The CA are in favor of a wolf-hunting season to decrease livestock and pet losses.

Hunters and Trappers Coalition
The professional and amateur hunters and trappers are eager to begin the recreational hunting season. They want a large number of allowable licenses and a corresponding large figure for the maximum allowable harvest. They would like to be able to hunt with few restrictions.

State Department of Agriculture (DA)
The Department of Agriculture is responsible for paying out compensation to cattle ranchers and landowners for property loss as a result of wolves. They are in favor of wolf hunting if they can use the revenue from license fees to pay for professional trappers to decrease livestock loss.

State Department of Natural Resources (DNR)
DNR officials are on record saying that any agreed upon wolf management plan should be a "science-based management strategy that ensures the long-term survival of wolves in [the state]." The State DNR Commission will make the ultimate decision regarding the details of the wolf-hunting season once the Division of Wildlife Director brings the results of the negotiation to the Commission.

Native American Fish and Game Agency (NAFGA)
The representative for the Native American Fish and Game Agency is responsible for negotiating on behalf of the Ojibwe tribal groups in the state who oppose wolf hunting. The tribal groups represented include the Mille Lacs and Fond du Lac tribes in the east central and northeast part of the state, respectively. The goal of the NAFGA is to preserve off-reservation natural resources on ceded territories for future generations, and to this end the NAFGA works with the DNR on a number of wildlife management issues and projects. Other Ojibwe tribes not associated with the NAFGA but who oppose wolf hunting include the White Earth, Red Lake, and Leech Lake tribes.

Issues and Options

The following four issues and associated options were generated during a preliminary meeting between the stakeholders. These issues represent the major concerns of all stakeholders.

1) Hunting Zones

A. Option 1: One hunting zone in the core area, a total of 8,000 mi^2 solely in the NE, no hunting allowed within reservation boundaries and restricted hunting on ceded territories, no hunting allowed in areas to the south (Zone B) that are not the wolf's core area.

B. Option 2: Hunting zone in the core area (Zone A) totaling 15,000 mi^2; hunting allowed with a limited number of licenses for hunting on state- and privately-owned land within boundaries of reservations and in the southern part of the state (Zone B).

C. Option 3: Hunting zone in the core area totaling 30,000 mi^2 in the NE, NW, and East Central areas (i.e. entirely of Zone A in Fig. 2); hunting will also be allowed in the southern region of the state (Zone B; Fig. 2).

2) Hunting Methods

A. Option 1: Only regulated firearms, calls, and bow and arrow methods allowed.

B. Option 2: Firearms allowed with traps and snares, calls and bait are allowed.

C. Option 3: Firearms, traps, snares, calls, bait, and hunting dogs allowed.

3) Hunting Licenses

Option 1: 1000 licenses per season, $50/license for residents and $400 for non-residents, maximum harvest is 100 wolves.

Option 2: 2000 licenses per season, $40/license for residents and $300 for non-residents, maximum harvest is 200 wolves.

Option 3: 6000 licenses per season, $30/license for residents and $250 for non-residents, maximum harvest is 400 wolves.

Option 4: 8000 licenses per season, $10/license for residents and $200 for non-residents, maximum harvest is 500 wolves.

4) Scientific Studies/Monitoring

Option 1: In addition to the FWS monitoring plan, the DNR will monitor hunting more closely with tagging and GPS collars, and will make ongoing assessments of wolf population, distribution, and health of packs.

Option 2: In addition to the FWS monitoring plan, DNR would conduct some monitoring, with one additional scientific evaluation after hunting season ends.

Option 3: No monitoring of wolf population other than what the FWS requires by the ESA.

Overview

1) Each stakeholder will receive a brief introduction that includes shared background information and history of the scenario. The Division of Wildlife Director will receive a group vote tally sheet.

2) Along with general background information, each stakeholder will receive a confidential document detailing your organization's positions on each issue. These confidential reports should not be shared with other stakeholders under any circumstances. Instructions detailing specific contract objectives are included to guide negotiation efforts. Information that is not included in the general background information or in the individual confidential reports cannot be used in the negotiation.

3) Each stakeholder must in turn take five minutes to explain his/her interests and values for the given issues in the negotiation. During this time, the speaking stakeholder may not be interrupted. Each stakeholder will have the opportunity to express their interests and acknowledge each other's statements in this fashion. Once everyone has shared his/her interests, the stakeholders may begin to discuss the specific options, explore possibilities for compromise, or brainstorm new ways of creating value.

4) The State Division of Wildlife Director from the Department of Natural Resources is the convener of the meeting, and is therefore responsible for moderating the negotiation. He/she will establish ground rules of conduct with the group and hold a series of three votes with the goal of finding a solution by the third vote. In order for the State Department of Natural Resources Commission to accept the negotiation results, five of the six stakeholders must approve the final decision.

5) At the beginning of the negotiation, the stakeholders will all vote to determine whether the NAFGA representative must be one of the five agreeing stakeholders. If, during the negotiation, the group is at an impasse, the Division of Wildlife Director may choose to hold another vote to rescind the requirement that the NAFGA representative must agree.

Preparation for Negotiation Worksheet

1. What is your perception of the problem – what's going on?
2. What is your BATNA?
3. What are your interests; what do you care about? (Ask yourself "why" and "for what purpose")
4. What do you aspire to? What is your vision of the future? What can you live with?
5. What is their BATNA? Is it necessary to think of a way to persuasively make their BATNA less appealing to them so that they will be more committed to a negotiated settlement?
6. What do you estimate their interests to be? (Treat these as theory and test them early in the negotiation.)
7. What are some options that can satisfy your interests and theirs?
8. What are the comparative advantages of each group (yours and theirs)? Can you exploit those differences for mutual gain?
9. How might you frame the problem to bridge all known interests? One way to do this is to ask "How can we...?" Remember, you are using the "inclusive" we here.
10. What are some fair and objective criteria for evaluating options?
11. Should you reach an agreement, what can you suggest to the other side so that all parties will live up to the agreement?

