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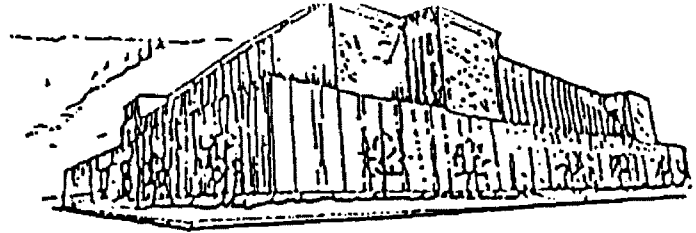
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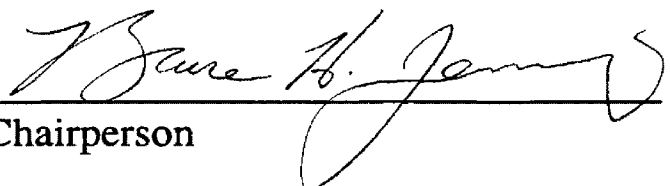
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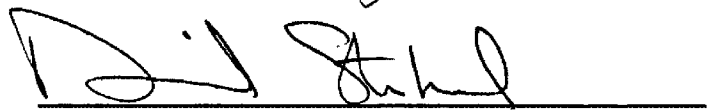


**MOUNTAIN GOATS IN OLYMPIC NATIONAL  
PARK:  
FAIR GAME OR REASONABLE DOUBT?**

by  
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B.A. The University of California, Berkeley, 1989  
presented in partial fulfillment of the requirements  
for the degree of  
Master of Science  
The University of Montana  
1995

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**Mountain Goats in Olympic National Park: Reasonable Doubt?**

Director: Bruce Jennings



In March 1995, Olympic National Park issued a Draft Environmental Impact Statement stating the park's preferred alternative to shoot the population of non-indigenous mountain goats residing in the subalpine and alpine communities of Olympic National Park, location of 33 rare and/or endemic plant taxa. The impact of the goats on both plant communities and soils has caused the National Park Service concern. Olympic National Park faces the difficult task of removing a charismatic, sentient mammal from a national park in which the mammal has been present for the history of the park and some opponents argue, for the history of the ecosystem. Removal of non-indigenous plants and animals is an ongoing problem in the National Park Service, but particularly conflict-ridden when the exotic is an appealing, charismatic animal that has been in the area long enough to be strongly identified with the region.

The issue of if and how the goats should be removed has stirred much controversy for the park for about fifteen years. Some of the mountain goats have already been removed through relocation and sterilization. The destiny of the remaining population is a hot debate topic, particularly since the NPS has expressed the opinion that the safest, most economical and effective solution is to shoot the remaining population. Animal rights groups claim the animal is potentially native and question the severity of the mountain goats' impact on the alpine and subalpine communities of Olympic National Park. Hunting groups resent action that would diminish the population in areas outlying the park, and some park visitors condemn the extermination of the goats for the sake of a few plants. The National Park Service, however, is firmly supporting their interpretation of the exotic removal policy.

In this paper, the ecological impact of the mountain goats is examined, as well as the results of the application of non-lethal measures. This is followed by an explanation of the conflict between the governmental agencies sharing jurisdiction over this Olympic Peninsula mountain goat population, and the stands and approaches of various concerned interest groups. The final section is a discussion of the various value systems that enter into this kind of debate and the ethical implications of this decision.

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## INTRODUCTION

### Leave Only Hoofprints, Take Only Sensitive Vegetation

Whatever the designated use of an area, the desired relationships between human and animal occupants are difficult to establish. I believe from observations to date that it is justifiable to state the general proposition that **the more man desires to preserve the native biota, the more complex become his problems in joint occupancy.**

-George Wright, 1930

I found articles in the library describing their favorite foods, the political warfare they caused, the emotional debates they provoked and the questions they were making people ask. In the 1920's, a dozen mountain goats were brought for hunting to the Olympic Peninsula. At the time, environmentalism wasn't even in the dictionary and Olympic National Park wasn't on the map. Wildlife biologists didn't give it a second thought when the animals were introduced. It seemed a good idea at the time. An appealing game animal screwed into the perfect little niche. Nature had failed to provide goats and so it made sense to correct a natural mistake.<sup>1</sup> There were just a few dissenters who were already opposed to the hunting of mountain goats in the Cascades.<sup>2</sup> Those voices faded into ineffectiveness and the goats were shoved into their new home. Today, the question of what to do with the goats has become, in the words of one ranger, "the park's Vietnam."

National park tenants for over half a century, subject to current park service policy, they are considered "unwelcome additions", "aliens in the park." They've moved



tons of soil, and eaten plants you won't find anywhere else. The park service has spent over a million dollars on research and goat removals by helicopter, sterilization, darts, nets, and even a little shooting for biological sampling. A lot of them are gone now, taken by road and by sky to places where they are welcome. That is, welcome to state lands run by wildlife departments that equate mountain goats with sport hunting and revenue-generation. But to get any more goats out alive is considered dangerous. Helicopters and people weren't made for such steady intimacy with the dizzy, precipitous home of the mountain goats. The National Park Service, feeling that they have exhausted all practicable alternatives, just released a Draft Environmental Impact Statement that advocates shooting the remaining population. After 56 years of fortuitous protection, the goats may again be legally shot, this time in the name of preservation rather than sport.

After spending time researching the facts and arguments, I wanted to see the goats to legitimize my armchair study. I spoke with the ranger who had been in charge of airlifting out a substantial part of the population in the late 80's. He drew me a map to one of their remaining residential areas on a slip from a yellow message pad. He was the one park service person I spoke with who violated park service nicey-niceness, and showed me pictures of a drug-shot goat who stumbled and crashed down the mountain to its death during the capture operation. I could tell he was giving me his litmus test for bleeding hearts, who wouldn't appreciate the "intellectual" side of the issue. I made a point not to flinch when he showed me the picture, because I wanted him to speak freely with me. The goat's eyes were glassed over, stunned and resigned. Before I left, he told me he wished the National Park Service had had the "guts" to just go in and shoot them all in the early 70's before the whole thing became high-profile. He would have done it, he said. Didn't mind being the bad guy.

His scrawled map led me up Switchback Trail to Klahhane ridge. This area once contained the highest population density of goats in recorded mountain goat history and is often used to illustrate the results of concentrated mountain goat impact. Klahhane Ridge probably attracted a lot of goats because it was perfect terrain: lush alpine meadows for feasting mingled with craggy cliffs for escape and shelter. The NPS planted a salt lick there earlier to attract goats for capture and research purposes. The salt leached into the soil, encouraging the goats to dig for their favorite seasoning, especially in the late spring, exacerbating their impact.

Klahane Ridge is quieter now. The last time NPS checked, two billy goats had been seen in the area. I kept walking a little further, looking closer at the lines and circles scrawled underneath “While You Were Out.” Though I didn’t explore very far, I didn’t really see what was wrong. I also didn’t know what I was looking for. Goat impact isn’t always obvious to the public. Without a trained eye, you still see vegetation, not realizing that it’s altered by disruption. Some wallows look like sandtraps while others just look like smudges of erosion, not startling without a lesson in their significance.

My friend called over to me. “You’re going to like this.” I tried to quietly gallop over to his patch of stale, crusty snow. Across it trailed the repeated prints of two big lima beans touching head to toe. The series of prints stamped a gentle arc across the snow remnant, then disappeared at the start of the rocky soil. I went further and explored. No goats. Just ghosts.

I tried again later. The map-maker also told me that some of the goats were removed by helicopters, airlifted like stork-babies away from their mountainside, and taken to Woodland Park Zoo. So Christmas Day, when Seattle was coated in a drizzly film, I went to the zoo. The goats were part of the Northern Trail Exhibit, where a noteworthy

effort has been made to simulate the animal's natural environment, albeit on the scale of a postage stamp. The grizzly was pacing back and forth on his lush, green simulated hill next to his simulated mountain creek. I wound through the maze of the exhibit. I finally saw the goats at a distance, poised, motionless on their fabricated rocky mountainside. These goats, I was told, were sterilized to keep them from over-populating their enclosure. These goats, at least, would benefit from foresight.

So I've only seen the goats up close on television, kicking up balls of dust as they clatter up steep mountainsides to flee from the camera-toting helicopter, or standing family portrait-style, the white robed stocky adults and the gangly cottony kids, posing for the newsreels about the destructive vegetarians.

Television news shows and popular magazines have featured the goat population in Olympic National Park. They are a lively subject of discussion in academic and scientific journals. After twenty years, the question of if and how the goats should be removed has hardened into a highly politicized and emotionally charged conflict between supporters of shooting the goats to protect the sensitive endemic plants, and opponents who feel such an action is tyrannical and unjustified.

Scientists can't prove the goats will exterminate the seven endemic plants in goat habitat. The possibility just clearly exists. The goats dustbathe and wallow, pawing up clouds of dirt over their bodies to cool down and fend off insects in the summer, often displacing several tons of soil per wallow. In addition to disrupting soil, goats consume subalpine and alpine plants, including the sensitive, threatened endemics. If the mountain goats were considered native, this activity would be considered a natural disturbance. And Olympic staff can't entirely prove the goats never wallowed in the Olympic mountains before they were brought in for a little hunting fun. However, geological history and the

early documents from scientific expeditions where groups say they didn't see any goats, or don't mention goats at all, support that assumption. The park also appears to be geographically isolated from colonization from other regions, judging by the topography of the peninsula and the several occurrences of endemism in Olympic plants and animals.

Current park policy calls for restoring, where possible, the native composition of the ecosystem. This includes removing introduced species, like mountain goats, who threaten native communities. The National Park Service asserts that the goat is exotic, and so the removal of goats from sensitive alpine vegetation areas is logical NPS policy interpretation. But removal is difficult when the selected removal method is lethal and the "problem" animal is an intelligent, sentient animal, as endearing as the mountain goat. Also, defining an exotic is easier when the animal is indisputably from a distant foreign land or when one agent is making the decision. It can become difficult to define an animal as exotic under less clear-cut circumstances, with several participants.

An animal rights group brandishes a couple of articles from the late 19th century that mention goat sightings and sees the Olympic National Park staff as ecological fascists. An anthropologist juggles a few theories and assumptions and asserts the possibility that the goats hung out on the Olympic Peninsula 200 to 10,000 years ago. A native plant protection group demands that the goats needed to be shot yesterday. The state Department of Wildlife, which manages the bordering hunting lands, shrugs at the park's science, disagreeing with the botanically-based conclusions that all of the game animals need to be deported. Some members of the public don't understand the emphasis on non-native removal when human impact remains relatively uncontrolled. Writes one community member to a local paper, "I would have to suggest that no more time and money be spent on the goats unless there is some conclusive evidence that they are

destroying people, causing mud slides, cutting down large trees or contributing to the decline of salmon.”<sup>3</sup>

So now the goats are at the center of a controversy raising difficult questions about the true meaning of “exotic” and managing what is deemed an exotic on public lands: How should a native or an exotic be defined? Where should the geographical, temporal and empirical lines be drawn in the sand? How will that determine an animal’s fate? How strictly can land managers strive to restore and protect an ecosystem shared by different mandates? How should we “manage” animals who are in places due to our mistakes or decisions? The National Park Service, other agencies and interest groups that influence decisions affecting wildlife will answer these questions in a variety of ways. When government manages habitat and wildlife, the “definition” of an animal is determined by an agency’s policies and mandate. On the other hand, animal protection advocates may critique policy applications which seem “slapped on” to complex problems involving animal welfare.<sup>4</sup>

In simple terms, this is a story about how our characterization of an animal determines its destiny. This is a classic wildlife management controversy over the role of an animal and the role of a public land. These arguments over removing mega-charismatic immigrants tend to be highly charged emotionally and politically, and probably always will. Preservationists see an ecologically interloping quadruped, hunters see perfectly good game animals and animal rightists see individual animals, unlucky consumers. The decision to define wildlife by management categories, manipulate the size or distribution of a population, to hunt or protect individual animals, infers a value position about human relationships to wildlife, and expresses certain beliefs about the appropriate human uses of animals.<sup>5</sup> Though our definition of an animal may be rooted in scientific or philosophical

terms, there is no absolute definition when an issue involves values, whether the priority is preservation of biological diversity, animal rights, viewing opportunities or hunting availability.

It's amazing to see how differently groups and agencies, that is, humans can look at a single animal. This is a difficult issue; in resolving it, we are tempted to be quick and decisive before other considerations seep in and muddle the clarity. One ranger's favorite story (he told it to me twice with the same chortle), was how when he would give his goat talk to the Elderhostel groups, a sweet old bluehair would raise her hand and in a quavering, indignant voice say, "Why don't you just shoot the bastards?" I think he enjoyed the story for it made the issue, for a moment, seem simple. Most of the rangers I spoke with were tired and jaded. They felt the goats should be shot, but not everyone was comfortable with the issue. One biologist who had worked on the issue since the late 60's grumbled about Olympic National Park staff being depicted as "soul-less", devoid of care for the animals they chose to kill, after spending several years painstakingly laboring over alternatives. Shooting sounds clean and neat and cheap. It's a one-stop solution that doesn't require perpetual funding, research and removal efforts. Maybe it will make the political skirmishes slow to a scuffling and everyone will have to move on. Yet with all the vying agencies and interest groups, it just won't be that easy. "Pack it in, pack it out," will never be easily applied to animals.

This paper will explore the array of perspectives on native and non-native species illustrated in the Olympic mountain goat issue. I will show how official definitions are unclear and where more clarity is needed. I will then more closely examine the values that public lands are perpetuating, and discuss how to be responsible for species we're protecting *and* the individuals we're mixing in. Like any turbo-charged emotional issue,

the goats at Olympic National Park have been mainly discussed from the position of one particular agenda or another. It's important, however, to address both sides of the dilemma: protection of biodiversity and threatened species **and** consideration of the welfare of animals that *we* have "mis-placed". We're moving into a world of paradox. Right when we see the environment slipping between our fingers and stretching at the seams, we're ready to appreciate and salvage the remaining variety. And we're also trying to listen to the voiceless animals. But in cases like this it seems we can't do both. Environmental issues *are* ethical issues and we need to start choosing between firmly held sets of values to make difficult decisions about cleaning up some of the messes that we've made.<sup>6</sup>

## **CHAPTER ONE**

### **What Are Exotics? Why Are They a Problem?**

**(In general and in national parks.)**

In 1936, a forester who was fond of the melaleuca tree flew over the Everglades area and dropped melaleuca seeds from his plane.<sup>7</sup> Today, the Australian melaleuca tree is spreading through Florida's wetlands at the rate of 50 acres a day.<sup>8</sup> The South Pacific brown tree snake was accidentally introduced as a stowaway to the Pacific Islands, including Hawaii and Guam. The snake has caused power outages after slithering around power lines, and wriggles its up to eight foot frame into homes through air conditioning vents, sewer lines, and household plumbing, causing apprehension for some of the okoles of the tourist industry.<sup>9</sup> The snake, now established on Guam, has effected significant social costs and destructive ecological consequences.<sup>10</sup> Kudzu, originally promoted by the U.S. Department of Agriculture in the 1940's for erosion control and forage, now is outcompeting other vegetation throughout the southeastern United States.<sup>11</sup>

#### **What are exotics?**

A 1993 publication on non-native species put out by the Congressional Office of Technology Assessment chooses the term "non-indigenous species", or NIS, to describe: "The condition of a species being beyond its natural range or natural zone of potential dispersal; includes all domesticated and feral species and all hybrids except for naturally occurring crosses between indigenous species." "Natural range" is defined as "The geographic area a species inhabits or would inhabit in the absence of significant human



influence.” The strong points of this term and definition are its specificity and ecological, rather than political, basis. Gerry Wright gives a more general definition but still strives for an ecological focus: “plant and animal species that inhabit areas in which they did not evolve or spread to naturally.” He goes on to explain that these new inhabitations are typically human caused.<sup>12</sup>

Non-indigenous species in the United States are the result of five hundred years of exploration and colonization. Species have been carried to formerly inaccessible new homes by sailors, traders and colonists. More recently, sportsmen have moved game species to improve hunting and fishing. Agriculturists have established domestic animals and crop plants at new sites. The mixing of flora and fauna in new combinations and locations during the past five centuries led to consequences that affect the whole country. In the national parks, native species have been reduced or even driven to extinction by the presence of NIS.<sup>13</sup>

### **Why are they a problem?**

Exotic species, often unchecked by the predators, pathogens and parasites that plagued them at home, can outcompete native species in the new environment and destroy resources critical to the survival of indigenous species. Exotics can modify normal ecological processes or relationships, including predator-prey and herbivore-plant relationships; nutrient and energy cycles; and soil-building and erosion processes.<sup>14</sup> The impact of an exotic is not always dramatically apparent--they can cause ecological damage that is inconspicuous on a grand scale.<sup>15</sup> However, as ecosystems all over the world are already under duress, a new biological presence can be the last straw for some native species through predation, competition or alteration of the landscape.<sup>16</sup> Nine of eleven

species of forest birds in originally snake-free Guam that were around in 1945 are now extinct courtesy the brown tree snake.<sup>17</sup>

The Congressional Office of Technology Assessment has identified 4,500 foreign species that are new tenants in the United States, with about 15% known to cause economic, environmental or human health damage.<sup>18</sup> This century, 79 exotics have caused at least 97 billion dollars in damage.<sup>19</sup> The report estimates that a certain 15 species of plants, insects and disease-causing organisms that have been brought to the U.S. could cause up to \$134 billion in losses in the next 50 years. In 1993, 25 renowned scientists, including Paul Ehrlich and E.O. Wilson, signed a letter to Al Gore asserting that the integrity of the nation's ecosystem is "severely threatened by invasions of alien species."<sup>20</sup>

According to Science magazine, "as the pace of human commerce quickens, more and more stowaways are expected to arrive uninvited."<sup>21</sup> Conflicts involving exotic species will increase as human population grows and we continue to shave away habitats. Modern transportation will continue to facilitate new species combinations and interactions crawling through the window into our shrinking islands of preservation. As international trade and travel increase so do the opportunities for plants and animals to be moved to new habitats, a process OTA describes as "a game of biological Russian roulette."<sup>22</sup> Further, according to Pimm, mere resolve to change isn't sufficient. Even if the drive to introduce species is reduced, faster and larger volumes of international travel increase the probability of accidental introduction.<sup>23</sup> The report issued by the Congress' Office of Technology Assessment asserts that the spread of harmful exotics eludes attempts at control.<sup>24</sup> Due to the limitations of the current state of knowledge, it is difficult to predict the outcome of introducing a species, making it difficult to anticipate potential trouble.<sup>25</sup> Also, since most newly introduced species begin as a small population, the impact from a

population increase can be difficult to foresee. Some of the most harmful non-indigenous species have been imported purposefully, like kudzu, water hyacinth and feral goats, and the Olympic mountain goats, with no foreknowledge of negative impacts. At least 36 of the 300 weeds in the western United States were cultivated for crops and gardens.<sup>26</sup> However, only a small portion of exotic species are actually “bad” in the human frame of reference. Cattle, soybeans and wheat are just a few of the exotics upon which U.S. agriculture partly depends.<sup>27</sup> Nevertheless, of the 205 species that have become recently established (since 1980), over a fourth are deemed harmful by OTA.<sup>28</sup>

Most of the legislation and regulations addressing the introduction of foreign species are inadequate and inconsistent.<sup>29</sup> One of the problems with controlling exotic encroachment is that adjacent parcels of land sometimes have conflicting policies. As will be addressed later, this is an issue that comes into play with the Olympic Peninsula mountain goat population, managed by three different agencies.

Ecologists have studied introductions for decades, to better comprehend the machinations of an ecosystem by observing how exotic species perturb them. In discussing the powers of transformation of some NIS, the Office of Technology Assessment explains how some NIS “don’t merely compete with or consume native species, they change the rules of the game by altering environmental conditions or resource availability.”<sup>30</sup> However, of late, “they have approached the exotic species with a new urgency, increasingly alarmed at what invasion experts such as Ted Case of the University of California, San Diego, call ‘the homogenization of the world.’”<sup>31</sup> As the Office of Technology Assessment warns,

Many harmful NIS clearly impair biological diversity by causing population declines, species extinctions, or simplification of ecosystems. Moreover, the very establishment of a NIS diminished global diversity: as NIS like

- starlings, grass carp, and crabgrass spread to more places, these places become more alike biologically.<sup>32</sup>

Michael Soule, a prominent conservation biologist, sees the spread of NIS as the only high impact threat to biological diversity that affects both the richer and poorer countries at every level of organization, from single genes to whole landscapes.<sup>33</sup>

## **EXOTICS IN NATIONAL PARKS**

### **Overall problem**

Almost half of the currently endangered-or threatened species in the United States exist in the National Park System.<sup>34</sup> A study of twenty-four national parks in the Western United States and Canada showed twenty-seven mammalian species have gone extinct since the establishment of the national parks.<sup>35</sup> Mount Rainier and Yosemite national parks have already lost 35-40 percent of their species.<sup>36</sup> In a 1980 report to Congress, 300 NPS areas reported 602 cases where alien plants and animals were 'perceived threats' to the natural resources of the unit.<sup>37</sup> Only 30 percent of the species were adequately documented by scientific study.<sup>38</sup> In a survey of national parks taken in 1986 and 1987, NIS plants were listed as the most common threat to natural resources. NIS animals were the fourth most common threat. Parks in every regional area are affected.<sup>39</sup> There is an increasing need for intervention on NPS lands to stem ecological disruptions.<sup>40</sup>

Presently however, less than 1% of the NPS budget is spent on NIS. Only 6% of the total NPS budget goes towards resource management.<sup>41</sup> Nevertheless, recent priority has been placed on NIS projects, demonstrating a developing concern. 42% of NIS projects are actually being funded or ranked as highest priority unfunded projects as opposed to 36% of other natural resource management projects.<sup>42</sup>

Ungulates, the hooved vegetarians, are one of the most disruptive types of introduced species. These species can change the characteristics of an ecosystem, and can invade otherwise undisturbed native ecosystems.<sup>43</sup> A generalist herbivore can cause substantial community changes because the effects of the introduction become widespread.<sup>44</sup> Ungulates cause erosion, affect soil fertility and promote successful alien plant invasions, often allowing disturbance-oriented plant species to dominate plant communities. They also reduce total plant cover, which favors the better defended alien and disturbance-oriented species. Native plants are often defenseless against a new grazer, lacking protections like thorns and toxicity. High altitude species like mountain goats cause soil erosion in fragile alpine areas. After the damage is done, recovery is slow because alpine areas typically have shallow soil and short growing seasons.<sup>45</sup> Through consumption, trampling, wallowing and burrowing, herbivores cause death and injury to plant tissue, alter plant growth and reproduction and create an opportunity for disturbance-oriented species to invade.<sup>46</sup> Yet,

The role of large herbivores in shaping the species composition, structure, and function of ecosystems is still poorly understood. Until science identifies which components and processes are key to ecosystem dynamics, it will be difficult to design management actions to achieve this goal and especially difficult to define the approximate time scale.<sup>47</sup>

These are some of the reasons behind the National Park Service's concern about the mountain goats.

As species continue to dwindle in number and interconnections change in response to the mingling of native and non-native species, these dilemmas of picking and choosing between species, and defining the criteria by which to determine which to protect and which to remove will become more difficult. Simply preventing introductions isn't the only dilemma. Making choices about already established non-native species will potentially get

more complicated. In Big Cypress National Preserve in Florida, the Florida panther is an endangered species, the only confirmed breeding population is in south Florida, numbering between 30 and 50.<sup>48</sup> Two population centers are in the Big Cypress area. Any population trend is probably downward, due primarily to development and associated habitat loss.<sup>49</sup> European feral hogs, introduced by the Spanish in the 16th century, are the most common food source for the south Florida panthers, followed by white-tailed deer.<sup>50</sup> Feral hogs uproot extensive areas, potentially threatening native plants and archeological resources. Rooting could also disturb areas, thus allowing for exotic plant establishment. Negative impacts on native wildlife through competition and transmitting disease is also feared. Hogs are known to carry brucellosis and could infect the panther.<sup>51</sup> Of the 22 exotic animals collected in Big Cypress, hogs have the greatest impact on native species.<sup>52</sup> The Florida state historic preservation officer has recommended that the feral hog population be reduced, because of the potential damages from rooting.<sup>53</sup> However, National Park Service staff have decided that there is no current need for management and in fact are working to discourage hunting of the hogs on bordering lands as that would reduce the population available in the preserve and to the panthers.<sup>54</sup>

In the next chapter, I will discuss the particulars of the mountain goats' impact on the flora and fauna of its habitat in Olympic National Park.

## CHAPTER TWO

### **Olympic Mountain Goats as Case Study:**

#### **The Conflict Between the Plants and the Animal**

“Trapped by an experienced trapper in the Canadian Selkirks at Banff, the mountain goats were crated and shipped to Port Angeles, arriving here New Year’s Day. They were taken aboard a truck and released at a point on the Olympic highway where the white railing skirts the road. When the crates were first opened the goats refused to come out, being somewhat dopey from their long confinement. First one large one came out...the goat went up the rock cliff and found a crag satisfactory to him, and looked over Lake Crescent and surrounding country, going higher a short time afterward. Two other goats came out. One struck up the highway toward the fish hatchery and the other back toward Lake Sutherland. The latter scattered a road crew before he finally took to the hills. The last one went up the rock cliff and joined number one. Bringing mountain goats to this section comes about after planning of six years duration...Members of the game commission, officials of the forestry service and officers of the Klahhane club who have studied the habitat of the mountain goats all agree that the section back from Port Angeles is ideal for their propagation. There are many high peaks to which they can escape from their enemies, and to which the cougar will not go to battle with them. They are more wary than the other animals of the hills and are good fighters.”

The Murrelet, vol.6:10., 1925

“Twelve goats have been liberated within the past few years at the foot of Storm King on Lake Crescent. One band of seven, a part of which were kids, has been seen: also a band of five...People working and living there frequently see goats standing clearly outlined against the firs, the dark rock or sky. Also, they have been seen from planes...There were many who believed, at first, that the cougar would get all the kids, but apparently their introduction is and will continue to be a success.”

The Murrelet, vol.13:25, January 1932

I vaguely mentioned the project I was working on to Lyle. He thought for a moment and then said, “The goats at Olympic National Park. They’re invading the park and eating the vegetation.”

I bristled a little. “I prefer to think of them as introduced to the area. They didn’t really invade.” Lyle looked peeved.

“Tell that to the plants being eaten.”<sup>55</sup>

“Targets,” he said calmly. “The idea at the time was the more targets the better,” explained Victor Scheffer, a retired USFWS biologist. He was describing the logic behind the transplantation of mountain goats to the Olympic Peninsula in the 1920’s, then managed by the U.S. Forest Service. Four goats were imported in 1925 from British Columbia and eight more were shuffled in from Alaska a few years later.<sup>56</sup> The goats were traded for Roosevelt elk, one of the features for which Olympic National Park protection would later be established.<sup>57</sup> In 1938, 13 years after the shaggy mountain climbers were introduced with bullseyes on their rumps, Congress designated a substantial portion of the Olympic Peninsula as a national park.<sup>58</sup> The National Park Service now protected the mountain goats along with the other flora and fauna within the park borders. Goats turned from target to protected tourist attraction. The park was ideal goat real estate and the goat population flourished.

When the national park system was first established, parks were managed for the visual features and attractive animals. Yellowstone National Park was established in 1872 for the purpose of the preservation “of all timber, mineral deposits, natural curiosities, or wonders within said park.”<sup>59</sup> Joseph Sax further describes, “Most early parks were set aside by Congress for their scenery and curiosities, and they reflected the public’s fascination with monumentalism as well as their ignorance or naivete when it comes to biology.”<sup>60</sup> So it was okay when “bad” predators, like wolves, were shot to protect the “good” populations of the more cuddly herbivores, like elk and bison. It was okay to bring in new species to enhance the park where it was deficient, particularly in the form of fish stocking. In the mid 1930s, between 20 and 30 non-native species of fish had been permanently established in park waters. Some stocking took place in almost every park.<sup>61</sup>



A little later, the Congressional Organic Act of 1916 established a broader purpose for the new national park system. Parks were to:

“...conserve the scenery and the natural and historical objects and the wildlife therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This act can be and still is interpreted by some to encompass *all* pre-park wildlife. For some, mountain goats were “wildlife therein” upon the establishment of Olympic National Park.<sup>62</sup>

Since the Organic Act, the National Park Service policy has gradually increased its emphasis on the restoration of natural systems. In 1963, then Secretary of the Interior Stewart Udall appointed a special committee to review wildlife management. The resulting “Leopold Report” was a comprehensive examination of park wildlife management goals and policies and methods that would best accomplish those goals.<sup>63</sup> A. Starker Leopold stated:

As a primary goal, we would recommend that the biotic associations within each park be maintained, or where necessary recreated, as nearly as possible in the condition that prevailed when the area was first visited by white man. A national park should be a vignette of primitive America..<sup>64</sup>

Leopold was suggesting that a “pre-Columbian vegetation mosaic could be restored by reinstating natural disturbance processes, particularly fire, to park landscapes...The report provided a stimulus for a positive shift in park, and later wilderness, policy by emphasizing the need for active management.”<sup>65</sup> Active management includes among other things, re-introducing predators and removing introduced animals where possible, to restore the “ecologic scene as viewed by first European visitors.”<sup>66</sup> Leopold also stated, “Where animal populations get out of balance with their habitat and threaten the continued existence of a desired environment, population control becomes essential.” and

Where other methods of control are inapplicable or impractical, excess park ungulates must be removed by killing.... control of animal populations in the national parks would appear to us to be an integral part of park management, best handled by the National Park Service itself.<sup>67</sup>

and “Direct removal by killing is the most economical and effective way of regulating ungulates within a park.”<sup>68</sup>

The Leopold Report catalyzed the park service’s shift away from grooming parks for the visuals and the sexy animals. Leopold’s ideas weren’t radically new. In fact, his suggestions were echoes of observations and ideas which had been discussed for decades. But this time, the parks and policymakers listened. The new challenge for the national parks was to protect the present *and* restore the past. Leopold’s ideas were taken a step further in the 1970’s when the basic goals of natural resource management

...evolved into the refined ecological perspective that is prescribed by the Service today--the perpetuation of a park’s natural processes and total systems dynamics rather than the preservation of individual members of single populations of related harvestable species...(replacing) the concept of preserving vignettes of primitive America at a fixed period in history which had, only a decade earlier, replaced the archaic concept of protecting only selected species.<sup>69</sup>

A report attached to House Resolution 10024, the 1938 enabling legislation of Olympic National Park (ONP) articulated the park’s purpose:

...to preserve for the benefit, use and enjoyment of the people, the finest sample of primeval forests of Sitka Spruce, western hemlock, Douglas-fir, and western redcedar in the entire United States: to provide suitable winter range and permanent protection for the herds of native Roosevelt elk and other wildlife indigenous to the area...and to conserve and make available the mountainous and coastal landscapes therein.<sup>70</sup>

In 1976 the park was designated by the United Nations Education, Scientific and Cultural Organization as a Biosphere Reserve, as one of the world’s major ecosystems, deserving protection of its genetic diversity while providing an area for environmental research and education. In 1981, ONP was deemed a World Heritage Site as one of the natural and

cultural properties of “outstanding universal value to mankind.”<sup>71</sup> The designating document described Olympic as “...the best natural area in the entire Pacific Northwest...[with] outstanding examples of on-going evolution and superlative natural phenomena.” The document continued to express concern over the fact that one of the main dangers to the area is “...oddly, one of its attractions--the mountain goat....their introduction...may be causing significant changes in the natural ecosystem.”<sup>72</sup>

The Olympic Peninsula is generally considered a geographically isolated region, or “biological refugium.” Ten million years ago, long before the mountain goat’s ancestor crossed from Asia to North America, the earth heaved up the Olympic Mountains. The range is isolated from other ranges by topography: the peninsula is surrounded by water on three sides--the Pacific Ocean, the Strait of Juan de Fuca and the Puget Sound. The lowlands of the Chehalis River valley spread forth from the south side.<sup>73</sup> As a result of this isolation, there are several native plant and animal species unique to the Olympic Peninsula, including “...nine species and varieties of plants that are found nowhere else in the world.”<sup>74</sup> There are eleven species of mammals native to the Cascade Range that are not native to the Olympic Range lying 120 kilometers away. Six of these missing species are characteristic of alpine and subalpine habitats.<sup>75</sup> However, humans manage to overcome such natural impediments to mix and match species. This century the range of mountain goats has been extended by human hands to parts of Oregon, Colorado, Nevada, Utah and South Dakota and in areas where they are non-native in Wyoming and Montana.<sup>76</sup> Besides the goats, the Olympic National Park has been embellished with other newcomers like starlings, pigeons, Norway rats, quail, pheasants, red fox, coyotes, porcupines, bullfrogs, and largemouth bass. There are also almost 300 transplanted plants, including aggressive invaders like reed canary grass, Canadian thistle and holly.<sup>77</sup> Post-

Columbian settlers are an easily forgotten alien also over-running the interior and exterior of many national parks. They, like the goats, clomp on high-country terrain, especially low, scrubby vegetation and ridgetop alpine cushion plant communities. Damage amassed in a couple of years can take up to 100 years to bounce back and only then when reparation is possible.<sup>78</sup>