Before you begin negotiations, meet with negotiating counterparts and together:

A. Set goals, generate an atmosphere of openness, trust and safety, and create joint value;
B. Share interests and aspirations;
C. Agree on rules and procedures to follow during negotiations;
D. Identify the issues to be resolved.

While negotiating, keep the elements of successful negotiation in mind:

- **Know your BATNA. How solid is it? When is negotiation no longer beneficial?**
- **Have a clear understanding of your interests. How can you satisfy your interests and theirs?**
- **Invent options for mutual gain without committing. Terms such as "What if…" and "How can we…" are useful.**
- **To settle on the best option, search for criteria that you can both be satisfied with.**
- **Listen to what others have to say. Tailor your message to their needs.**
- **Make it easy for all parties to live up to commitments.**

Spokesperson for the Conservation Groups

Background

You, the advocate of conservation groups, strongly believe that the DNR has not done its due diligence regarding implementation of a wolf-hunting season. You are concerned first and foremost with the importance of the wolves' role within the larger ecosystem and their preservation for future generations. You think that depredation control hunting should be the only form of hunting, and only humane forms of hunting should be allowed. You argue that we do not know enough about how the wolf packs function to determine an allowable harvest. You are participating in the negotiation in good faith in an effort to contribute towards a fair solution.

In your opinion, the DNR has not considered other situations that lead to wolf deaths, including but not limited to unreported illegal kills ("Shoot, Shovel, and Shut Up"), vehicle accidents, and normal depredation control measures, which alone could account for an additional 300 wolf deaths per year. Studies conducted by your research teams predict that up to 30% of the wolf population could be killed, a number too high to sustain a thriving population.[5] According to the DNR wolf briefing from January 5th of this year, "there has been no significant change in wolf population size or distribution since 1998."[6] This finding reveals that the wolf population does not need to be managed by a recreational hunting season. You assert that there is no evidence to suggest that "random hunting of non-problem wolves" will decrease livestock depredation, and the effect on pack reproduction is unknown.[7]

If an agreement cannot be reached, you and other members of the conservation groups will take the DNR to court to challenge the decision. You would agree to a solution if you felt that you effectively advocated and increased awareness about the necessity for wolf protection.

Specific Positions on Issues

Hunting Zones: Overall, you want to see as few wolves killed as possible, and thus support option #1 that includes the smallest range of allowable hunting. Option #2 is negotiable although undesirable, and option #3 is off the table entirely. This is your **second-highest priority** issue.

Hunting Methods: Although in theory you oppose all wolf hunting, the matter of humane vs. inhumane hunting practices is your **third-highest priority**. You support option #1 that involves the most humane hunting methods available, and option #3 is not negotiable. Option #2 is negotiable as long as the number and style of traps could be regulated.

Hunting Licenses: You want the number of licenses to be as few as possible, with a higher cost to hunters and trappers to raise revenue for the state. This increased revenue could be allocated to enhance monitoring methods described in issue #4. This is an issue of **highest importance**, and options #1 and #2 are negotiable. Option #3 is a possibility if other issues are settled in favor of the conservation groups, but option #4 is completely off the table.

Scientific Monitoring: Since the original stipulation of a 5-year moratorium on wolf hunting after delisting was removed, you are concerned about future monitoring of the wolf population. You would like to see a significant effort put towards making sure the health, distribution, and population are not greatly disturbed by hunting. This is your **lowest priority** issue; however, you favor option #1 and option #3 should not be considered.

Conservation Groups

Minimum Negotiated Contracts

	Option	***Most preferred option*** →								***Least preferred option***
Zones of Hunting	1		x		x	x		x		
	2						x		x	x
	3									
Hunting Methods	1		x						x	x
	2					x	x			
	3									
Licenses & Harvest	1	x								
	2			x						
	3				x	x	x	x		x
	4									
Scientific Studies	1				x		x		x	
	2		x					x		
	3									

These combinations represent the minimum contracts you should aim to achieve in negotiation. If you are not able to attain your number-one priority options for every issue, use this chart to focus your negotiating efforts. Contracts on the left closely match your interests and decrease in value to the right.

If none of these minimum contract combinations are included in the decision by the third and final vote, you must opt-out of the negotiation.

Instructions for Determining Negotiators' Scores and POPs

After the Division of Wildlife Director holds the final vote and the group reaches an agreement, each negotiator must tally his/her "score" for the negotiation. This score represents the degree to which each negotiator achieved his/her prioritized interests based on the confidential qualitative descriptions of each issue and option.

The option numbers and option values for each issue are given in the "Final Score Sheet" tables. Under the "Final Agreement" column, the students will put an 'x' in the box for each option that negotiators agreed to in the final vote. In the "Score" column the students will write the option value for the agreed-upon options. At the bottom of the column, the students will sum the scores to determine his/her final score. An example is given below:

Issues	Option	Option Value	Final Agreement	Score
Zones of	1	25	X	25
Hunting	2	15		
	3	0		
Hunting	1	15		
Methods	2	6	X	6
	3	0		
Licenses &	1	50		
Harvest	2	45		
	3	10	X	10
	4	0		
Scientific	1	10		
Studies	2	6	X	6
	3	0		
			Sum =	**47**

The *proportion of potential (POP)* for each negotiator is calculated from three values: (1) the negotiator's score; (2) the negotiator's reservation value; and (3) the negotiator's maximum feasible score.