Mountain goats are “perfectly adapted to the high mountain meadows of Olympic National Park”<sup>79</sup> They tend to summer above 5,000 feet and winter down to as low as a few hundred feet above sea level.<sup>80</sup> In 1989, they occupied 30 to 40 percent of the park, including most of the region’s alpine meadows and about 70 percent of the subalpine zone.<sup>81</sup> The goats eat alpine and subalpine plants. They leave their mark on alpine and subalpine vegetative communities by “feeding, bedding, trampling, wallowing, and dust bathing with resulting soil loss and the changes in the natural subalpine community.”<sup>82</sup> By “grazing and trampling rare native plants, and creating trails and wallows that result in extensive alteration of the fragile alpine habitats...[mountain goats]cause considerable habitat modification, compete with native fauna, and alter natural ecosystems”<sup>83</sup> The redistribution of nitrogen from their excrement can change how nitrogen is cycled through the ecosystem and this could affect the productivity of local plants.<sup>84</sup> They reduce moss and lichen cover, increase soil disturbance and expose mineral soil through their wallowing and trampling. As a result of these actions, the vegetative communities change. Ruderal species increase and palatable species decrease.<sup>85</sup> Mountain goat grazing alters climax subalpine communities by reducing the dominance of several species.<sup>86</sup> These areas dominated by disturbance-oriented species differ from surrounding vegetation.<sup>87</sup> Though other large herbivores (Roosevelt elk and black-tailed deer) cause disturbance through trampling, bedding, grazing, trails or wallowing, medium to high goat densities exert a

significantly higher impact, especially on rocky outcrops.<sup>88</sup> Fragile alpine communities are particularly vulnerable to mountain goat impact, “characterized by short growing seasons, low plant productivity, and shallow soils.”<sup>89</sup>

Unfortunately, 43% of the 77 rare plants found in the park occur within mountain goat summer range.<sup>90</sup> Some of these plants, particularly at the higher elevations, may be considered ‘ecologically naive’<sup>91</sup>, never having encountered a mountain goat’s impact before. Three peninsula endemics, Piper’s bell flower, Olympic Mountain groundsel, and milkvetch, and one endemic shared with nearby Vancouver Island, Olympic Mountain aster, have been disappearing down goat gullets. The Olympic Mountain milkvetch is found only in the Northeast Olympic Mountains. The Washington State Natural Heritage Program calls it “threatened” and it qualifies for Category 1 listing by the Endangered Species Act. A Category 1 candidate is under review for listing as threatened or endangered and the U.S. Fish and Wildlife Service has enough information to support the proposal to list, but other species have higher priority.<sup>92</sup> The total population of this species numbers between 3,500 and 4,000 individuals. All 12 of the subpopulations of milkvetch are in prime mountain goat summer terrain, and 11 are within the park.<sup>93</sup> Goats injure and kill milkvetch plants by grazing, trampling and wallowing on them.<sup>94</sup> Goat-caused mortality of milkvetch plants was documented even at medium goat densities. “Grazing was evident on up to 72% of the milkvetch plants in some plots in a given year; much of the impact from severe grazing.” Schreiner also documented goat wallowing causing *Astragalus* mortality.<sup>95</sup> In long-term monitoring between 1985 and 1991, and after most of the goat removals, the milkvetch population sagged briefly and then returned to its original size. However, results remain inconclusive because all measurements were taken in the midst of the removal period, and there are no pre-goat measurements for

comparison purposes. Milkvetch density was much lower where goat density was highest, but milkvetch is so rare that without a pre-goat frame of reference, a solid conclusion couldn't be drawn.<sup>96</sup> Ed Schreiner suggests that maximum milkvetch population recovery from present impacts would probably require 25 to 100 years to recover, depending upon the site.<sup>97</sup>

Wallowing is the other high-profile goat activity. Black-tailed deer and Roosevelt elk also disturb the soil, wallow and bed, but on a smaller scale than the goats.<sup>98</sup> A wallow is typically “a flat spot on a slope where vegetation has been eliminated. Mountain goats scrape all of the surface material away and any rocks and stones.”<sup>99</sup> Mountain goats earnestly dustbathe in the summer, scooping up soil and showering it over their bodies to cool off on hot summer days and to fight off annoying insects. Wallowing disturbs soils and creates mineral substrates for colonization by plants. Ruderal plant species that thrive in response to soil disturbance begin to colonize the wallow edges, while the originally dominant alpine and subalpine species decline.<sup>100</sup> This disruption also reduces the total amount of habitat for plant species.<sup>101</sup> More than 700 wallows in Olympic National Park have been counted--most in medium and high goat density areas. Most were 1 to 3 meters square with the disturbed area extending another 2 meters downslope, often created over a single season with several uses.<sup>102</sup> However, there have been some larger wallows with one as large as 230 square meters.<sup>103</sup> The largest wallow discovered displaced approximately 45 tons of soil.<sup>104</sup> Usually on a steep slope, a wallow, in breaking the vegetation cover, accelerates soil erosion.<sup>105</sup> If the goats were removed, “Significant soil restoration would eventually occur, although soils recover at a very slow rate, especially in alpine areas where steep topography and cold temperatures inhibit soil genesis.”<sup>106</sup>

Another part of the problem is that mountain goats aren't picky eaters. Goats are generalist herbivores, able to consume most, including rare, plant species.<sup>107</sup> Thus, mountain goat numbers are not directly checked by the lower abundance of threatened, rare and sensitive plant species. In other words, there is no feedback loop to control mountain goat increases in the face of a decrease in the number of rare plants. If it's a plant, they're likely to eat it, "from coniferous trees to ferns."<sup>108</sup> Goats pick their habitat more for its physical features than the specific food selection. When they stake out habitat, it appears that the mere availability of plant resources was more important than a hankering for a particular type of plant.<sup>109</sup> As Schreiner described, goats "have an almost psychological attachment to rock," and leafy greens are a secondary consideration. Rock outcrops are needed for quick getaways and that combined with areas with late melting snow for thermo-regulation seem to be the most important criteria for habitat selection.<sup>110</sup> Vertical cliffs and rocky bluffs are key features for mountain goat survival as havens from predators, free of deep snow and offering food out of reach of other herbivores.<sup>111</sup> And, because of their attachment to rocky outcrops, goats still substantially grazed in such areas even at lower population levels.<sup>112</sup> This unique access to such areas means that "...fragile alpine, subalpine, and rocky outcrop vegetation receives a disproportionately high amount of goat use."<sup>113</sup> So mountain goat impact is most conspicuous in areas next to rocky outcrops. Plant communities shift "in favor of disturbance-oriented plant species, including western yarrow, waterleaf and Indian thistle." Foraging and increased slope movement due to trampling cause these changes.<sup>114</sup>

Klahhane Ridge was, at one time, the site of the highest concentration of mountain goats in history. Vegetation studies indicated that mountain goat grazing and wallowing changed plant composition, increased areas of bare ground and reduced the biomass of

endemic plants in the subalpine areas. And, vegetation studies done at Klahhane Ridge suggested that the goat density had to be substantially reduced before “appreciable recovery of plant communities could occur.”<sup>115</sup> Goat use has been detected even at low goat density, and park researchers expect that vegetation impacts occur at low densities though such impacts haven’t been quantified.<sup>116</sup> In 1988 and 1990, even though the goat numbers had been reduced, evidence of goat use was still visible, including consumption of two endemics.<sup>117</sup> From the series of removals and studies, park scientists have concluded that “...virtual elimination of goats will be required to appreciably reduce grazing and trampling impacts on plant species in preferred goat habitat.”<sup>118</sup>

The impact of mountain goats on other animals isn’t a known quantity, but guesses abound. The park staff did not directly observe and so could not accurately determine which herbivore species was responsible for consuming which plants. Herbivorous sign was used to infer the responsible species, but without solid accuracy.<sup>119</sup> According to herbivorous sign, mountain goat, black-tailed deer and marmot territory overlap significantly. National Park Service studies indicate that there is broad overlap in the vegetation used by the various park ungulates in the summer, though this was not sufficient evidence for resource competition. Winter observations showed little overlap. There is scanty evidence for actual resource competition between the goats and other large ungulates.<sup>120</sup> Since it is clear that goats alter the flora and become locally dense, even without specifically determined impacts, park scientists anticipate goat presence somehow impacts native residential fauna.<sup>121</sup> Despite the lack of concrete evidence and research, the DEIS does state that “...where their activities overlap with goats and similar plant foods are used, it is reasonable to assume that such species could benefit from the removal of a possible competitor such as goats.”<sup>122</sup> There is a particularly strong possibility for



interaction with the small mammals and birds that also use rock outcrops with sparse and altered vegetation. Ed Schreiner says,

‘When you alter community composition...you always affect other herbivores--insects, small rodents, deer and plant-pollinating birds. And when you affect those, you affect carnivores, creating a domino effect. When you introduce an exotic species, you’re playing ecological roulette.’<sup>123</sup>

But this “can’t be proved empirically.”<sup>124</sup>

According to scientists at Olympic National Park, there’s a long-term problem with the continued presence of the mountain goat. They can’t guarantee that the goats will gobble or smooch the last individual of a rare plant species, but they do see goats breaking up and reducing populations and habitats.<sup>125</sup> They note in the Environmental Impact Statement that fragmentation and reductions of populations increase the risk of extinction. Also, “extinction often involves a combination of forces acting on of small, fragmented populations.”<sup>126</sup> The resource management team at Olympic doesn’t pretend to have the facts to draw an accurate flow chart predicting exactly what goat presence or absence will do. However, they have enough confidence in their assumptions to fight to have the goats removed. Their inability to make definite statements and predictions makes their argument less compelling for groups not supportive of goat removal. Assumptions are also difficult to make due to the scientists’ lack of “pre-mountain goat measurements”.<sup>127</sup> Also, a lot of the endemic plants have slow reproductive rates. Park scientists feel long-term monitoring is necessary to get a feel for long-term populations trends.<sup>128</sup> For more accurate foresight, long-term studies of individual taxa are required--but the enormity of that task with the lack of resources, including staff, time and money, makes that daunting.<sup>129</sup> Furthermore, some park staff fear the time for more research will allow the problems time to worsen.

What also makes the situation difficult to forecast is the significantly reduced population of mountain goats. Mountain goats typically don't rebound quickly from heavy reductions. The decline experienced by this population makes Doug Houston, research biologist with the National Biological Survey stationed in Olympic National Park, reluctant to predict future responses, knowing that it has always been tricky to manage a goat population successfully for sustained yield because goats are easily overharvested.<sup>130</sup> Yet, they do have certain capacities to reproduce in the face of population reduction, such as faster growth, younger breeding ages and an increase in twinning. But it's not just a numbers game. The overall numbers may be low but it is the actions of the individual groups that may still impact local areas. Goats group together in independent small groups called nodes, and it's difficult to predict accurately the impact of one node to the next, as each node does different things.<sup>131</sup> Also, some of the plant taxa are so rare that a low number of mountain goats could still place plants at risk.<sup>132</sup> Park scientists estimate an unchecked mountain goat population would eventually grow to approximately 1,400 goats, which would lead to modification of the vegetation until some kind of equilibrium was achieved. The resulting effects on the endemic and rare plants is pretty much an unknown quantity.<sup>133</sup> But park scientists feel that it's safe to say "...increased numbers of goats could cause some, or all 33, taxa of rare/endemic plants to become extinct at Olympic if [the mountain goat population remained and grew]."<sup>134</sup>

Enough research has been done to alarm the park scientists, but not necessarily to convince everyone. In Ed Schreiner's words, "Biomass won't change, but the system or community will."<sup>135</sup> Wright asserts that one of the major problems with the goat issue is that a casual observer won't detect ecological damage like changes in plant dominance and species composition.<sup>136</sup> So it has been difficult for the normal observer to react to the

scientists' cause for alarm, because for many, "If it's green, it's fine."<sup>137</sup> Further, scientists cannot guarantee the ultimate eventuality of extinction. But the Office of Technology Assessment warns,

Overemphasizing the significance of extinction as a consequence of NIS tends to divert attention from their other very significant and unambiguous environmental effects. Species extinctions do not have to occur for biological communities to be radically and permanently altered. Nor are extinctions necessary for the United States to experience a significant decline in the abundance, diversity and aesthetic value of its biological resources as populations of indigenous species shrink and numbers of NIS increase.<sup>138</sup>

### Chapter 3

#### **Getting the Goats of Olympic National Park: Technology, Firepower, Science and Bureacracy**

"These goats have rights and they have feelings," said Wayne Johnson, with the Northwest Animal Rights Network, "and if the lady in back wants them removed, she should go up there, look them each in the eye and pull the trigger herself."

"That's why they were put out there in the first place," responded the "lady in back," Polly Dyer, president of the Olympic Park Associates.

Then, from the front of the room again: "The Constitution says, 'We the People,' not 'We the Goats,'" said Ken Shirey, a man who likes to hunt.

They were all talking about the Olympic National Park's mountain goats and what to do about them.

In all, about 40 people gathered at a Tukwila motel last night to review the sort of technology, firepower, science and bureaucracy that *Homo sapiens* might require if they decide to exert their authority over *Oreamnos americanus*.<sup>139</sup>

#### **Science and Bureaucracy**

In the late 1960's park staff began to notice changes in the alpine vegetation in mountain goat habitat.<sup>140</sup> In the 1970's, Olympic National Park staff and graduate students began studying the goats' impact on the vegetation and the potential threat to the sensitive, endemic plants.<sup>141</sup> The National Park Service started edging towards a plan of

action in the 80's. From 1981 to 1995, the issue was cycled through two environmental assessments and most recently an environmental impact statement released in March 1995.

Between 1981 and 1989, under the provisions of the two environmental assessments, the National Park Service captured over 600 and actually removed 407 goats for research and/or population reduction. 360 were captured and translocated, 28 suffered capture related mortalities and 19 were shot as specimens. There were also 3 known illegal kills, and 111 goats were killed by recreational hunters outside the park.<sup>142</sup> Based on the 1981 Environmental Assessment, the National Park Service removed some of the goats as part of an experimental management plan. The experimental management plan was basically a test drive for the various methods of goat removal, including sterilization. Research was also done on goat dispersal and vegetative impact.<sup>143</sup> This stage was finished in 1985.<sup>144</sup> Park staff perceived the goats to be changing the sub-alpine plant community and decided that, in order to uphold Congressional mandate and resource management policy, goats needed to be moved out. A second environmental assessment was issued in 1987 to implement an operational management plan and solution. The shaping process behind this one brought everyone to the table, including the Washington Department of Fish and Wildlife, the Forest Service, the Native Plant Society and the Fund for Animals as members of an advisory committee to monitor the program.<sup>145</sup> Not surprisingly, the agencies managing the bordering lands had different agendas. Neither the Washington Department of Wildlife nor the USDA Forest Service would support the NPS in eliminating all goats in the park.<sup>146</sup> The Washington Department of Wildlife and the USDA Forest Service were willing to support the NPS if Olympic Peninsula goat hunting was preserved and if the goats were live-captured for transfer into native ranges in Washington.<sup>147</sup>

Public interest groups varied in their perspectives at the 1987 Environmental Assessment hearings, with particular debate surrounding the issue of how the goats should be removed.<sup>148</sup> The Washington Native Plant Society felt it important to eliminate the goats entirely, including from the eastern edge of the park, which bordered lands managed by the Forest Service and the Washington Department of Fish and Wildlife because that area contained some of the most valuable plant habitats.<sup>149</sup> Fund For Animals supported non-lethal measures. Hunting groups also opposed the eradication of park mountain goats which would reduce the huntable population on bordering lands. However, they were also pushing for the right to shoot the goats, should they be eliminated from the park.

The National Park Service finally decided to remove all the goats from the core population area, first through various live-capture techniques and finally through shooting when live-capture became too expensive, ineffective or hazardous.<sup>150</sup> The population which flowed in and out of state-managed hunting lands, where goats are bow hunted, would only be controlled, not eliminated. This resolution was a product of the superintendent wanting to act and to avoid the impediment of a significant stew. The lively debates, according to Carlquist, fueled the compromises which were "...perceived necessary by managers to reconcile conflicts between National Park Service management objectives and concerns of various interest groups."<sup>151</sup> Some park personnel have seen it as melting under political heat. Biologically, it was seen as the wrong decision.<sup>152</sup> According to Shelly Sparhawk, the writer of the following Draft Environmental Impact Statement, "Some would say it wasn't even a compromise."<sup>153</sup> Controlling the goat population on the eastern border was particularly contentious for a few reasons. First, the vegetation in that area contained the highest density of rare plants in the whole park.<sup>154</sup> Secondly, controlling the population would be difficult. The Olympic mountain goats had

already proven difficult to track and to count. To “control” the goats on a regular basis on the border would be a costly proposition, priced around 20,000 dollars a year. Because money is scarce for the Park Service and border control would be an expensive task yielding small returns, funds would potentially be shoved in another direction. Also, goats could begin to re-colonize the park. “For reasons of cost and the likelihood of shifting budget priorities over time...this program could easily shift from the proposed annual sustained control to occasional sustained control by default,”<sup>155</sup> opening up an opportunity for goats to re-colonize the park.