1. The negotiator's score is derived as described above.
2. The reservation value is ideally calculated by each negotiator and is the sum of option values from the combination of options that meet the negotiator's minimum requirements. For this exercise, each negotiator's reservation value has been assigned.
3. The maximum feasible score is a function of the all of the negotiator's option values and is estimated through a separate calculation, and may vary significantly between negotiators.

Reservation values and maximum feasible scores for each negotiator are:

Negotiator	Reservation Value	[a]Maximum Feasible (RV = 40)	[b]Maximum Feasible (RV = 60)
Conservation Groups	40	89	86
Hunter Coalition	40	83	85
State Cattlemen's Association	30	94	50
Native American Fish & Game Agency	40[a] or 60[b]	78	85
State Department of Agriculture	40	93	80
State Department of Natural Resources	40	90	85

Each negotiator's *potential* is the value of points between the reservation value (the negotiator's minimum) and the maximum feasible score. For example, the potential for the Conservation Groups negotiator is 46 (86 – 40 = 46).

To calculate a negotiator's *proportion* of potential first need to know the negotiator's *excess value*. The excess value is the difference between each negotiator's final score and his/her reservation value. In essence, it represents how far above the reservation value the negotiator settled. Then we divide the excess value by the negotiator's potential.

The best possible final score for any negotiator will be equal to his/her maximum feasible score, and thus the proportion of potential will be 1 (100%). If the negotiator settles at his/her reservation value, the proportion of potential will be 0 (0%). By looking at the range in POP values at the end of a negotiation, we can quantify how well each negotiator achieved his/her preferred options relative to the other participating negotiators.

Example:

Score (S) = 47
Reservation Value (RV) = 40
Maximum Feasible Score (MFS) = 86
Excess Value (EV) = S – RV or 47 – 40 = 7

$$\text{POP} = \frac{(\text{EV})}{(\text{MFV}-\text{RV})}$$

$$\text{POP} = \frac{7}{(86-40)} = \frac{7}{46} = 0.152 \text{ or } 15.2\%$$

Final Score Sheet

Conservation Groups

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	25		
	2	15		
	3	0		
Hunting Methods	1	15		
	2	6		
	3	0		
Licenses & Harvest	1	50		
	2	45		
	3	10		
	4	0		
Scientific Studies	1	10		
	2	6		
	3	0		
			Sum =	

Your score: _____ Your POP (%): _____

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President of the State Cattlemen's Association (CA)

Background

You are the chosen representative of the interests of the State Cattlemen's Association. The landowners and ranchers in the northeastern region of the state have noticed an increase in livestock losses and property damage correlated with the wolf population increase in recent years. You represent their interests, which are in favor of increased recreational hunting in the area to control the wolf population and prevent further property losses.

If a negotiated agreement is not reached, you have no choice but to continue to apply for livestock loss compensation through the claims system operated by the State Department of Agriculture. In recent years it has been more difficult to receive funding from the state, not to mention challenging to prove that a wolf was the culprit of attacks, and if wolf populations are not controlled soon you anticipate that the situation will get worse in the near future. You would be willing to settle for an agreement that includes at least a few options that allow more hunting (either more licenses and greater harvest or greater area of hunting); ultimately, you can be flexible as long as you reach an agreement.

Specific Position on Issues

Hunting Zones: The landowners in the northern part of the state are extremely invested in ensuring that hunting is allowed on the greatest area of land in the northeastern region, and this is your **highest priority** issue. Thus, option #3 is the favored option, which would have a great influence on wolf numbers and prevent damage to your personal property. You also find option #2 to be very reasonable and you could settle for option #1 if other issues go your way.

Hunting Methods: The issue of hunting methods is your **lowest priority** issue, and you prefer option #2 to options #1 and #3. You care somewhat about the popularity of hunting, and thus do not want to see hunting reduced to only regulated firearms and bow and arrow methods for big game. You do not see any problem with hunters using traps and snares, although you do not want them to use dogs that would disturb your cattle.

Hunting Licenses: You care about the number of licenses sold because more licenses available translate to more hunters controlling the wolf population, and this is your **second-highest priority** issue. The number of licenses in each option correlates to the maximum harvest, and it is in your interest to have a large maximum harvest. Thus, option #3 is your preferred option, and options #2 and #4 are negotiable. In your opinion, option #1 does not provide enough licenses and is not desirable, but if other issues went your way you could settle on option #1.

Scientific Monitoring: The issue of further scientific studies and monitoring is your **third-highest priority**. If you had your choice, you would choose option #2 because it seems reasonable to you to monitor the wolf population after one entire hunting season. You do not particularly want to see researchers on or around your property as in option #1; however, this is a negotiable issue if other, more important issues swing your way. Option #3 is also negotiable.

State Cattlemen's Association
Minimum Negotiated Contracts

	Option	*Most preferred option* →									*Least preferred option*
Zones of Hunting	1			x	x	x	x	x	x	x	x
	2		x								
	3	x									
Hunting Methods	1							x	x		
	2					x	x				x
	3							or x	or x		
Licenses & Harvest	1					x					
	2			x				x			
	3						x			x	
	4				x				x		x
Scientific Studies	1							x	x		
	2			x	x	x					
	3										x

These combinations represent the minimum contracts you should aim to achieve in negotiation. If you are not able to attain your number-one priority options for every issue, use this chart to focus your negotiating efforts. Contracts on the left closely match your interests and decrease in value to the right. A few contracts allow you to choose between two equal options for a given issue ('or').

If none of these minimum contract combinations are included in the decision by the third and final vote, you must opt-out of the negotiation.

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Final Score Sheet

State Cattlemen's Association

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	10		
	2	50		
	3	60		
Hunting Methods	1	3		
	2	5		
	3	3		
Licenses & Harvest	1	5		
	2	10		
	3	20		
	4	10		
Scientific Studies	1	9		
	2	15		
	3	5		
			Sum =	

Your score: _____ Your POP (%): _____

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Representative from the Hunters and Trappers Coalition

Background

As the representative of the professional and amateur hunters and trappers of northern Minnesota, you are eager to begin the recreational hunting season. Ideally, you want to see a large number of allowable licenses and a corresponding large figure for the maximum allowable harvest. You would also like to be able to hunt with no restrictions on the methods of hunting. Experts note that the most effective hunting methods include traps and snares, and you feel pressure from your coalition to advocate for these tools. You can cite wolf-hunting seasons in Idaho and Montana that demonstrated that hunters tend to have many difficulties hunting wolves, and in these cases the hunting season was extended because the target harvest was not reached.[8]

You are aware that the representatives from the conservation groups and the Native American Fish and Game Agency will argue against several options that you support and you face opposition in public comments, largely from the southern part of the state. However, you are receptive to the arguments made by these groups as long as the agreement includes options that allow more hunting with *effective* methods (traps, snares) and/or more licenses.

Specific Positions on Issues

Hunting Zones: The issue of hunting zones is not of great concern to you, although you would rather see larger areas of allowable hunting instead of smaller areas in the wolf's core area. As long as other options go your way, you would be willing to negotiate options #2 or #3. Option #1 is negotiable although not desirable.

Hunting Methods: This is your **number-one priority** issue. You want to continue the traditions of your grandparents and great-grandparents who lived in the northern part of the state almost since the time of the fur-trappers. The independent culture of hunters and trappers dominates in the north, and you want to emulate the historical period when trappers could use snares, traps, and dogs to hunt wolves.[8] From your recollections of your grandparent's stories, wolves are notoriously difficult to hunt; to outsmart this type of prey, hunters need to be able to use all possible resources. To this end, you are in favor of options #2 or #3, and option #1 is not negotiable. You don't think you could participate if you were only allowed to use certain firearms or bow and arrow methods.

Hunting Licenses: This is your **second-highest priority** issue. You want to see the maximum number of licenses allowed at the cheapest price as well as the maximum harvest of wolves for the season (option #4). Option #3 would not be bad, either—it still provides enough licenses and they would be relatively cheap. The other two options increase the price of licenses and decrease the possibility of obtaining a license to such an extent that you could not support option #1 at all, and you would only agree to option #2 if everything else went your way.

Scientific Monitoring: The issue of wolf monitoring is a **low priority** issue, and is only slightly more important than the hunting zone issue. You would rather not have ongoing assessments of wolf pack distributions because it would be a waste of money. You do not see the purpose of evaluating the wolf populations apart from the monitoring required by the Fish & Wildlife Service under the Endangered Species Act, and thus support option #3. Options #1 and #2 are negotiable.

Hunters and Trappers Coalition

Minimum Negotiated Contracts

	Option	***Most preferred option***								***Least preferred option***
Zones of Hunting	1									
	2					x				x
	3			x			x	x		
Hunting Methods	1									
	2		x							
	3	x								
Licenses & Harvest	1									
	2									
	3			x		x		x		x
	4				x		x		x	
Scientific Studies	1									
	2							x	x	x
	3			x	x	x				

These combinations represent the minimum contracts you should aim to achieve in negotiation. If you are not able to attain your number-one priority options for every issue, use this chart to focus your negotiating efforts. Contracts on the left closely match your interests and decrease in value to the right.

If none of these minimum contract combinations are included in the decision by the third and final vote, you must opt-out of the negotiation.

Instructions for Determining Negotiators' Scores and POPs

After the Division of Wildlife Director holds the final vote and the group reaches an agreement, each negotiator must tally his/her "score" for the negotiation. This score represents the degree to which each negotiator achieved his/her prioritized interests based on the confidential qualitative descriptions of each issue and option.

The option numbers and option values for each issue are given in the "Final Score Sheet" tables. Under the "Final Agreement" column, the students will put an 'x' in the box for each option that negotiators agreed to in the final vote. In the "Score" column the students will write the option value for the agreed-upon options. At the bottom of the column, the students will sum the scores to determine his/her final score. An example is given below:

Issues	Option	Option Value	Final Agreement	Score
Zones of	1	25	X	25
Hunting	2	15		
	3	0		
Hunting	1	15		
Methods	2	6	X	6
	3	0		
Licenses &	1	50		
Harvest	2	45		
	3	10	X	10
	4	0		
Scientific	1	10		
Studies	2	6	X	6
	3	0		
			Sum =	**47**

The *proportion of potential (POP)* for each negotiator is calculated from three values: (1) the negotiator's score; (2) the negotiator's reservation value; and (3) the negotiator's maximum feasible score.

1. The negotiator's score is derived as described above.
2. The reservation value is ideally calculated by each negotiator and is the sum of option values from the combination of options that meet the negotiator's minimum requirements. For this exercise, each negotiator's reservation value has been assigned.
3. The maximum feasible score is a function of the all of the negotiator's option values and is estimated through a separate calculation, and may vary significantly between negotiators.

Reservation values and maximum feasible scores for each negotiator are:

Negotiator	Reservation Value	[a]Maximum Feasible (RV = 40)	[b]Maximum Feasible (RV = 60)
Conservation Groups	40	89	86
Hunter Coalition	40	83	85
State Cattlemen's Association	30	94	50
Native American Fish & Game Agency	40[a] or 60[b]	78	85
State Department of Agriculture	40	93	80
State Department of Natural Resources	40	90	85

Each negotiator's *potential* is the value of points between the reservation value (the negotiator's minimum) and the maximum feasible score. For example, the potential for the Conservation Groups negotiator is 46 (86 – 40 = 46).