Nevertheless, the program was implemented and set for completion in 1992. Based on earlier research on the viability of various live capture methods, dart gunning with immobilizing drugs and net-gunning from helicopters were the selected techniques.<sup>156</sup> For two years, goats were darted, sling-loaded and packed in snow and cocktail ice for road trips to areas where they would not be considered an “unwelcome addition.” Ironically, they were travelling in many cases to areas where goats would be hunted. Other goats were sterilized or shot as biological specimens. Park staff planned on removing 200 goats between 1988 and 1989 and holding capture-related mortalities at 5%. In 1988, 80 goats were removed with 8.7% being lost to capture-related deaths.<sup>157</sup> In 1989, some of the capture attempts were made in more difficult terrain.<sup>158</sup> Only 67 goats were removed with a 19% mortality rate.<sup>159</sup> Several goats died from the stress and mishaps during the trapping and airlifting.<sup>160</sup> Increasingly elusive goats in precipitous terrain increased the hazards of the relocation program for both the helicopter crew and the remaining goats. In 1990, the live capture operation was stopped, the methods deemed too risky to the capture team<sup>161</sup> Relocation was also very expensive, costing more with the increasing reduction of the goat population, finally reaching nearly \$1,000 a goat.<sup>162</sup> A panel of

scientists concluded that birth control techniques were impractical and inefficient as a long-term and comprehensive solution to goat removal. The park concluded that they were at a live-capture impasse. But shooting the remaining population was a hot potato and the superintendent, Maureen Finnerty, anticipating controversy, already hearing murmurs of litigation from Fund for Animals, stepped up the approach to the problem with an EIS.<sup>163</sup> The EIS, shuffled through four years of starts and delays, was released in March 1995.

In the meantime, the goat population continued to decline. ONP research staff explain that harsh winters, the removal of lactating nannies, and the general difficulty of taking accurate censuses of a mountain goat population all contributed to the apparent decline. Today, an estimated two to three hundred mountain goats are sprinkled in the alpine regions of Olympic National Park, the remains of an earlier population peaking at approximately 1,000 goats in the 1980's.

## TECHNOLOGY

The removal of herbivorous mammals has often proved challenging and expensive.<sup>164</sup> Mountain goat population dynamics are unpredictable, making removal programs difficult to assess and prescribe. Uncertainty in the population estimate translates into uncertainty over the needed scale of removal efforts.<sup>165</sup> Mountain goats reside in hard to reach places. Goats dance on sheer rock precipices, daunting to other ungulate and bipedal users of the park. They are remarkable climbers, equipped with "A compact, muscular body and short, powerful legs."<sup>166</sup> Yearling mountain goats at the Woodland Park Zoo "have been known to scale eight-foot-high chain-link fences with comparative ease; an overhang is necessary to prevent escape."<sup>167</sup> The remaining sub-



populations are less accessible and dense than before. As a result, a helicopter is necessary for any removal plan, and more captures and removals are going to be trickier.<sup>168</sup>

There is also no clean, cuddly form of removal that is truly humane and truly feasible. As at the 1987 Environmental Assessment hearings, part of the debate surrounding the mountain goats has revolved around how the goats should be removed. It has become not only a practical and political question, but also an ethical one. For some, the bottom line is efficiency and cost. For others, humane management mandates non-lethal practices, or no management at all. Still others discuss humane management as a choice between bullets. Live capture methods are popularly supported, but in this case, they tend to be less friendly to the goat than many people realize. This is the case for several reasons. Prior to removal, the goats are tracked and darted. Darting a goat from a helicopter is a relatively easy task, but it's not easy on the goat. "Mountain goats are easy to approach for darting from a helicopter, but difficult to control and herd away from hazards during the 30 seconds to one minute required for drug induction."<sup>169</sup> One of the problems lies in the goat's natural response of fright and flight. Catching mountain goats by using drugs is tricky because the animals normally respond to danger, like a noisy helicopter, by seeking higher ground. In rugged mountain terrain, drugs would dangerously disorient the goats or make them uncoordinated.<sup>170</sup> As the live capture program continued into 1989, there were increasing numbers of treacherous situations. Capture attempts were sometimes launched in more difficult terrain than 1988 and mortalities increased, mostly from falls sustained during drug induction or netting.<sup>171</sup> By 1990, the staff had captured most of the goats and the remaining animals were in more rugged terrain. Further removal would require close passes with helicopters and the drugged animals continued the risk of stumbling off precipices.<sup>172</sup>

Another problem with live capturing some mountain goats is their natural reaction to being tracked by a helicopter and darted: lethal terror. The "...stresses of pursuit and handling caused several goats to develop a reaction called 'capture myopathy', in which lactic acid levels in muscles surge to levels that can lead to paralysis and death."<sup>173</sup> It's the result of the psychological stress, extreme physical exertion and increased body temperature that occurs during the trauma of stress and handling which cause muscle exhaustion and lactic acid buildup leading to fatal muscle degeneration and paralysis.<sup>174</sup> The National Park Service started to face the fact that these methods were dangerous and were beginning to be dishearteningly counterproductive. Paul Crawford explained: "One of the main reasons we cut out live capture was that it just seemed inhumane. If you're going to try to live-capture the goats in order to avoid shooting them and end up losing one fifth of them anyway, it starts not making much sense."<sup>175</sup>

There were also some traumatic effects on the goats left behind. Without close scrutiny, it's difficult to distinguish between male and female goats. When goats were spotted and darted, their gender wasn't always known. Furthermore, helicopters fly in the brief Olympic summer, when goats are more visible, which is the same time that nannies give birth to kids.<sup>176</sup> From 1985-1989, 66% of the 102 captured adult females were lactating, leading to the probable death of related kids and possible deaths of some yearlings. Furthermore, a live capture program seems a little paradoxical when most of the goats were taken to hunting areas. More than 300 goats have been live captured and removed from the park. Most of these goats have been given to game departments of surrounding states for restocking ranges.<sup>177</sup>

Contraception has been examined as a gentler way to remove the goats. In 1992, the National Park Service set up an independent panel of five scientists (wildlife biologists,

reproductive physiologists, and veterinarians) to look at the viability of birth control as a management tool.<sup>178</sup> In 1993, the National Park Service requested a follow-up from the panel members regarding new advancements in contraception. In 1994, during the preparation of the Draft Environmental Impact Statement, the panel members were again asked for assessments of the applicability of contraceptives for control or elimination of the park mountain goats. Four additional scientists were also asked for similar assessments at this time, including their evaluations of the 1992 and 1993 reports from the original panel.<sup>179</sup>

Jay Kirkpatrick, one of the scientists on the original panel, was disturbed by how the ONP superintendent told him and the other scientists that they were to primarily discuss contraception's capacity for elimination, not control in 1992. He concedes that this mountain goat population could not be eliminated in less than one hundred years with the use of contraceptives. The involved scientists still addressed the possibility of combining contraception with lethal control if the NPS was willing to consider reducing and controlling the population, not just elimination. Dr. Jessup, in his 1993 follow-up said,

I do believe the (sic) contraception, even limited to those currently available...has potential to help control mountain goat populations...consider combining several tools including local population reduction by shooting and/or removal in sensitive areas, and contraception with the goal of reducing and controlling mountain goat populations.<sup>180</sup>

The scientists were divided as to the promise held by pending contraceptive technology. Dr. Robert A. Garrott claimed, "...it is unrealistic to expect current contraceptive technologies or those that may become available in the near future to effectively **reduce** the population."<sup>181</sup> However, R. Bruce Gill explained,

In our own research with hormonal toxins, we are on the threshold of producing an effective contraceptive which will sterilize treated individuals for a lifetime with a single injection...minute enough to encapsulate the

drug into ‘biobullets’ which can be remotely delivered. These developments suggest that the conclusions of your review ought to be considered very tentative.

Dr. Robert Warren judged:

We are no closer to having a proven, one-shot, permanent sterilant available for field application than we were back in 1992...practical, field-level, population-level, safety and budgetary limitations that exist at Olympic National Park...Given these concerns for safety, cost, and practicality, my opinion remains unchanged on the use of contraceptives in controlling mountain goat populations in ONP.<sup>182</sup>

Dr. Dale McCullough anticipated mitigating factors that would offset the progress in contraception: “It is virtually certain that the technology of contraception will advance rapidly in the next decade. However, this is not the bottleneck. The intractable problem is delivery under field conditions, and actually achieving the desired control.”<sup>183</sup> Garrott also warned,

The basic difficulty with the application of contraceptives...[is] the lack of a long-duration contraceptive agent or sterilant that can be delivered remotely and the extremely difficult logistics of administering any agent to a sizable fraction of the population.<sup>184</sup>

Current contraceptive technology was judged an impractical way to implement large-scale management because there is the difficult need to selectively capture and treat each animal, and repeat the process for the female goats, and

...there currently are no remotely deliverable contraceptives or sterilants available that have been proven to provide long-term infertility or permanent sterility in mountain goats. Even if such contraceptive or sterilant agents were available, the panel believes treating mountain goats in the park with these agents would represent a very expensive, never-ending program that, at best, would only partially control the population.<sup>185</sup>

One of McCullough’s main concerns was that despite the potential of contraception for control, “...the critical question is the degree of control, and the feasibility of using contraception to achieve ONP’s objective of reversing impacts on native plant species.

Contraception is extremely slow and inefficient at reducing populations that are already too abundant.”<sup>186</sup> He also touched upon the subject of potential suffering:

Projectile darts and biobullets, which usually have been thought of as benign, actually inflict wounds and trauma...It is true that most animals recover quickly with no lasting effects provided the projectile strikes a large muscle mass. Nevertheless, secondary infections are possible, and the projectile does inflict pain and suffering.<sup>187</sup>

The ideal sterilization method would be permanent, suitable for all age and sex classes and deliverable by dart from a helicopter, but unfortunately this technique does not currently exist.<sup>188</sup> However, there are also problems with the use of such a technique for this mountaineering population. The scientific panel agreed “...even [a ‘one-shot’ permanent sterilant]...will likely never eliminate mountain goats from ONP...” The panel members also came to the agreement that current contraceptive or sterilant technologies will not eliminate mountain goats from ONP within an acceptable time period that would avoid possible adverse ecological impacts of this exotic herbivore to native plant communities and rare plant species in the park.<sup>189</sup>

Shooting is the Park Service’s first choice. However, among other considerations, shooting the remaining population is going to have some of the same problems as other methods, particularly inaccessibility and difficulty with accurately monitoring the populations. According to the panel of scientists that looked at birth control as an option for population management:

Lethal shooting may be a feasible option for the elimination or control of mountain goats in ONP. Destruction of individual animals with a firearm is an effective population control option. When carried out properly by a trained marksman, shooting from a helicopter, although not popular with the public, can be considered humane. Treatment obviously is permanent, costs are relatively low, effectiveness is high, and hazards to NPS personnel are minimized (because effective ranges are greater than for dart guns). Lethal shooting also can avoid several issues of concern, such as

side effects to non-target animals, FDA approval, annual retreatment with contraceptives, and helicopter prop-wash interference with dart delivery. The single disadvantage to shooting is public reaction to the destruction of goats.<sup>190</sup>

They also note, “Indeed, even with the use of lethal shooting, it will likely be very expensive and difficult to totally eliminate mountain goats from ONP.” Furthermore, shooting is controversial and disturbing to the public. The DEIS also fails to include the impact of various removal methods on the goats, other than the effectiveness of the technique in eliminating the goats. One risk I would apprehend is that of wounding goats and causing suffering in that fashion.

So the choice is a difficult one and it brings to mind Laura Westra’s assertion that “The ‘arrogance of humanism’ has taken us to this point: only if we abandon hubris and the hope for the eternal ‘quick technological fix’ that we can begin to relearn respect for nature.”<sup>191</sup> There is no quick technological or even logical fix for this situation. The moral complexity presented by this situation is discussed in greater depth in chapter six.

## **Chapter 4**

### **The Key Players in This Debate and Their Positions.**

#### **Agency coordination as clumsiness**

In 1992, an Interagency Goat Management Team was established by a Memorandum of Understanding in 1991, bringing Olympic National Park, Olympic National Forest and the Washington Department of Fish and Wildlife together to develop a peninsula-wide EIS addressing mountain goat management by all three agencies on the Olympic Peninsula,<sup>192</sup> encompassing the concerns and suggestions of all three agencies.<sup>193</sup> In 1993, the agencies agreed that the EIS should just cover the park, since consensus was difficult due to differing levels of research knowledge and the different mandates and policies of the various agencies.<sup>194</sup>

The Washington Department of Wildlife and U.S. Forest Service share responsibility for mountain goat decisions on the lands bordering the outside of the park. The Forest Service traditionally tries to comply with state wildlife law. Under the Multiple Use-Sustained Yield Act, they do have an implicit authority to manage wildlife as a multiple use, but section 528 of MUSY disclaims any intent to affect “the jurisdiction or responsibilities of the several States with respect to wildlife and fish on the national forests.” As a result, the WDFW is in charge of wildlife while the USFS is in charge of the habitat.

The Washington Department of Fish and Wildlife was established in 1933, after mountain goat introduction. The Washington Department of Fish and Wildlife is in charge

of the small population of goats (approximately 10% of the population) that spill over into lands outside the park. The WDFW defines goats as legally native to the state and a desirable game animal. The state agency is legally bound to protect the perpetuity of what is considered a native population. The 1989 Washington Wildlife Commission Goals, Policies and Objectives lists the mission statement as: “The Department of Wildlife shall preserve, protect, and perpetuate Washington’s diverse wildlife, and wildlife habitats and shall maximize the recreational and aesthetic benefits of wildlife for all citizens.” Recreational opportunities include hunting and viewing.<sup>195</sup> The management goals include, “Maintain abundant populations of naturally reproducing game species for consumptive use.”<sup>196</sup> According to policy, “Game animals...may be taken only at times or places, or in manners and quantities as in the judgement of the commission maximizes public recreational opportunities without impairing the supply of wildlife.” RCW 77.12.010

The Forest Service was established by the Organic Administration Act of 1897, establishing the National Forest system “for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.” The Multiple-Use Sustained Yield Act was passed in 1960 (16 U.S.C 528), which added management for outdoor recreation, wildlife, fish, and range as additional national forest purposes. The National Forest Management Act in 1976 (36 CFR 219) aimed to “provide for multiple use and sustained yield of goods and services” maximizing long-term public benefits in an environmentally sound manner.<sup>197</sup>

Under the Forest and Rangeland Renewable Resources Planning Act of 1974 , the regulations state “Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”<sup>198</sup> Regulations also state that “All management prescriptions shall...include measures for



preventing the destruction of adverse modification of critical habitat for threatened and endangered species.”<sup>199</sup> The Olympic National Park 1990 Forest Plan states that “Forest Service Policy requires that (State-listed sensitive plants) be managed to prevent the need from placing them on the Federal List.” The goat habitat is also on designated wilderness areas and 36 CFR Part 293 states that such areas “managed to promote, perpetuate and where necessary, restore the wilderness character of the land...” Forest Service Region 6 policy asserts, “Wilderness is to be managed to prevent degradation...Additionally, we must seek to improve conditions in situations where natural processes are not operating freely.”<sup>200</sup> The final EIS produced in conjunction with the Regional Guide for the Pacific Northwest Region (1984) states:

Priority management is provided for threatened and endangered species, sensitive species, and their habitats. Management actions include habitat protection, recovery programs, habitat perpetuation, and cooperative management with federal and state agencies, groups, and individuals.

The 1990 Land and Resource Management Plan for Olympic National Forest lists the following as goals: “Manage wildlife habitat to maintain (at a minimum) viable populations of all existing vertebrates...Provide for and maintain diversity of plant and animal communities to meet overall multiple use objectives...Protect communities of native plant species.” Also, “The protection of species and communities of native plants has emerged as a key issue on the forest. Impacts to these plants from management activities and from introduced plant and animal species is of primary concern.” These policies all suggest that native, threatened and endangered plants are something the USFS needs to be concerned with. However, the Forest Service Manual also sets to the policy to “Discourage measures for direct control (other than normal harvest) of wildlife.”