To calculate a negotiator's *proportion* of potential first need to know the negotiator's *excess value*. The excess value is the difference between each negotiator's final score and his/her reservation value. In essence, it represents how far above the reservation value the negotiator settled. Then we divide the excess value by the negotiator's potential.

The best possible final score for any negotiator will be equal to his/her maximum feasible score, and thus the proportion of potential will be 1 (100%). If the negotiator settles at his/her reservation value, the proportion of potential will be 0 (0%). By looking at the range in POP values at the end of a negotiation, we can quantify how well each negotiator achieved his/her preferred options relative to the other participating negotiators.

Example:

Score (S) = 47
Reservation Value (RV) = 40
Maximum Feasible Score (MFS) = 86
Excess Value (EV) = S – RV or 47 – 40 = 7

$$\text{POP} = \frac{(\text{EV})}{(\text{MFV}-\text{RV})}$$

$$\text{POP} = \frac{7}{(86-40)} = \frac{7}{46} = 0.152 \text{ or } 15.2\%$$

Final Score Sheet

Hunters Coalition

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	0		
	2	5		
	3	7		
Hunting Methods	1	0		
	2	45		
	3	50		
Licenses & Harvest	1	0		
	2	10		
	3	30		
	4	35		
Scientific Studies	1	0		
	2	5		
	3	8		
			Sum =	

Your score: _____ Your POP (%): _____

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Commissioner of the State Department of Agriculture (DA)

Background

The State Department of Agriculture is responsible for paying out compensation to cattle ranchers for property loss as a result of wolves. As the Commissioner of the Department of Agriculture, you are in favor of wolf hunting if you can use the revenue from license fees to either pay for professional trappers to decrease livestock loss or to fund the compensation fund, which in recent years has dwindled as budgets were slashed. Last year there were 128 claims that totaled $102,230 in compensation payments, and you have realized that it is not feasible for the state to pay these high claims in the future.[4] You feel pressure from landowners and ranchers to continue to pay them compensation, and are very eager to come up with a better solution that would control the wolf population and decrease property loss. You are hopeful after hearing that the projected revenue from license and application and fees is estimated to be up to $300,000.

You, along with the representative of the Department of Natural Resources, are aware that the livestock loss compensation fund will be slashed significantly in the next few years as the state tries to balance its budget. Faced with this so-called "fiscal cliff" in the state budget, you are desperate to reach a negotiated agreement that would increase revenue for the state. As long as the agreement includes a large number of licenses (really any option except option #1 for issue #3) and a relatively large portion of land available for hunting, you would be willing settle rather than continue the current trend that will necessitate finding another way to pacify the cattlemen.

Specific Positions on Issues

Hunting Zones: The issue of hunting zones is your **second-highest priority** issue because after a few years the hunting season may decrease wolf depredation and fewer angry landowners and ranchers would call your office. You prefer option #3, but option #2 is negotiable. Option #1 is a possibility but is not desirable.

Hunting Methods: You really have **no preference** for the method of hunting allowed. If pressed, you would likely throw your support behind whatever the cattlemen desire. All options are negotiable, and this is your lowest-priority issue.

Hunting Licenses: You are deeply concerned about the number of licenses allowed, and it is your **highest priority**. You want to see an increase in revenue for the state, and prefer option #3 that maximizes this potential revenue from license fees. If option #3 is unobtainable, you prefer options #4 or #2 over option #1, which does not provide enough licenses to increase revenue, even though they are relatively expensive. Option #1 is negotiable but not desirable.

Scientific Monitoring: The issue of scientific monitoring is your **third-highest priority**, mostly because you are concerned about the state budget and you do not want to see the state pay for extra monitoring equipment and specialists. You prefer options #2 or #3 over option #1; however, these are all negotiable if you can get a large number of licenses in issue #3.

Department of Agriculture
Minimum Negotiated Contracts

	Option	***Most preferred option***						***Least preferred option***
Zones of Hunting	1							
	2			x	x	x		
	3		x					
Hunting Methods	1							
	2							
	3							
Licenses & Harvest	1							
	2		x	x	x	x	x	
	3	x						
	4		or x	or x	or x	or x		x
Scientific Studies	1		x			x		
	2			x				
	3				x			

These combinations represent the minimum contracts you should aim to achieve in negotiation. If you are not able to attain your number-one priority options for every issue, use this chart to focus your negotiating efforts. Contracts on the left closely match your interests and decrease in value to the right. A few contracts allow you to choose between two equal options for a given issue ('or').

If none of these minimum contract combinations are included in the decision by the third and final vote, you must opt-out of the negotiation.

Instructions for Determining Negotiators' Scores and POPs

After the Division of Wildlife Director holds the final vote and the group reaches an agreement, each negotiator must tally his/her "score" for the negotiation. This score represents the degree to which each negotiator achieved his/her prioritized interests based on the confidential qualitative descriptions of each issue and option.

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Issues	Option	Option Value	Final Agreement	Score
Zones of	1	25	X	25
Hunting	2	15		
	3	0		
Hunting	1	15		
Methods	2	6	X	6
	3	0		
Licenses &	1	50		
Harvest	2	45		
	3	10	X	10
	4	0		
Scientific	1	10		
Studies	2	6	X	6
	3	0		
			Sum =	**47**

The *proportion of potential (POP)* for each negotiator is calculated from three values: (1) the negotiator's score; (2) the negotiator's reservation value; and (3) the negotiator's maximum feasible score.