In 1993, the three agencies realized coordination may have been overly ambitious, due to differences in mandates, policies and available information.<sup>201</sup> The state wildlife department wants to perpetuate the mountain goat population. They largely believe that the problem of impacts on the Olympic environment can be managed with controlled population levels.<sup>202</sup> Jack Smith opines that the National Park Service's conclusions are fueled by the park's bias. Generally the WDFW coordinates and works with the park. He understands that both agencies base their conclusions and actions on where they're coming from.<sup>203</sup> Shortly after the release of the DEIS proposing to eradicate the park population, WDFW announced the decision to limit hunting permits in March 1995, seemingly to help perpetuate of the remaining population on their lands. The department is recommending that 15, rather than last year's 35, hunting permits be issued, in response to the reduction of the mountain goat population over the past decade and the distinct possibility that the park will shoot the goats in the summer of 1996.<sup>204</sup>

The U.S.F.S realized that in comparison with NPS's twenty years of research, they have little data on the bordering forest lands. They were not willing to go with assumptions based on park data, despite the fact that the situations were potentially similar. Furthermore, U.S.F.S. staff in the area is spread very thinly, as is their funding. Sustained funding for this kind of research doesn't look to be a pending priority. As indicated the agency is legally bound to ensure viable populations of plants and animals. Further, it is mandated to protect and maintain threatened, endangered or sensitive species as well as populations of desired non-native species.<sup>205</sup> So it is responsible to sustain viable populations of species on forest lands, including plants potentially at risk with the continued presence of the goats. The Native Plant Society, a plant protection organization, is watching this situation closely.<sup>206</sup> Doug Houston's impression is that the Forest Service,

for various reasons, would prefer non-involvement.<sup>207</sup> Accordingly, the National Park Service decided to confine the scope of the EIS to the park.

### **Fund For Animals**

One of the products of the 1987 Environmental Assessment was the formation of a technical advisory committee, a committee to be made up of involved agencies and major interest groups to monitor the goat management program and make recommendations.<sup>208</sup> The NPS formed the committee to help smoothe the vigorous controversy. The Fund For Animals was asked to participate as a member. The FFA is an animal protection group that has steadfastly fought the National Park Service's decision to remove the goats, particularly with bullets. In 1992, the committee made up of the various agencies and interest groups was disbanded as a potential violation of federal regulations.<sup>209</sup> This "conciliatory" committee was a violation of the Federal Advisory Committee Act and this gaffe may ironically provide the basis of Fund for Animals' with a basis for a potential lawsuit. Fund For Animals claims that the park failed to provide the committee with complete information and also did not charter the committee using the legal process mandated by FACA.<sup>210</sup> FFA deems any EIS illegal that uses the work of these advisory committees appointed by the park. The EIS, FFA feels, needs to be shaped by more independent scientists and public participation than the park has allowed.<sup>211</sup>

Over the years, FFA has questioned the application of NPS exotic management policy to the mountain goats. Recently they stated that "It is the position of the Fund that officials of Olympic National Park have not substantiated their claims that (1) the goat is an exotic species or that (2) the goat's impact on park flora warrants the radical solution they propose: total eradication."<sup>212</sup> Fund For Animals, since 1991, has sown doubt about

the park's claim that the goats are non-native. Their disbelief is fueled by a few historical documents that refer to goat sightings, including one in an 1896 National Geographic, and a 1917 account of excavated remains containing items made out of goat horn and wool. Furthermore, in 1988 Dr. Lee Lyman constructed a hypothetical dispersal model that allowed for the possibility of goats living on the peninsula since prehistoric times.<sup>213</sup>

The Fund For Animals also thinks park evidence for plant damage is insufficient grounds for goat elimination.<sup>214</sup> They emphasize that the NPS exotic policy calls for "Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken whenever such species threaten park resources or public health and when control is prudent and feasible."<sup>215</sup> They suggest that "up to" does not require the final goal to be eradication. They feel that the park has had a predisposition to shoot the goats and speculate that contraception has not been adequately explored as a population controlling device.<sup>216</sup> What they would like to see happen, according to a radio interview last year, is the use of an open and fair process with independent panels of scientists looking at the evidence and drawing conclusions, including a look at the evidence on contraception and the status of the plants. They feel the current decision was made through a process polluted by the park spoonfeeding the evidence to reach predestined conclusions. Further, they see the only reasonable plan as monitoring the small remaining population of goats, particularly since they may not rebound.<sup>217</sup>

An interesting aspect of Fund For Animals' approach to this controversy is that they have used the park's jargon and value system as a framework for their arguments, though judging from some earlier statements that they have made, their underlying concern has been the welfare of the goats and preventing the injustice of lethal removal. Roger Anunsen, the head of FFA's campaign to prevent the killing of the goats explained

that FFA does not support the senseless killing for the joy of it and believes that when the animals are removed they should be moved into a situation of similar protection, not another hunting area. When asked his feelings on dealing with a choice between an animal and a threatened plant species, he merely explained that he didn't see this as an either/or dilemma, so he chose not to respond directly. He instead explained that FFA had been a plaintiff in a lawsuit involving a group of environmental organizations suing the Department of Interior and U.S. Fish and Wildlife Service for the indefensibly slow federal listing process. An out of court settlement in December 1992 resulted in the consideration of 400 plants and animals as threatened or endangered by fall of 1996. Anunsen used this as an illustration of Fund for Animals' acknowledgement that plants also have a place in the ecosystem. He didn't mention that one of the plants to soon be considered, as a result of this legal action is the *Astragalus australis* var. *olympicus*--the Olympic milkvetch<sup>218</sup>

Cathy Sue Anunsen believes park officials should be more committed to a non-lethal answer to the goat question. "Killing as a means of conflict resolution has no place in a compassionate culture," she explained. "When human kill humans, that behavior is called pathological. When park rangers try to wipe out an entire species, that's called wildlife management."<sup>219</sup> In the late 1980's Fund For Animals chose to join forces with bow and arrow trophy hunters in urging the park to transplant the goats to other mountains in the Northwest, while the Fund for Animals particularly encouraged the search for a contraceptive solution. Cathy Sue Anunsen declared that "man had created the situation by bringing the goats in, and I didn't think that goats should have to pay with their lives for man's stupidity."<sup>220</sup>

## **Park and Plant Protection Groups**

There are a number of individuals and environmental organizations that look at this controversy in a different light. Victor Scheffer, a wildlife biologist and retired state employee, addresses Fund For Animals' concerns and supports the park's decision in "Reply to the Anunsens." He asserts that the published allusions to the goats before the 20's introduction are "bare statements without elaboration" and that while no listed plants are in jeopardy, Scheffer expresses concerns over the "changes in floral composition." He acknowledges Lyman's dispersal hypothesis, suggesting the potential presence of prehistoric goats, is not impossible but not entirely probable. To the contraception concerns, he acknowledges that Kirkpatrick, one of the contraceptive panel scientists, did extol the possibilities of the 3 year booster contraception shot for nannies, but that the five member panel investigating contraception did conclude that the use of current sterilants would "represent a very expensive, never-ending program that, at best, would only partially control the population...[For goat elimination] lethal shooting appears to be the only feasible option."<sup>221</sup>

Other involved organizations include The Mountaineers, Olympic Park Associates and the Washington Native Plant Society, conservation organizations who assert that "...a timely and complete elimination of non-native goats from the Olympic Peninsula is the only feasible solution to this problem" since:

...based on extensive research findings from park service biologists, and the simple fact that mountain goats are not a threatened species in Washington state--while the alpine plant communities of the Olympic Mountains are irreplaceable. To further sacrifice this area's ecological integrity in order to supply goats for trophy hunters on national forest lands is unthinkable, but that would be the end result of lobbying efforts by a vocal constituency of sport-hunters and animal rights advocates.<sup>222</sup>

The Olympic Park Associates supports shooting as “...the most effective and economical means of removing goats” and believe that:

non-native mountain goats should be removed from public lands on all jurisdictions of the Olympic Peninsula: National Park Service, National Forest Service and Washington Department of Natural Resources, by the most expedient and cost-effective means available, including aerial shooting.<sup>223</sup>

The Washington Native Plant Society, an organization of botanists actively interested in the preservation of native flora, asserts that “complete and timely elimination of mountain goats on the entire peninsula should be the goal.”<sup>224</sup> and that “...it is essential that populations on adjacent lands be eliminated as well.”<sup>225</sup> They consider the WDW’s retention of the goats for a hunting experience is ecologically irresponsible, particularly when goat hunting is available in other parts of the state. While admitting that “...it is extremely unfortunate that these noble animals will have to suffer for the foolish actions of the men who introduced them to the Olympics, such a course of action is both correct and essential.” They consider shooting to be the most cost-effective, efficient and humane method for goat removal. They explain that the extreme trauma, high mortality and uncertainties involved with live capture, as well as the relative ineffectiveness, deem shooting as the best choice.<sup>226</sup> Mark Sheehan, manager of the Washington Natural Heritage Program, an agency of the state Department of Natural Resources, was quoted as saying:

Goats are white, woolly, have big brown eyes, and are tremendously appealing. I’m not anti-goat, but the impact of these introduced animals is so dramatic I simply can’t justify their presence. Olympic National Park’s rare alpine plants are relics from the Ice Age that have survived several episodes of glaciation. It would be a shame to have them perish due to the impact of this exotic species.<sup>227</sup>

The National Park Service has been faced with juggling the involvement of all of the above parties and other agents of similar divergent views. And typically being in the

station of being one of the few government agencies people actually like, they find the position all the more difficult. “This is a contradiction. We’re a white-hat agency doing good for animals,” said park biologist Bruce Moorhead. “But you have to consider what’s best for the whole ecosystem, and that means the goats go.”<sup>228</sup>



## Chapter 5

### **Problems With the Act of Defining a Non-indigenous species. Where Clarity is Needed. Where to Draw the Lines in the Sand.**

“...the process of nature preservation...creates a situation where biological invasion is inevitable...and also is defined in terms of preservation time and preservation space.”<sup>229</sup>

“Workable definitions are hard to come by, and they get harder the better we appreciate the complexity of the resource we are responsible for.”<sup>230</sup>

“The metaphors that guide natural resource management are shifting--from the self-sustaining wilderness to the managed garden...The world is being defined more in terms of the ‘unnatural’ rather than the ‘natural.’...part of a general trend toward a more managed globe...To some, this shift represents a grave loss. To others it represents greater willingness to undertake responsible action. Issues regarding indigenous and non-indigenous species underscore these different points of view.”<sup>231</sup>

In the Olympic National Park visitor center, there is a drawing of an angry, young goat glowering over the edge of a cliff. “Aliens in the Olympics!” whistle-blows the headline, and the tale follows of the goats introduced for recreation, now seen as “unwelcome” alpine lawnmowers. Meet the Olympic National Park mountain goats, part

of a string of introduced species whose removal becomes a political brouhaha before you can say “ecosystem management.”

Defining what is non-indigenous and then deciding exactly what term to use for reference has become a knotty issue. Alien, exotic, adventive, immigrant, introduced, non-native, non-indigenous, transplant, naturalized, or neophyte are some of the many terms that have been used to pin down the squirming concept, making it less impressive that the Eskimos have several words for snow. The arguments often whirl around semantics, distinctions and political boundaries. What occasionally gets lost is the ultimate reasoning behind the definition. The NPS claims to strive after ecological integrity, which Westra describes as “...the idea of wholeness and of unbroken functioning...Ecosystem integrity is historical, not something static...Integrity in ecosystems includes the capacity to evolve.”<sup>232</sup> For other agencies, like the Washington Department of Wildlife, the objective appears to be a definition that is politically compatible with their mandate to provide recreation.

The National Park Service is careful about diction. In the Natural Resources Management manual, the first section under “Exotic Species Management” reads:

Exotic, non-native, introduced, and alien are synonymous terms. The term exotic is used here because it is used in the professional literature and in NPS Management Policies. However, ‘alien,’ ‘non-native,’ or ‘introduced species’ might be better terms to use with public/nonprofessional audiences, as ‘exotic’ has a different connotation for most such people.<sup>233</sup>

Sensitive to public impression, NPS first addresses the image issue and then the the definition, which is the trickier part.

Defining an exotic is the act of making a decision about what should be considered natural or at least what should be considered natural for an intended purpose or perspective. One of the common glitches in ecosystem management lies in inter-agency

differences. Each land management entity manages parcels of limited size with permeable borders. The definitions of bordering agencies limit independent agency management. It's difficult to cooperate when there is not only a proliferation of names for non-natives, but also a proliferation of definitions among decision-makers. Yet the different definitions are a symptom of a larger issue: different fundamental goals. The National Park Service is in the business of preservation and perpetuation, as discussed in chapter two. The Forest Service is guided by the 1897 Organic Administration Act, the 1960 Multiple-Use Sustained Yield Act, and the 1976 National Forest Management Act, which supports Forest Service timber extraction combined with multiple-use objectives. The Washington Department of Wildlife is set up to provide recreation partly interpreted as hunting opportunities. Doug Houston asserts "...new definitions will not be sufficient to fully resolve alien species conflicts in national parks. Parks are surrounded by lands managed by other agencies with dissimilar objectives and policies--where native and exotic species are defined on different spatial and temporal scales."<sup>234</sup> He further says that there are "troublesome areas remaining which involve spatial and temporal scales where policy seems to collide with biogeography."<sup>235</sup>

Spatial and temporal scales are the dominant factors in the conflict between the agencies influencing the Olympic mountain goat population. Of the three agencies, the National Park Service is most focused on the commodity of preservation, and so has the strictest definition of an exotic and further defines "pests" which are any species, native or exotic, which interfere with park purposes. The National Park Service defines exotic species as "...those that occur in a given place as a result of direct or indirect, deliberate or accidental actions by humans (not including deliberate reintroductions.)" A dispersal caused by humans qualifies a species for elimination or at least control. NPS gives as

examples the construction of a fish ladder allowing species to cross a natural barrier to their dispersal. Also, an exotic could be introduced through the droppings of an animal that fed on an exotic outside the park. The National Park Service additionally has a pest policy, which also has potential relevance to the goats:

Pests are plant or animal populations that interfere with the purposes of the park. Strategies for managing pest populations will be influenced by whether the pest is an exotic or native species...Native species will be allowed to function unimpeded except where control is desirable...to conserve threatened, endangered, or unique plant specimens or communities...Exotic plant and animal pests will be controlled according to provisions of the exotic species policy, stated above.<sup>236</sup>

Within the wording of the definition of an exotic, there is room for interpretation, making its application more flexible which can have practical value. However, while it can be practical, it can allow too much latitude for interpretation and thus debate.

For the Washington Department of Fish and Wildlife, human introduction isn't as important as the state residency of the species. Tom Juelson explained that the department is not legally able to differentiate between populations within the state. They are bound to look at populations which are native to the state as native species, or in their terms, as wildlife.<sup>237</sup> Wildlife "means all species of the animal kingdom whose members exist in Washington in a wild state."<sup>238</sup> As long as a species is from within the political confines of Washington state, it's home. They restrict their designation of non-native species to "deleterious exotic wildlife," "species of the animal kingdom not native to Washington and designated as dangerous to the environment or wildlife of the state." More recently, they have established the Washington Department of Fish and Wildlife 1988 Policy on Release of Exotic Wildlife into the Wild (POL-4001) which "applies whenever any animal species, subspecies, or hybrid is being considered for release for the first time into wild natural habitat in Washington outside of the original native range of that animal species or

hybrid.” Since goats were introduced before the establishment of this policy, this policy does not apply to their situation. This policy defines native wildlife as “Wildlife which occupied habitat within Washington at the time of European exploration.” Exotic wildlife is then defined as “Wildlife which either occupies, or could occupy through human introduction, habitat within Washington outside the natural historic range for that animal species, subspecies, or hybrid.”<sup>239</sup> Strangely, mountain goats, according to these policy definitions, would now qualify as both native and exotic.