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State Department of Agriculture	40	93	80
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Example:

Score (S) = 47
Reservation Value (RV) = 40
Maximum Feasible Score (MFS) = 86
Excess Value (EV) = S – RV or 47 – 40 = 7

$$\text{POP} = \frac{(\text{EV})}{(\text{MFV}-\text{RV})}$$

$$\text{POP} = \frac{7}{(86-40)} = \frac{7}{46} = 0.152 \text{ or } 15.2\%$$

Final Score Sheet

State Department of Agriculture

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	0		
	2	10		
	3	20		
Hunting Methods	1	0		
	2	0		
	3	0		
Licenses & Harvest	1	0		
	2	40		
	3	70		
	4	40		
Scientific Studies	1	5		
	2	10		
	3	7		
			Sum =	

Your score: _____ Your POP (%): _____

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Director, Division of Wildlife from the State Department of Natural Resources (DNR)

Background

You, as the Director of the Division of Wildlife for the DNR, are responsible for moderating this negotiation to reach an agreement between at least five stakeholders. You are concerned about maintaining a good reputation as an agency that upholds the interests of residents all over the state; therefore, your role is mainly to ensure that each stakeholder feels as though they have equal power and input, and that each stakeholder is respectful. You will conduct a series of three votes with a goal of reaching a joint decision by the last vote. Before negotiation begins, you will hold a special vote to determine whether the NAFGA organization must be one of the five agreeing stakeholders required to reach a decision. You will negotiate under the outcome of this vote, and prior to the third vote on issues, you will hold another special vote for all stakeholders to either maintain or reverse the initial outcome.

The allegations brought forth by the conservation groups maintain that the DNR has not done its due diligence. You argue that this *conservative* inaugural wolf-hunting season is not meant to decrease wolf depredation, but rather to gauge hunting and trapping success rates to inform rules for future wolf hunting seasons and potentially decrease wolf depredation over time.[8] You could also note that illegal killings, vehicle accidents, etc. have not significantly decreased the wolf population. You would remind the conservation groups that they share a common goal, which is to ensure a long-term healthy population of greater than 1,600 wolves for future generations.[10] Since this hunting season is designed as an experiment that will influence hunting rules for future years, you are very open to suggestions or recommendations from other stakeholders.

To avoid wasting time and money being sued for a decision you made by yourself, you would much rather reach a consensus decision in negotiation. If necessary, you have the power to offer under-the-table incentives in the form of either small monetary funds towards conservation or hunting interests (<$10,000), or future decisions relating to other game management plans (deer, etc.). These incentives should only be offered if it looks like a consensus will not be reached.

Specific Positions on Issues

Hunting Zones: The issue of hunting zones is your **third-highest priority**. You want to find an agreeable middle ground between the hunters and the conservation groups, and prefer option #2. Option #3 is your second choice, and option #1 might be negotiable if you achieve other issues.

Hunting Methods: This is your **lowest priority issue**. You do not particularly care about the methods the hunters can use to hunt wolves, although you favor the middle ground option (option #2) that would make hunting and trapping fun for the hunters but that would also be humane to appease the conservation groups.

Hunting Licenses: You, like the representative from the Department of Agriculture, are concerned about balancing the state budget without needing to cut significant funds from the livestock compensation payment program. You are interested in maximizing the state's revenue by favoring option #3, but options #4 or #2 are negotiable. Option #1 would not provide much revenue, and you guess that neither the hunter posse nor the Department of Agriculture would support this option. This is your **number-one priority**.

Scientific Monitoring: The issue of scientific monitoring is your **second-highest priority** because you want to appease oppositional groups while limiting the amount of money you have to spend on future studies. For these reasons you favor option #2 or option #3, but option #1 is negotiable.

State Department of Natural Resources
Minimum Negotiated Contracts

	Option	***Most preferred option***									***Least preferred option***
Zones of Hunting	1	x		x	x	x		x			
	2		x				x				x
	3								x	x	
Hunting Methods	1		x	x			x		x		
	2	x			x	x		x			
	3		or x	or x			or x		or x		
Licenses & Harvest	1							x			
	2		x	x	x		x		x	x	x
	3	x				x					
	4		or x	or x	or x		or x		or x	or x	or x
Scientific Studies	1						x		x	x	
	2	x	x					x			
	3			x	x						

These combinations represent the minimum contracts you should aim to achieve in negotiation. If you are not able to attain your number-one priority options for every issue, use this chart to focus your negotiating efforts. Contracts on the left closely match your interests and decrease in value to the right. A few contracts allow you to choose between two equal options for a given issue ('or').

If none of these minimum contract combinations are included in the decision by the third and final vote, you must opt-out of the negotiation.

Instructions for Determining Negotiators' Scores and POPs

After the Division of Wildlife Director holds the final vote and the group reaches an agreement, each negotiator must tally his/her "score" for the negotiation. This score represents the degree to which each negotiator achieved his/her prioritized interests based on the confidential qualitative descriptions of each issue and option.

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Issues	Option	Option Value	Final Agreement	Score
Zones of	1	25	X	25
Hunting	2	15		
	3	0		
Hunting	1	15		
Methods	2	6	X	6
	3	0		
Licenses &	1	50		
Harvest	2	45		
	3	10	X	10
	4	0		
Scientific	1	10		
Studies	2	6	X	6
	3	0		
			Sum =	**47**

The *proportion of potential (POP)* for each negotiator is calculated from three values: (1) the negotiator's score; (2) the negotiator's reservation value; and (3) the negotiator's maximum feasible score.

1. The negotiator's score is derived as described above.
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Reservation values and maximum feasible scores for each negotiator are:

Negotiator	Reservation Value	[a]Maximum Feasible (RV = 40)	[b]Maximum Feasible (RV = 60)
Conservation Groups	40	89	86
Hunter Coalition	40	83	85
State Cattlemen's Association	30	94	50
Native American Fish & Game Agency	40[a] or 60[b]	78	85
State Department of Agriculture	40	93	80
State Department of Natural Resources	40	90	85

Each negotiator's *potential* is the value of points between the reservation value (the negotiator's minimum) and the maximum feasible score. For example, the potential for the Conservation Groups negotiator is 46 (86 – 40 = 46).

To calculate a negotiator's *proportion* of potential first need to know the negotiator's *excess value*. The excess value is the difference between each negotiator's final score and his/her reservation value. In essence, it represents how far above the reservation value the negotiator settled. Then we divide the excess value by the negotiator's potential.

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Example:

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Reservation Value (RV) = 40
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$$\text{POP} = \frac{7}{(86-40)} = \frac{7}{46} = 0.152 \text{ or } 15.2\%$$

Final Score Sheet

State Department of Natural Resources

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	5		
	2	20		
	3	15		
Hunting Methods	1	6		
	2	10		
	3	6		
Licenses & Harvest	1	5		
	2	20		
	3	40		
	4	20		
Scientific Studies	1	5		
	2	30		
	3	20		
			Sum =	

Your score: _____ Your POP (%): _____

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Group Tally Sheet (Given to the DNR Representative)

Vote #1 Results

		Parties						
Issue	**Option**	Cons.	CA	Hunters	DA	DNR	NAFGA	**TOTAL**
Hunting Zones	1							
	2							
	3							
Hunting Methods	1							
	2							
	3							
Licenses	1							
	2							
	3							
	4							
Scientific Studies	1							
	2							
	3							

Vote #2 Results

Issue	**Option**	Cons.	CA	Hunters	DA	DNR	NAFGA	**TOTAL**
Hunting Zones	1							
	2							
	3							
Hunting Methods	1							
	2							
	3							
Licenses	1							
	2							
	3							
	4							
Scientific Studies	1							
	2							
	3							

Vote #3 Results

Issue	**Option**	Cons.	CA	Hunters	DA	DNR	NAFGA	**TOTAL**
Hunting Zones	1							
	2							
	3							
Hunting Methods	1							
	2							
	3							
Licenses	1							
	2							
	3							
	4							
Scientific Studies	1							
	2							
	3							

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Representative from the Native American Fish and Game Agency (NAFGA)

Background

As the representative from the NAFGA, your job is to represent the interests of two sovereign Native American tribal governments that are located within the proposed wolf hunting area in the northern part of the state. You inherently represent a viewpoint that opposes all wolf hunting in a negotiation that will inevitably allow for wolf hunting; regardless of this disadvantage you are at the negotiation table to influence the proceedings and advocate for greater wolf protection.

Other Native American tribes not represented by the NAFGA are able to effectively close the reservation borders to hunting (ex. the Red Lake Band, who designated 843,000 acres as a wolf sanctuary),[11] but most other reservations include a significant checkerboard pattern of state- or privately-owned land.[12] You are concerned with preserving off-reservation wildlife resources on territories ceded to the United States in treaties from 1837 and 1854; these lands cover the majority of the proposed wolf hunting area (Fig. 3).

In the Anishinaabe creation story, Ma'iingan (wolf) is the brother of Man, and their fates are joined. You claim, "the health and survival of the Anishinaabe is tied to that of Ma'iigan,"[13] and thus wolf management and preservation are significant cultural responsibilities. You need to emphasize this intrinsic spiritual value to the other stakeholders and advocate for a solution that identifies and educates others about this cultural clash at the root of the conflict. For example, you could suggest that wolf-hunting manuals include an educational section on the spiritual value of the wolf in Ojibwe culture, or perhaps there are funds available for greater outreach to educate the public about this issue.

You testified to the State Senate's Committee on Natural Resources and Environment in February of this year about the NAFGA's stance on wolf hunting.[14] Based on the arguments in your testimony, you are unlikely to agree to a solution that involves hunting on ceded land.

Specific Positions on Issues

Hunting Zones: You have done everything you can to limit wolf hunting, and you support option #1 that prohibits hunting on treaty-ceded land. This is your **number-one priority** and the main reason you wanted to be involved in this negotiation. If you can achieve option #1, the other issues are inconsequential to you.

Note: **If you cannot negotiate to include option #1 for the hunting zones issue in the final decision, you *must* achieve your number-one option for your second-highest priority. If this is not possible, you must opt-out of negotiation.**

Hunting Methods: You oppose wolf hunting in general; however, you support option #1 and object to the inhumane methods described in option #3.

Hunting Licenses: You prefer option #1, which includes the fewest number of licenses and the lowest target harvest value.

Scientific Monitoring: You care deeply about the health and population numbers of the wolf packs in your area, and therefore support option #1 that includes the maximum amount of monitoring effort by the DNR. You might suggest alternative or supplementary options, such as enhancing scientific monitoring of deer to study the effect of decreasing wolf numbers on the health of the greater ecosystem. This is your **second-highest priority**.

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Instructions for Determining Negotiators' Scores and POPs

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Zones of	1	25	X	25
Hunting	2	15		
	3	0		
Hunting	1	15		
Methods	2	6	X	6
	3	0		
Licenses &	1	50		
Harvest	2	45		
	3	10	X	10
	4	0		
Scientific	1	10		
Studies	2	6	X	6
	3	0		
			Sum =	**47**

The *proportion of potential (POP)* for each negotiator is calculated from three values: (1) the negotiator's score; (2) the negotiator's reservation value; and (3) the negotiator's maximum feasible score.

1. The negotiator's score is derived as described above.
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State Department of Agriculture	40	93	80
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Each negotiator's *potential* is the value of points between the reservation value (the negotiator's minimum) and the maximum feasible score. For example, the potential for the Conservation Groups negotiator is 46 (86 – 40 = 46).