The U.S.D.A. Forest Service has an even more tolerant definition. Non-indigenous species are those “Species not originally occurring in the United States and introduced from a foreign country. Exotic species that have become naturalized such as the ring-necked pheasant are considered the same as native species.” Native species are “animal and plant species originally occurring in the United States.” Indigenous species are “species which originally inhabited a particular National Forest or National Grassland.”<sup>240</sup> So mountain goats are native, but not indigenous to the Olympic National Forest. The definition of exotic, dilute to the point of relative meaninglessness, indicates that they too will probably not share NPS priorities. As is evident in the various agency definitions, the area where an agency should draw a line runs the spectrum from ecological to national identity. Even within the NPS more “ecologically sound” definition there is going to be potential spatial blurriness. Johnson touches upon the spatial confusion of “Determining whether a colonization of species native to the outside of a region is a natural range extension or alien intrusion is difficult--native flora and fauna seen as static with future colonization or extirpations as a deviation from the natural.”<sup>241</sup>

All of the above policies also suffer from temporal fuzziness. “Biologists have criticized the exotic species concept because of its ambiguity. Classifying a species as

native or exotic is arguably invalid because all plants and animals were introduced at some point in time, whether by man or by some other force of nature.”<sup>242</sup> This has caused particular problems for the National Park Service. The general geography is delineated, but the question “as of when?” still remains. Are all human introductions, past and present, unacceptable? Or is there an arrival date after which species no longer qualify as natural? The absence of clarity is reflected in the number of theories as on when the clock starts ticking. The Leopold Report is often used to guide NPS interpretation. The report points to the time of European contact as the birthday of non-native species which alter the “primitive vignette.” The WDW in their 1988 policy also refer to European contact as the deadline for native status, and the USFS also considers this a guideline for interpretation. Yet, this is a questionable touchstone, as Darryll Johnson points out that the:

...creation of a static “vignette of primitive America”, ...is an inappropriate concept for non-equilibrium conditioned systems. The four centuries preceding the voyage of Columbus had unusually warm weather that has not since reoccurred. Vegetation, wildlife and disturbance processes were different then.. To recreate the scene of 1870 is also inappropriate for similar reasons. Leopold and other committee members regretted language choice, but the issue hasn’t been resolved.<sup>243</sup>

James Luko further criticizes: “Even though there is evidence to indicate much human influence prior to human settlement(cited Williams 1989), [some] North American ecologists remain attached to the myth of presettlement native vegetation in a state of benign equilibrium.”<sup>244</sup>

The NPS policy distinguishes between European introductions and the introductions of earlier native residents. However qualifications blur any possible “native/exotic” distinction. The policy explains:

Many preserve managers define exotic species in the United States as those introduced by Europeans. This definition differs from the NPS definition in that it includes as native the few species introduced by indigenous

peoples...NPS Management Policies does not specifically address special categories of exotics such as taxa introduced by indigenous peoples.<sup>245</sup>

Under “Management of Special Categories of Exotics in Cultural Landscapes” the policy elaborates: “Plant or animal species introduced by indigenous peoples may be preserved and protected where they were introduced to the site prior to European settlement, and were culturally significant, and where their presence does not have any demonstrated impact on native species.”<sup>246</sup> So, such introductions are acceptable insofar as they do not harm native species, making it clear that they are not considered native species. This turns the clock back even further, to the chagrin of those who consider the interaction of native peoples with their environment as legitimately natural. And this also leaves thousands of years open to question and speculation.

Mountain goats were clearly introduced in the 1920’s. But the temporal vagueness of the NPS policy causes some to scrutinize the historical record, in case mountain goats existed before the introduction, and could possibly earn native status. Speculation has often fueled discussions about the possibility of a species being native or native “enough.” Arguments are made for species which have been present for a substantial period of time or whose pre-existence is suggested by scant historical or archaeological evidence. Lee Lyman, an anthropologist, presented a speculative dispersal model that suggests mountain goats may have been present on the Olympic Peninsula 10,000 years ago and were potentially still present 200 to 2,000 years ago. Lyman thinks the lowlands of the Puget Sound could have served as a biogeographic filter rather than a barrier. He believes the current goats were introduced, but isn’t completely convinced that the species is new to the peninsula. His work has added another layer of speculation that has been used to support the argument that the mountain goats are native. In an internal memo, a park

botanist responds, “Even if mountain goats were present in Olympic (which I strongly doubt) and became extinct ca. 200 years ago, this makes no difference to our current views and management policies. We would be concerned only if modern man [sic] had a hand in the extinction.”<sup>247</sup> The Fund For Animals has long been suspicious of the National Park Service’s confident assertion that the goats are indisputably not native. This doubt was bolstered by the fact that in 1987, a park Environmental Assessment stated, “There is no evidence to suggest that they [the goats] ever inhabited the Olympic Peninsula.” Shortly thereafter, FFA discovered a park biologist’s chronology of early mountain goat reports which included two articles which made reference to mountain goats, including an 1897 National Geographic Magazine article which mention the sighting of one goat on the peninsula.<sup>248</sup> The Fund also refers to an article by Albert B. Reagan in a 1917 Journal of the California Academy of Sciences which reported mountain goat remains in a coastal dig, including Native American relics like ladels made of goat horn and blankets of goat wool.<sup>249</sup> The park service responded to this with a closer investigation and discovered that an extensive trade network brought goat wool and goat horns, materials prized for their utility, to the Olympic Peninsula. Nevertheless, the NPS admits that the lack of sufficient evidence of goat presence should not be considered conclusive. The current archeofaunal record predominantly covers the past 1,000 years and most of the studied sites were in coastal, not mountainous areas. Furthermore, mammalian shifts tended to occur during the late Quaternary. As Schalk further comments, negative evidence isn’t evidence for goat absence or presence. Schultz, the Olympic National Park historian did a historical review of Olympic Peninsula travel accounts from 1790 to the time of goat introduction. She too was challenged to analyze negative evidence and deal with the confusion resulting from the use of common names applied to wildlife in the 19th century. She concluded from her



interpretation of the literature survey that the goats weren't present. Not everyone feels that tenancy for hundreds or thousands of years legitimizes an animal as a member of the ecosystem. Photographer Keith Gunnar thinks the goats have evidently co-existed with Olympic vegetation for 70 years and everything seems fine for it. And in an editorial letter, J. Marvin Chastain more bluntly says, "They (the NPS) seem to have some obsession that they are going to transform the Park into what is {sic} was before Columbus. Somebody needs to tell them that is neither possible nor desirable {sic}."<sup>250</sup> So far, these types of queries have largely been left to agency discretion, but without a clearly articulated temporal definition, debates surrounding the legitimacy of damning an animal as exotic despite its potential pre-existence will continue.

In fact, some land managers have avoided this type of conflict not through clearer definition, but where "...species that were historically absent from an area but are now present and are successfully reproducing and maintaining viable populations are 'naturalized.'" <sup>251</sup> There are obvious problems with this as Schullery scoffs that the naturalization concept:

...allow[s] some administrators to trim the yardstick; to run a four-minute mile by shortening the mile. It would allow them to relax and admit defeat when defeat is not one of their alternatives. It would allow them to stop worrying about some particularly annoying exotic. It would short-circuit the park service's institutional conscience. Once that had been done, and once a few weak people in the right positions had tasted the sweet relief of a problem deftly ignored, it would be hard to stop further encroachments on the remaining principles the parks live by.<sup>252</sup>

Doug Houston understands some agencies' motives to naturalize. He notes that WDFW is often managing intensely altered land, where the environment is changed with agriculture. In some cases, they don't even have examples of native plant communities. Under these

circumstances, Houston sees where they are coming from. Naturalizing makes more sense where the habitats are completely altered and have long-established species.

These temporal arguments are not new. There have been similar debates over the legal residency of a species. The National Park Service wanted to remove burros in Grand Canyon, motivated by reasons similar to Olympic National Park's. The burros were introduced to the area by humans, and left behind, becoming feral after the 1870's. They "altered native plant communities and possibly competed with native wildlife."<sup>253</sup> Many paleontologists considered the burros to be "ecological equivalents of late Pleistocene equids."<sup>254</sup> This same animal became extinct about 12,000 years before Grand Canyon was established as a national park, possibly driven extinct due to early humans.<sup>255</sup> The National Park Service disagreed with this being a bargaining chip in achieving native status for the burros, as the relationship between the feral burros and the ancestral burros was "only at the subgeneric level."<sup>256</sup> and the "late Pleistocene environments no longer occurred in the Grand Canyon."<sup>257</sup> The burros were removed, using live capture and removal and those remaining were to be shot. Fund For Animals protested and funded a capture and adoption program for the remaining population. In Big Bend National Park, a group proposed introduction of the bolson tortoise, an endangered species. A similar or closely related species lived in the region till the late Pleistocene, early Holocene times. However, the tortoise had not been present for thousands of years. Also, the tortoise "has undergone a reduction in body size and a contraction of geographic range since the late Pleistocene." The National Park Service decided the tortoise was alien.<sup>258</sup>

In the 1950s and 60s, mountain goats were introduced for Montana and Wyoming hunters at several sites in National Forests surrounding Yellowstone and Grand Teton National Parks by the Idaho Department of Fish and Game and the Montana Department

of Fish, Wildlife and Parks. These mountain goats released into the periphery of the Greater Yellowstone Ecosystem, where they had not occurred historically, were first sighted adjacent to Grand Teton National Park in the late 70s and since that time there have been occasional reports of mostly single goats. In 1984 some were observed in the north of the park indicating that they had traveled through the park. Mostly billy goats were sighted. Eventually, these goats could be a problem in Grand Teton, but there is no evidence of residency or colonization yet.<sup>259</sup> They are considered a prehistoric species (greater than 10,000 years B.P.) but evidence indicates that they were absent upon European arrival.

However, mountain goats have established a population in the northeast corner of Yellowstone park where there are small groups reproducing. Based on what has happened in Olympic National Park, researcher John Laundre forecasts:

...the immigration introduction of goats into Yellowstone and Grand Teton could threaten native alpine habitat and certain wildlife species such as bighorn sheep. The presence of mountain goats in the Parks could also violate Park System mandates to preserve original faunal and floral communities...[and] could eventually colonize...[A] management plan needs to be formulated to avoid crisis management after goats become established.

These are projections. For now, Laundre said that “Based on existing literature, little impact of goats on vegetation and the physical environment is anticipated in either park. The main wildlife species that goats may impact would be bighorn sheep.”<sup>260</sup> Low goat populations in Yellowstone aren’t anticipated to negatively impact sheep, but even a low population could impact the sheep in Grand Teton because of constricted sheep winter range.<sup>261</sup>

According to Sue Consolo-Murphy, the local fish and game department is no longer transplanting mountain goats outside of Yellowstone. The park has tried through

planning and research to anticipate the issue. There have been an increased number of sightings. As usual, money is a problem. There are many resource management tasks to accomplish, but this analysis is not on the top of the pile. If the situation did start growing into an ecological or political crisis, priority would be established, particularly after seeing what happened at Olympic.

Mountain goats haven't been in the Yellowstone area for 10,000 years and rangers intend to shoot goats infiltrating from the north, east or south. But to further complicate matters, there is some suspicion that some of the mountain goats coming into Yellowstone are part of a natural migration. However, there is a potential "natural" migration along the Continental Divide from the west which will be allowed to enter and remain in the park, a situation Fund For Animals has labeled as "ridiculous."<sup>262</sup> This is the beginning of another exotic puzzle involving time and space as discussed in the previous chapter. Consolo-Murphy admits there are rumors of a pre-existing population, but she doesn't necessarily agree with them. There is no observable evidence, and it is not theoretically implausible. There's no evidence that it is occurring now. The mountain goats currently coming in are still considered non-native. There is nevertheless some brewing uncertainty as to the origin of mountain goats sighted in the northwest corner..." At this point, they're assumed to be from core populations introduced to the northwest. but "...it is possible goats may be immigrating into the Park from existing native populations to the west along the Montana-Idaho border."

In Grand Teton National Park, there have been mixed signs of inter-agency cooperation. Currently, there isn't an anticipated problem because the Idaho Fish and Game department put hunting pressure on the mountain goats to keep the population down. However, at one time, the local game and fish department outside the Tetons

claimed that they would start managing a newly established colony of mountain goats as an acceptable game herd, causing some concern for the park staff. If the goats showed signs of establishment in the park, rangers would probably shoot them, echoing the turf war between the Washington Department of Wildlife and Olympic National Park. Cain doesn't anticipate state agencies to change their approach in greater accordance with bordering National Park lands management in the near future.

The Olympic mountain goats released more recently have caused similar problems. R.G. Wright claims that some of the goats taken from Olympic to Idaho and placed in the southeastern part of the state have also been seen in Grand Teton National Park.<sup>263</sup> In 1988, eighty Olympic National Park mountain goats were live captured. Forty-three of them were taken on a road trip to Utah, where mountain goats are also not native and had never been previously introduced. One of the areas in which they were released is close to Wasatch Cache National Forest, an area of high plant endemism.<sup>264</sup> From the Wasatch Range, they began to migrate into a national monument.<sup>265</sup> Crawford explained that NPS wasn't anticipating these kinds of consequences.

In 1992, the Inter-agency Goat Management Team agreed not to relocate the goats to areas where goats were not native. Doug Houston explained in an article, "...Recently, the NPS and the Washington Department of Fish and Wildlife signed an agreement that will permit translocation of the Olympic goats only to habitats where they occurred historically, or to zoos and approved research institutions."<sup>266</sup> But it turns out that the agreement was made after the live captures ceased. Houston also asserted that he cannot find the agreement in writing and believes it to be a verbal agreement.<sup>267</sup> Furthermore, Jack Smith of the Washington Department of Fish and Wildlife differed with the term "agreement" and described it instead as the National Park Service telling the

WDFW what they were planning on doing. WDFW said that the proposal was fine, but it wasn't part of their policy or intention.<sup>268</sup> Another potential problem is that the importing state departments of wildlife would determine whether or not the mountain goats were native. These agencies, as illustrated by Washington Department of Wildlife, can be more flexible than the National Park Service in how "native" a game species needs to be. So with this kind of practice, live capture is not only relocating the goats to areas where they will be hunted, gutting the "live" part of the capture, but it is potentially moving a problem elsewhere to another place and time instead of solving the fundamental problem. In the Draft EIS, one of the three alternatives is to eliminate goats by a combination of live-capture and shooting, and the text reads:

WDFW would be responsible for distribution of captured animals. Goats would be transferred to state wildlife agencies for release at sites where the introduction has been approved by appropriate state and federal authorities. Environmental impact statements would likely be required for introductions in non-native ranges. A live-capture program would not be initiated unless availability of agencies to receive translocated goats is assured.<sup>269</sup>

There is no mention of the earlier agreement, nor evident determination to prevent related problems in the future.

When the various groups determining the fate of the mountain goats come to the bargaining table, each is approaching the situation with a language and culture<sup>270</sup> different from the other agencies, making common ground a little lumpy. This all largely stems from the more fundamental differences in mandates. Barker asserts that "when dealing with introduced species it is important not to confuse political borders (ecologically meaningless) with physical and climatic barriers (eg. oceans, deserts, which hinder dispersal).<sup>271</sup> But with our current management structure, political barriers and turf wars continue to abound.

Lack of ecological unity in management decisions of various public land agencies is going to perpetuate this kind of problem. In Olympic and Grand Teton National Park, the wildlife departments are evidently intent upon perpetuating the hunting reservoir. How do we make our borders more consistent, cooperative and less combative and counterproductive? According to Ed Schreiner, NPS and Congress need to clarify natural area management and achieve more consistency in the application of policy. Schreiner, working for the National Biological Survey, isn't certain that natural area management is well understood by the National Park Service. As a result, biological decisions are more likely to be made under political pressure. To really achieve ecosystem management we need to deal with human activities on both sides of the borders.

A clearer policy is needed for NPS, according to Doug Houston, frustrated enough by the battles he's witnessed to suggest that improvement in National Park Service policy needs to take place. Bolder lines need to be drawn in space and time. Without a clearer delineation of where the park service's line is drawn, nebulous discussions will be free to flourish making the resolution of whether or not a species should be considered an exotic all the more tangled with conflicting ideas. Furthermore, it is this kind of slippage that will also continue to foster inconsistent applications of a policy that should be designed for sound ecological management, not flexible political convenience, causing the kind of inconsistent management from park to park and resource manager to resource manager that shakes public confidence. And fundamentally, it is an ecological debate under discussion. All these debates and discussions over terms, definitions and interpretations begin to seem arbitrary--a game where everyone is playing by different rules *and* with a different objective. But ultimately what we should be striving after is a more ecological form of management and making decisions in accord with that objective.

This is a particularly relevant time to start examining what our goals are. The ecological disruption projected from climate change will include the likelihood of NIS invasions as:

...the changing environment may soon render the concept [of non-native] invalid. Major changes in the global climate due to the greenhouse effect may significantly change our parks and preserves. The global warming within the next fifty years will most likely change the ranges of many species of plants and animals, as coastal species are forced to migrate inland.<sup>272</sup>

This would throw an extra wrench into the act of defining what is and isn't indigenous, and will present a new set of decisions over whether movements in response to climate change should be treated as natural or actively managed, making the struggle of current policy-making look easy.<sup>273</sup> Because definitions are typically historically based on when a species leaves its natural range at some particular point in time, temporal difficulties would flourish. There would have to be regular reassessments for the definition to remain meaningful. Some means of distinguishing between phenomena involving lesser and greater human intervention will be increasingly difficult.<sup>274</sup> Luken suggests that in regards to plants, terms should be defined on a temporal scale based on an agreed upon fixed reference point in time. Movement of a plant population would be studied and described as desirable or undesirable, focusing on the process and not so much the species. In the meantime, he suggests:

...that we cease using all terms related to historical distribution of plant species...simply because there is no universal standard for time or scale associated with these terms...some might argue for a distinction between plants that were present prior to European colonization and plants that were introduced thereafter, such a distinction has rather limited geographic utility...If terms must be applied to plant species to convey information about historical distribution, it would be best to provide information on the most recent trends in distribution at the scale of the continent. Thus plant species could be described as having expanding, stable, contracting distributions relative to a universally agreed upon reference point in time.<sup>275</sup>



As Alston Chase argues:

Concern should be directed not at exotics, but at any invasive plant or animal that threatens to destroy its own habitat or that of other creatures. Likewise, whether the goats of Olympic are 'native' or 'exotic' is biologically irrelevant. The decision to control them should depend only on whether they are damaging their range.<sup>276</sup>

Though the Park Service does pick and choose exotic and pest control programs based on both the species' impact and the feasibility of removal, Chase reminds us that these debates run the risk of sinking into specious semantics debates when the bottom line of the exotic concept should be our attempt to understand and restore ecological integrity.