To calculate a negotiator's *proportion* of potential first need to know the negotiator's *excess value*. The excess value is the difference between each negotiator's final score and his/her reservation value. In essence, it represents how far above the reservation value the negotiator settled. Then we divide the excess value by the negotiator's potential.

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Example:

Score (S) = 47
Reservation Value (RV) = 40
Maximum Feasible Score (MFS) = 86
Excess Value (EV) = S – RV or 47 – 40 = 7

$$\text{POP} = \frac{(\text{EV})}{(\text{MFV}-\text{RV})}$$

$$\text{POP} = \frac{7}{(86-40)} = \frac{7}{46} = 0.152 \text{ or } 15.2\%$$

Final Score Sheet: RV = 60

Native American Fish and Game Agency

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	60		
	2	0		
	3	0		
Hunting Methods	1	10		
	2	0		
	3	0		
Licenses & Harvest	1	5		
	2	0		
	3	0		
	4	0		
Scientific Studies	1	25		
	2	0		
	3	0		
			Sum =	

Final Score Sheet: RV = 40

Issues	Option	Option Value	Final Agreement	Score
Zones of Hunting	1	0		
	2	0		
	3	0		
Hunting Methods	1	30		
	2	0		
	3	0		
Licenses & Harvest	1	25		
	2	0		
	3	0		
	4	0		
Scientific Studies	1	45		
	2	0		
	3	0		
			Sum =	

Your score: _____ Your POP (%): _____

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Figures

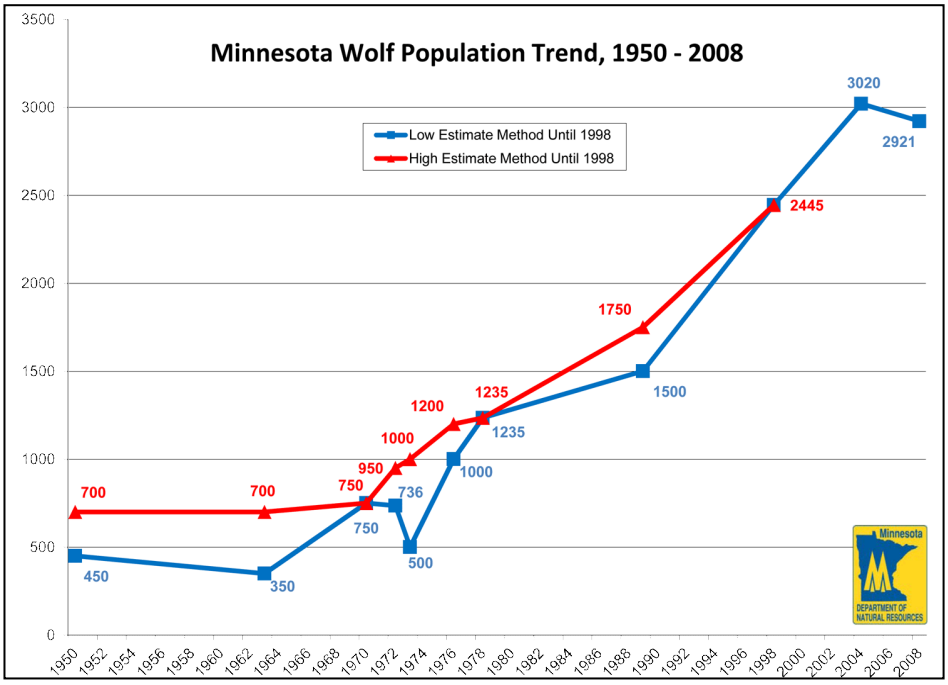

Fig. 1. (*Above*) Graph of the wolf population growth in the last 50 years; the growth correlates with increasing property damage and compensation payments to ranchers.

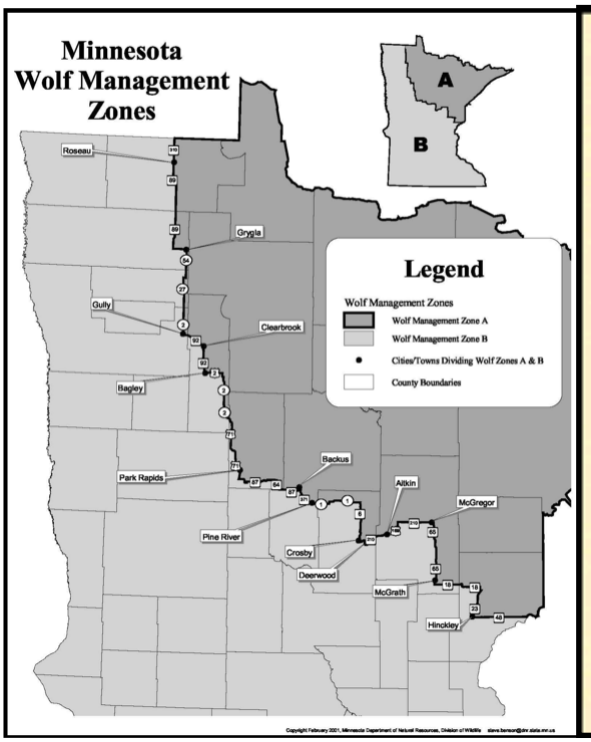

Fig. 2. (*Above*) Map of Minnesota's Proposed Wolf Management Zones; Zone A is the wolf's core area (~30,000 mi^2)

Fig. 3. (*Above*) Fond du Lac and Mille Lac Ceded Territories in 1837 and 1854 Treaties

Figs. 1, 2: http://www.dnr.state.mn.us/mammals/wolves/mgmt.html; Fig. 3: http://www.glifwc.org/map.html

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