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## **Chapter 6:**

**Closer examination of the value systems at play in this controversy, showing how environmental issues *are* ethical. Our responsibility to species we're protecting and species we're mixing in.**

“...the destruction of any species raises moral questions; human beings assume that they have the moral right to eradicate any nonhuman species.”<sup>277</sup>

“Remote from universal nature, and living by complicated artifice, man in civilization surveys the creature through the glass of his knowledge and sees thereby a feather magnified and the whole image in distortion. We patronize them for their incompleteness, for their tragic fate of having taken form so far below ourselves. And therein we err. For the animal shall not be measured by man. In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the earth.”<sup>278</sup>

“The goat issue divides the environmental community between those who favor rare plants that survived the ice ages on storm-scoured ridges above the great ice sheet, and those to whom the sure-footed handsome mountain goats are living, feeling beings not deserving of a death sentence.”<sup>279</sup>

The mountain goat issue is a classic wildlife management conflict, intensified by the potentially irreconcilable differences in the various value systems. For the past several years, the most tenacious opponents to the park's plans have been advocates of animal protection and rights. The animal rights movement is an effort to combat cruelty to individual animals. Most animal rightists see no morally relevant difference between humans and animals and thus believe that they should share basic legal rights,<sup>280</sup> "equal or similar to those of humans."<sup>281</sup> As a result, they reject the idea of speciesism, where one "...allows the interests of her or his own species to override the greater interests of members of other species."<sup>282</sup> Animal welfare movements gained momentum from the 'liberation' and 'ecology' movements of the 1960s.<sup>283</sup> Movements for the protection and concerns of animals have been and will continue to grow for understandable reasons. Animals elicit empathy more readily than plants because animals remind us of us, and as sentient beings, obviously suffer. Environmental law is somewhat shaped by this affinity. An environmental law article explains, "...the degree of protection that Congress and the public gives to a particular species depends upon why the public values that species. There are a number of laws that favor the protection of species higher on the phylogenetic scale of evolution."<sup>284</sup> Plants, on the other hand, don't as commonly elicit such visceral reactions as charismatic megafauna. People tend to be less responsive to the visual effect of plants unfurling new leaves, spraying a fine dust of new seeds, and shimmering under the gentle weight of raindrops than a nanny goat nuzzling her kid. As Laura Westra explains, "...it is far easier to tolerate the birth, growth, decay and death of grasses, trees and insects than of sentient creatures, who are perhaps too much 'like us' for comfort, and it is even harder to see ourselves as an integral part of this cycle."<sup>285</sup>

According to Tom Regan, the basis for understanding the rights of animals comes from understanding that each of us is an "...experiencing subject of a life, a conscious creature having an individual welfare that has importance to us whatever our usefulness to others." Regan explains that the "... same is true of those animals that concern us...they too must be viewed as the experiencing subjects of a life, with inherent value of their own."<sup>286</sup> For Peter Singer, the important bottom line is the capacity of a being to suffer, and that capacity must be taken into consideration: "No matter what the nature of the being, the principle of equality requires that its suffering be counted equally with the like suffering--insofar as rough comparisons can be made--of any other being."<sup>287</sup>

The primary organization promoting the consideration of animal rights in the mountain goat issue has been Fund For Animals. Unfortunately, I found them a little reluctant to discuss their animal rights perspective, as during our conversation they were mainly interested in promoting the debate over the goat's exotic status and vegetative impact. In an article however, Cathy Sue Anunsen of Fund For Animals explained that during the live capture operations of the late 80's, she supported capture over shooting, despite the stresses and risks of live capture. She made the decision by putting herself in the place of the goat and evaluating how she would feel were she posed with the various options.<sup>288</sup> Regan explains part of the reasoning behind promoting the survival of individual animals:

...an untimely death is a deprivation of a quite fundamental and irreversible kind. It is irreversible because once dead, always dead. It is fundamental because death forecloses all possibilities of finding satisfaction. Once dead, the individual who had preferences, who could find satisfaction in this or that, who could exercise preference autonomy, can do this no more.<sup>289</sup>

Some animal rights supporters, including Fund For Animals, have supported research for a contraceptive solution. It is an alternative that wipes out the species but not the

individuals, respecting their right to life.<sup>290</sup> However others are opposed to contraception also based on the concept of rights. The animal is not given a choice about being sterilized.<sup>291</sup> It takes away the right of species to reproduce, potentially frustrating a very basic and powerful drive, and violates the animal's right to preference autonomy.<sup>292</sup>

The animal welfare movement is more anthropocentric in their interpretation of responsibilities to animals. In Appendix H of the DEIS, animal welfare is defined as a view that:

...holds that human beings may use or manage non-human animal resources, as long as we are sensitive and compassionate to the animals' condition. In some cases, it is necessary to kill individual animals. Consideration for the individual's pain and suffering is of primary importance.<sup>293</sup>

A person sincerely interested in reducing animal suffering is interested in animal welfare.<sup>294</sup> According to this position humans are responsible to curtail and if possible eliminate pain and suffering, but when push comes to shove, human benefits and objectives can override prevention of the animal's pain or suffering. This position is likely to support shooting the goats provided alternatives have been considered and credibly dismissed. The NPS has ostensibly addressed animal welfare by considering, testing and evaluating various live capture methods. For reasons discussed in chapter four, live capture methods have been promoted and criticized based on arguments of animal welfare. Supporters of shooting the goats often claim that it is perhaps the most humane form of removal since it, ideally, instantly kills the goat without causing the goat any suffering.

Environmental ethics also plays a role in the debate surrounding the mountain goats. This is a belief system that holds:

...plants are included within the parameters of the ethical theory as well as animals. Indeed, inanimate entities such as oceans and lakes, mountains, forests, and wetlands are assigned a greater value than individual animals and in a way quite different from systems which accord them moral

considerability through a further multiplication of competing individual loci of value and holders of rights.<sup>295</sup>

References are often made to Aldo Leopold's land ethic as the basis for "biocentric" or environmental ethics: "A thing is right when it tends to preserve the integrity, stability and beauty of the community. It is wrong when it tends otherwise."<sup>296</sup> Calicott comments, "The land ethic, in other words, is inclined to establish value distinctions not on the basis of higher and lower orders of being, but on the basis of the importance of organisms, minerals, and so on to the biotic community." He goes on to explain that in such a hierarchy, a bacteria could be considered higher than a dog, as, in every case, the effect upon the ecological system "is the decisive factor in the determination of the ethical quality of actions."<sup>297</sup> Laura Westra explains that an ecosystemic perspective places every single organism within it in a functioning niche, and it has only the 'rights' predicated by its natural interaction with other elements both biotic and abiotic at the most basic level, at which the principle of integrity functions.<sup>298</sup> It is this kind of ethic that the Park Service attempts to propound, at least in the goat controversy. The National Park Service is in charge of:

...wide open spaces and natural landscapes [which] have a unique biological and cultural value in the western United States. The National Park Service is charged to preserve and protect ecosystems and natural processes in a manner that will leave them unimpaired for future generations, even if it means making painful decisions in the short term.<sup>299</sup>

Park manager Boyd Evison explained that the National Park Service is in the business of preserving natural processes. Intervention should occur only to counteract the unavoidable effects of past mistakes.<sup>300</sup> Within NPS natural zones, the emphasis is on maintaining "fundamental ecological processes rather than individual species per se."<sup>301</sup> As a result, exotics are not always "unwanted." Ring-necked pheasants and chukars, introduced a long

time ago to Haleakala National Park, are tolerated because they may satisfy roles once filled by now extinct Hawaiian birds. And biological control agents have been used to control harmful NIS.<sup>302</sup> This shift accompanies the growth of the idea of the ecological community as an object of value in and of itself along with its select separate parts, and translates into the recent shift towards ecosystem management where:

...managers must learn to view species not just as individual units but also as parts of ecosystems upon which they depend. Furthermore, managers must view ecosystems themselves as interacting elements at regional and local scales.<sup>303</sup>

These are three of the dominant value systems tussling in this controversy. All of them emphasize that it is more than human welfare that counts.<sup>304</sup> Few of the participants are exclusive adherents to one value system or another. The area of emphasis is the distinguishing factor. Environmentalists place primary importance on the preservation of species, communities and ecosystems rather than individuals, whereas animal liberationists urge the consideration of the suffering of sentient animals when making ethical decisions.<sup>305</sup> Environmental ethicists may wrestle against killing the goats as they are sentient, important beings. Fund for Animals, as mentioned earlier, litigiously demonstrated their support of endangered plants. One Seattle Times editorial columnist asserts:

I am not squeamish about shooting animals to balance nature. I've advocated killing the California sea lions that camp at the Ballard Locks and are destroying the Lake Washington winter wild steelhead run. Logic supports that. A state-protected species (steelhead) is being extinguished by a federally protected species (sea lions) whose numbers are mushrooming. Ten years of trying to solve the problem with nonlethal means failed. Shoot 'em. I'm not convinced facts support shooting all of the park's goats to save Olympic milkvetch or other rare species of vegetation....The environmental-impact statement says the goats have the potential to impact rare and fragile vegetation. It doesn't say the reduced number of goats is wiping anything out by eating, trampling or wallowing in it.<sup>306</sup>

One criticism made of the “environmental” perspective is that such a belief system does not press the advocate to care about the suffering of individual organisms so long as the species is preserved.<sup>307</sup> Instead, environmentalists claim autonomous values for wholes, sometimes avoiding the added messiness of adjudicating ethical conflicts between individuals with autonomous values.<sup>308</sup> This type of belief system “may take the form of a monolithic doctrine according to which the only thing that matters is the stability of the ecosystem.”<sup>309</sup> The weak basis for this is that, Sober notes, “...organisms do not passively reside in an environment whose properties are independently determined.”<sup>310</sup> Westra concurs that “...one may respond that this ethic gives no place to the good of individual organisms, other than when that good contributes to the well-being of the whole.”<sup>311</sup> Therein lies the major contention of animal rightists with this viewpoint. They see a great deficiency in the education of wildlife professionals where emphasis is placed on populations, to the exclusion of developing sensitivity to individual animals.<sup>312</sup>

Another contentious issue has been the distinction made between artificial (human-shaped) and natural. Sober argues that humans are part of nature and explains that “If this is a premise, that we are part of nature, then everything we do is part of nature, and thereby natural.”<sup>313</sup> He uses this premise to criticize the distinction made between domestic and wild animals as respectively artificial and natural. He argues that the domestication of animals, and I would suggest his logic could be extended to introduction, as one species exerting a selection pressure upon another.<sup>314</sup> The distinction between natural and artificial, native and non-native, is deemed biologically unrealistic.<sup>315</sup> Chase angrily states that aversion to exotics “...is based on the dangerous notion that people are not part of evolution, and therefore ‘preservation’ requires killing things that have been changed by man.”<sup>316</sup> Westra also argues for a greater acceptance of inevitable cultural



impacts on wild nature, yet cautions that we should beware of compromising biological integrity with cultural integrity in such a way that the natural system becomes seriously degraded, especially if to the point of potential collapse, because "...culture depends on agriculture, and ecosystems and hydrology and meteorology. We still want land health, even when pristine integrity has been compromised in order to support various forms of cultural integrity."<sup>317</sup>

On the other hand, the animal rights perspective has been censured for narrowly basing an ethical system on the prevention of suffering in sentient organisms. Westra questions the act of going to great lengths, such as forsaking meat, to prevent pain and suffering in other creatures. She feels this approach is wrong for two reasons:

First, it leads to an unavoidable polarization between animal and ecological ethics, torn asunder by the criterion of sentience and capped even by the possible requirement of sympathy. It seems to me that a defense based on either sympathy or sentience can only be supported by paternalistic disrespect for the realities that govern all life.<sup>318</sup>

In its place, Westra proposes an alternative ethic "...that accepts both the inescapable facts of natural hostility and instrumental interdependence and the respect due to all of nature, including animals."<sup>319</sup> Calicott also criticizes the crusade for animal rights as unrealistic, even unnatural:

...the value commitments of the humane movement seem at bottom to betray a world-denying or rather a life-loathing philosophy...To live *is* to be anxious about life, to feel pain and pleasure in a fitting mixture, and sooner or later to die. That is the way the system works. If nature as a whole is good, then pain and death are also good...People have attempted to exempt themselves from the life/death reciprocities of natural processes and from ecological limitations in the name of a prophylactic ethic of maximizing rewards (pleasure) and minimizing unwelcome information(pain). To be fair, the humane moralists seem to suggest that we should attempt to project the same values into the nonhuman animal world and to widen the charmed circle--no matter that it would be biologically unrealistic to do so or biologically ruinous if, per possible, such an environmental ethic were implemented.<sup>320</sup>

Singer, however, argues against the justification that it is okay for humans to kill nonhuman animals because killing is a part of nature, as non-human animals kill other sentient beings. He retorts that humans are unique in having a capacity for moral reasoning, and so have a responsibility to make morally sensitive decisions, whereas animals do not have that option.<sup>321</sup> The animal rights movement has also been criticized for adjudication based on sentience as it leads to a trap that the animal rights movement itself professes to avoid: speciesism, described as “a prejudice or attitude of bias towards the members of one’s own species and against those of members of other species.”<sup>322</sup> The term has been used by animal rightists to condemn choices based on assumptions of human superiority. However, some argue against the assumption of the superiority based on sentience when the dilemma is sentient animal versus plant. Speciesism can also be played out at the level of the biotic community.

Another argument made against the animal rights perspective is the consideration of individual animals as the basis of moral choices. Calicott also warns against the problems that stem from trying to provide for the needs of individuals as a primary goal:

On the level of social organization, the interests of society may not always coincide with the sum of the interests of its parts...A society, indeed, is particularly vulnerable to disintegration when its members become preoccupied totally with their own particular interest, and ignore those distinct and independent interests of the community as a whole...Each special interest accordingly clamors more loudly to be satisfied while the community as a whole becomes noticeably more and more infirm economically, environmentally, and politically.<sup>323</sup>

The argument is made that when weighing the health of an ecological community versus the potential suffering and death of individual mountain goats, it does become a special interest versus the interests of the ecological society as a whole. However, Regan differs, and bristles at the nth degree of this line of logic, as he fears that: “It is difficult to see how

the notion of the rights of the individual could find a home within a view that, emotive connotations to one side, might be fairly dubbed ‘environmental fascism.’” He follow with the analogy of pitting a rare wildflower which contributes more to the biotic community against a common human being. Given a choice, the human life should be killed to save the wildflower. He explains:

The rights view can not abide this position, not because the rights view categorically denies that inanimate objects can have rights...but because it denies the propriety of deciding what should be done to individuals who have rights by appeal to aggregative considerations, including, therefore, computations about what will or will not maximally ‘contribute to the integrity, stability, and beauty of the biotic community.’ Individual rights are not to be outweighed by such considerations (which is not to say that they are never to be outweighed). Environmental fascism and the rights view are like oil and water: they don’t mix.<sup>324</sup>

As I’ve discussed in previous chapters, these various value systems haven’t mixed too well and probably can’t. The mountain goats in Olympic National Park are unwitting pawns in a battle of belief systems and this respect of the controversy bears studying if not to achieve reconciliation, then at least a better understanding, because as I’ve noted, these clashes and their relations will continue.

VOICES AT THE DEIS PUBLIC HEARING:

SEATTLE, WA, 5/3/95

Kevin Herrick (“The Mountaineers”) - This is an opportunity to correct past ecosystem mistakes. Ecosystems are difficult and complex. When NPS addresses a controversial issue, it’s usually when the issue has gone pretty far.

Ken Shirey - Goats should be hunted, not gunned out of a helicopter in this “environmental Disneyland.” The “web of life includes a predator called the human species.” Carcasses left in ecosystem is a waste of resources.

Peter Stekel - “Ecosystems and plant communities are alive too.” Mountain goats are “cute and furry” but in this case they are “weeds.”

Andrew Cuk - He espoused the philosophy of responsibility. Goats deserve the right to be treated as individuals, not as “weeds.”

Will Anderson (Progressive Animal Welfare Society) - He accused the DEIS of being wordsmithed to death. The ecosystem has resilience. Since there are not high numbers of goats, the ecosystem is “absorbing” the impact.

Molly Sargent - She was also opposed to killing goats as well as killing goats as a solution to a problem: “murder.”

Ken Harkin - **“People will believe what they hope is true.”**

The 1969 National Environmental Policy Act requires “an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action” called “scoping.”<sup>325</sup> In the Purpose and Need section of the Draft Environmental Impact Statement on the Olympic mountain goats, there is a listing of the major issues that the public has identified regarding the Olympic mountain goat issue. The issues were sorted into two categories: those which were developed into resource elements as subjects to cover in comparing the alternatives, and those issues considered, but not used as a comparison element for analysis, titled “Issues Considered, But Not Analyzed.” The issue in the unanalyzed group is “Ethical concerns of a goat management program.” The details explain that the wide range of ethical concerns raised by the public during the EIS process included environmental ethics, animal welfare, and animal rights. Then the following statement is made: “Ethics is not an environmental issue and is outside the realm of NEPA.”

When I first read those words, I was taken aback. I read the National Environmental Policy Act to make sure ethics is not an environmental issue. NEPA, Section 2 depicts itself as a policy to “encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man...” Ethics is not outside the realm of NEPA because NEPA *is* the statement of an ethic, a value-based priority system promoting the environmental harmony and welfare of humans.

On one hand, I understood the DEIS writer’s point. The EIS is to wear a tone of impartial scrutiny. It should not be beleaguered by the murky nebulousness of values. It’s procedural I rationalize. Ethics are messy, values are messy, no one agrees, better not dabble in that--just serve up cool, clear logic and wash the problem away. But the rub is,

this whole dilemma has been complicated by little more than human values. One of the problems with the National Park's treatment of this controversy is that they consider the ethics, but *don't* fully analyze them. That's the public relations rub. This issue and every single position taken on this issue is a values position. Donald Brown defines ethics as the "domain of inquiry" which seeks to construct propositions as to what is good, right or obligatory. "Ethics is concerned with 'prescriptive' statements, which attempt to transcend relative cultural and individual positions."<sup>326</sup> The questions asked in this issue are requests for prescriptive answers, like "What species and what qualities do we recognize as important? What do we want to protect and perpetuate? *Why?*" When these choices involve killing selected living beings for the potential survival of others, it's difficult to see "mountain goat management" as other than an issue of environmental ethics. Furthermore, an NPS NEPA guideline (1982) states that "important environmental issues discussed during consultation should be described whenever conflicts are apparent or whenever issues remain unresolved."

Some of the language volleyed in this debate illustrates how polemical this issue has become. In articles, word choices clearly indicate where the writer's sympathies lie. Alston Chase, an enthusiastic park service critic accused, "Hostility to exotics is biological xenophobia. It is a religious and racist idea, resting on the false belief that plants and animals should stay where God put them..."<sup>327</sup> A Seattle Post-Intelligencer editorial discusses the park's "seemingly inevitable conclusion in its efforts to cope with hordes of ill-mannered mountain goats." Alternatively, a Seattle Times editorial describes "a mountain goat standing regally on a high cliff...the real symbol of the vast stretch of spectacular land that is Olympic National Park." An angrier writer lambastes the "runaway shoot-the-mountain-goats train stoked by park scientists." He discusses the park service's

plan to leave the goats' "...carcasses to rot." He describes the goats as "...regal creatures with astounding perseverance...a testament to courage and endurance."

The decision to shoot the goats has generated a tremendous amount of controversy because there is no right answer. Any solution contains some wrong--whether it leads to the death of innocent mountain goats or the potential loss of alpine vegetation with unknown repercussions. There is no absolute answer here, handed up on a silver platter made of science. A common misunderstanding is that science shows what should be done. However scientific research does not produce preservation goals and can't demonstrate that any decision made for a certain management objective is a biological and ecological necessity.<sup>328</sup> Instead, it reveals the direction and magnitude of ecological interaction. In this case, science is the source of a limited knowledge bank and educated guesses. Though science is often used as a tool for guiding management decisions, it does require a leap of faith when the conclusions are speculative and not grounded in empirical fact. The NPS decision is based on faith in scientifically based projections: the plants will *probably* become extinct or at least significantly jeopardized. Considering the field conditions and the current technology, a wonder contraceptive will *probably* not be found in time to be part of the solution to this problem. Lyman observes "Because policies and decisions are based on available data, management will only be as good as those data, particularly in the long-term."<sup>329</sup> Agee and Johnson discuss the transience and malleability of the foundation upon which ecological decisions are made, as the developing knowledge bank and values and priorities are always changing. There is no clear-cut formula for ecosystem management. Trial and error and hypothesizing are some of the main tools used in decision-making. "Natural resource management is an experiment, including park and wilderness management...[we] do not know precisely the outcome of most

management strategies...goals will therefore be achieved through hypotheses that are continually tested and refined.”<sup>330</sup> Ecologists make decisions under the influence of data, but are ultimately in such decisions representing their own viewpoints or philosophies (more diversity versus less, native versus non-native).<sup>331</sup> “Which species to import and release, which to exclude, and which to control are ultimately cultural and political choices--choices about the kind of world in which we want to live.”<sup>332</sup> An article discussing the blurriness of ethical and scientific judgements points out that:

...often in these discussions wildlife professionals give the animal rights perspective little credibility because it is considered emotion....On the other hand, strong support for manipulation of individual animals and populations of wildlife...the perspective typically espoused by wildlife professionals, is considered highly credible because it is science-based or biologically correct...Such discussions are troublesome because they miss the main point of the debate, or perhaps purposefully ignore it in an attempt to protect views and practices traditionally held by wildlife professionals. The point being missed is that **both perspectives are fundamentally ethical judgements**. Misrepresenting ethical judgements as scientific judgements is the pitfall to avoid.<sup>333</sup>

My view on this issue comes after months of ambivalence. The goats are both incredible and innocent animals. I believe that with our human capacity to trample anything impeding our path towards “progress” and our ability to wallow in our repeated displays of ignorance, we have an enormous responsibility to prevent animals from being the hapless victims of our choices. I also think plants and communities and the interconnections therein deserve similar respect. The biggest sticking point for me in this whole dilemma is that humans introduced the mountain goats, humans designated a national park, and humans proceeded to establish a set of goals of how they wanted this land to be used (for preservation purposes) that demanded that the goats be erased from the place to which they were originally, eagerly brought. I also have a problem with the fact that the litmus test telling us that it is time to completely remove the goats is partly



based on assumptions. As Porter et al. explain, it's a lot easier to depend on science as a solid foundation when dealing with very specific objectives and fairly simple ecological relationships. But when you start acting upon a partial understanding of more complex ecological relations, like with the mountain goats and figuring out the repercussions of their impact, we make untested assumptions so we can't be confident that our actions will accomplish what we intend.<sup>334</sup>

Perhaps the ecological impact won't be so severe if the goats remain. Perhaps there is time for an alternative solution. But with fragile alpine areas, solutions based on speculation seem pretty risky. Until all of the goats are removed, according to park scientists, rare plants unique to Olympic National Park are in jeopardy of extinction. Too, while I am personally more comfortable with protecting the goats, I stop because of the precedent that I'm setting, feeling comfortable with the potential loss of a few plant species for the protection of the mountain goats, which is setting a dangerous precedent for future similar conflicts. This logic Lovejoy claims is classic in philosophy: "...the loss of a single species out of the millions that exist seems of little consequence.... increments seem so negligible, yet in aggregate they are highly significant."<sup>335</sup> Based on the value of ecological integrity, best guesses and minimizing risk, I can see why the National Park Service has decided to shoot the goats. Shooting currently seems to be the most viable method of permanently removing a large number of mountain goats. After realizing the trauma and stress attached to current viable forms of live capture for both humans and mountain goats, with a rate of up to 20% in capture-related mortalities, and the risks of capture myopathy, game hunting and abandonment of kids, these alternative methods don't seem that redemptive upon close scrutiny. If this decision is to achieve as near a complete solution as possible, I think the permanence of shooting is needed to prevent the

perpetuation of an ongoing solution that won't necessarily have an ongoing, perpetual source of funding. For the good of the biotic community, specifically the ecological health of alpine and subalpine communities and for the protection of particular plant species, the goats should be removed. Essentially, I support the "greater good" of ecological integrity in the form of restoring the original members and connections to the community, assuming that can be done. But if we're going to do something as drastic as shooting the goats, for a situation that our species is responsible for, both by importing the goats and designating their new locale as a preserved area without allowance for goat impact, we need to look very closely at the significance of the causes and actively prevent these situations elsewhere. Bullets are not The Solution to The Problem.

I consider the best comprehensive solution *at this time* to be one which pulls a little from all of the above described value systems. I think that we need to take genuine responsibility for the animals placed on the peninsula by our own species, spurred on by the horror of the "best" solution to this problem as incentive to keep this kind of history from repeating itself. After having so many lessons from a chain of exotic problems, we have a keen responsibility not to continue to harm animals to achieve our purposes, just because we can. Our shrinking base of biodiversity and protected lands is reason enough to do everything we can both for the sake of jeopardized ecological communities and the sacrificial ungulates.

In the immediate future, we assiduously need to continue the search for permanent humane methods that don't involve taking lives. Even if not based in moral argument, there is a need for avoiding the management nightmare caused by this kind of controversy. Wright says that while shooting the goats is, "...by far the most cost-effective and expedient method for reducing or eliminating the population" it "would probably be the

most politically unpalatable solution.”<sup>336</sup> I don’t know how the public is going to respond to this “ecological” decision and its concomitant emotional weight. The fact that plant populations are threatened with fragmentation and potential extinction may not seem persuasive if the press covers the scene of the mountain goats being shot point blank. I don’t think mainstream public concerns for changes in floristic composition will currently outweigh the shock of seeing beautiful, regal animals killed. Tom Juelson, of the Washington Department of Fish and Wildlife predicts that if NPS shoots the mountain goats, it will lead to a tremendous public relations volley. The media will come in droves and generate a tremendous public outcry. Politically, Juelson doesn’t think this is going to happen. When questioned about her opinion on future instances like this, Sue Consolo-Murphy of Yellowstone National Park, predicted that from a bio-political standpoint, there will be more problems when it comes to the issue of charismatic mega-fauna. There is a public orientation to the individual animal that ecological education won’t necessarily change. A widely effective form of contraception is would probably the most promising live control method, technically and politically. Wright projects, “New techniques presently in development and testing may someday eliminate the need for capturing an animal to be treated, thus removing the most expensive and difficult step in sterilizing wild animals. Should this occur, it would provide NPS with a humane and politically viable control option to deal with what has thus far been an extremely difficult problem to solve.”<sup>337</sup> In addition to public resistance, there will also be a remnant population on neighboring Forest lands that the Washington Department of Fish and Wildlife is going to try to perpetuate. Mountain goat management between the two agencies will be combative rather than cooperative. There are at least two lawsuits that will potentially hamper action in the near future, one from Fund For Animals and another from a retired employee with

the Washington Department of Wildlife who feels that state acceptance of the preferred alternative is breaking the state law of perpetuating and protecting wildlife.<sup>338</sup> There are also calculated risks with settling on this solution. The full impact of the current mountain goat population, its current dispersal and the level of threat those goats pose to the various communities is not fully clear. Also future developments in contraception hold unknown potential as part of an alternative solution albeit expensive and potentially technically more difficult.

For the future, we need to stop introducing exotics to areas where there is any possibility of animals impacting the native ecological community. Doug Houston asserts that the introduction of non-native ungulates is not usually accompanied by a strong consideration of resident rare and endemic plant species. He admits that this often occurs at introduction sites with long histories of heavy livestock grazing, so in some cases the lack of consideration is understandable. But this isn't always the case and mountain goats don't have a map saying where their hoofprints are no longer welcome. There have been fairly recent incidents involving the transplantation of mountain goats where the goats have been "legally" introduced only to become "unwelcome additions" nearby, discussed in greater detail in chapter five.

I think just as we're striving after a broader vision in efforts towards ecosystem management, so too we need to strive after a broader decision-making framework: specifically, the ethical aspects of this decision need to be considered *and* analyzed as "environmental consequences." Ethical concerns need to rub the elbows of more traditional bases for decision-making, i.e. politics, economics and science. Killing the mountain goats based on speculation and projection is understandable when viewed through a cost and balance evaluation where the bottom line is ecosystem values. The

plants are more valuable, judging from park data. But there's another bottom line: the goats are imbedded in the Olympic Peninsula due to human whim. The deeper I dig into this issue and as I press my ear to the ground, I hear reluctant murmurs and misgivings about shooting the goats from several different directions. And as I reach a conclusion, my voice carries the same tone. I don't think these reservations are just visceral reactions to the sure-footed scampering of mega-charismatic fauna. There's something larger going on and that's the discomfort of stifling profound concern about our decision to exterminate an admirable group of animals. It's all the more difficult to squelch such concerns when some are saying with great conviction, we don't need kill all of them. Towards the end of this project, I called the National Park Service and the Washington Department of Fish and Wildlife with some last minute questions. Both parties referred to a meeting that they had with the other agency the following day. One NPS resource management scientist explained that he understands that the ultimate differences between the two agencies are philosophical, so he no longer gets offended. And a biologist from WDFW alluded to the differences as being based on opinion. It would benefit the discussions between agencies and interest groups if differences were routinely noted and explained based on ethics. What I'm suggesting is difficult and could pave the way for mushy discussions. I don't think it will facilitate discussions or agreement but I do think that it will be a truer representation when that arena is included instead of smokescreening the issue by just focusing on graphs, tables, and law. I also think that a stronger, more painstaking discussion of values on the part of the Park Service will demonstrate that there is an internal struggle for the Park Service in making this decision--they're not just rabid ecologists with a taste for blood. I don't know if more public will agree with their

decision, but I think that there might be at least a better understanding of what the difference really is and what NPS considers important.

So as this project is limping towards closure, there is something to be said for avoiding problems and hold-ups by cutting and drying the decision with one straightforward and permanent conclusion: Shoot 'em. There are other resource management objectives after all. But I'm tired of talking the vocabulary of "harvesting" and "managing" and "eradicating." This is a decision to kill animals to protect the future of several plant taxa. I can't condemn the decision because frankly, after all of my research and discussion, I have a hard time seeing any other currently viable alternative. But I think we need to proceed with caution in future dilemmas to prevent our move towards ecosystem management from leaning towards ecological totalitarianism. In the end, I don't think we should always be steered by, but we should be influenced by care for the individual animal.

It's true, we're enormously influenced by the issue of charismatic megafauna. If exotic toxic plants presented the possibility of slowly killing off the native mountain goat population in Glacier National Park, there wouldn't be so much disagreement. More of us would agree, yank 'em. The mountain goats tug at us and to ignore that or reduce it to silly sentimentalism is to pretend that we share no commonality with animals, and it is a denial of our enormous influence and unwarranted control over the welfare of these "fellow prisoners of the splendour and travail of the earth."

## **RECOMMENDATIONS**

“The metaphors that guide natural resource management are shifting--from the self-sustaining wilderness to the managed garden... The world is being defined more in terms of the ‘unnatural’ rather than the ‘natural.’...part of a general trend toward a more managed globe... To some, this shift represents a grave loss. To others it represents greater willingness to undertake responsible action. Issues regarding indigenous and non-indigenous species underscore these different points of view.”<sup>336</sup>

### **For the Draft Environmental Impact Statement**

Clarify the present and projected impact of the current mountain goat population. More carefully explain the reasons there are unknowns and why concern is still present. Work harder at clearly educating the public on issues of ecology and values on the part of the NPS.

### **Other responsibilities**

1. Prevent history from repeating itself
  - a. Support the research and use of permanent humane (contraceptive solutions).
  - b. NPS should not play party, even as part of an inter-agency effort, to exportations of exotics.
  - c. Work on a clearer, more specific definition of an exotic species, particularly in temporal terms.

2. Make the consideration of ethics an integral part of resolving environmental issues.

a. Consider the effect of mountain goat management on goats in DEIS alternatives.

Discuss the ethical implications and the impacts of various approaches on the goats - what are the risks, advantages, disadvantages to them? Potential range of impacts of goat management on the mountain goats. This could make for messier discussions, but it will also clarify bases for conflicts rather than obfuscating differences with discussions strictly limited to science and policy.

b. Develop the technical skill to deal with the ethical and value dimensions of our environmental problems. Work on distinguishing fact from ethical issues. Consider ethical questions and positions in environmental decision-making processes.



## ENDNOTES

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- <sup>25</sup> Clary, 14.
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- <sup>28</sup> OTA, 73.
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- <sup>37</sup> OTA, 188.
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- <sup>95</sup> NPS, DEIS, 85.
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