FINAL REPORT

"LEASING HABITAT FOR THE AMUR TIGER"

TO:

National Fish and Wildlife Foundation's

Save the Tiger Fund

From:

Hornocker Wildlife Institute and
The Institute for Sustainable Use of Natural Resources

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Executive summary. In the Russian Far East, conservation of the Amur tiger will depend on the survival and well-being of tiger populations living on unprotected lands just as much as those living within a network of protected areas. Presently a great opportunity exists to implement wildlife management regimes on unprotected lands that will be beneficial to tiger conservation. We used a grant of $20,800 from the National Fish and Wildlife Foundation's ***Save the Tiger Fund*** to lease 165,000 ha of land in Olginski Raion, Primorski Krai, Russia, as a hunting lease, to be managed by the Institute of Sustainable Use of Natural Resources with the three-pronged goal of securing tiger habitat, increasing prey densities, and providing a source of revenue for local inhabitants. Much of the hunting lease, which was found to contain at least 11 tigers (including a female with cubs), is slated to become part of a proposed national park, but until such time, there would have been no or poor control of how wildlife resources would be utilized. With the guidance of a strong director, Southern Valley Hunting Lease has successfully secured lands through July 2003, and has begun a series of initiatives to gain control of the region. Anti-poaching raids, some in combination with the Amba patrols, have been important in demonstrating commitment to protection of resources. Appropriate management of ungulate and fur-bearers has begun, including conducting the mandated yearly surveys. A financial plan developed for the lease suggests that the organization may become financially viable in 4-5 years, but that start-up funds, such as those provided by the **Save the Tiger Fund**, are critical for quick, effective initiation of activities. Funds in addition to those obtained from managing wildlife resources will likely be necessary for future financial security. The results of this project are a first step in demonstrating the feasibility of integrating tiger conservation on multiple use lands in the Russian Far East.

INTRODUCTION

The last viable population of Amur, or Siberian tigers (*Panthera tigris altaica*) resides in the Russian Far East Provinces of Primorye and Khabarovsk. There are approximately 156,000 km^2 of tiger habitat remaining in the Russian Far East (Matyushkin et al. 1996), with the majority of this habitat (over 78%) in Primorye Krai. Most tiger habitat is unprotected: only 8.4% of Primorye's forested lands is protected as zapovedniks (reserves) or zakazniks (wildlife refuges), and even if extensive habitat protection plans are implemented (Miquelle et al. 1999), no more than 28% of the land base would be protected, and some percentage of even those lands would include poor quality tiger habitat. Full implementation and creation of a protected areas network is likely to protect no more than 30-40% of the potential tiger population, given the existing known distribution and numbers of tigers. This "protected" population of tigers is unlikely, by itself, to be viable over an extended timeframe.

It is clear, therefore, that if the Amur tiger is to survive in the wild, tiger management cannot be restricted to nature reserves. A successful "recipe" for tiger conservation in the Russian Far East will combine a system of protected areas with a management regime on unprotected lands that gives high priority to tiger conservation.

Two million people inhabit Primorye, and a large percentage of them rely on the fish, wildlife, timber, and other natural resources to provide a means of subsistence and income. With this economic reality, halting natural resource exploitation is not an acceptable alternative. Thus new forms of conservation for large predators are needed in this region.

Hunting and trapping are important sources of meat and revenue in village economies of the Russian Far East, and a significant percentage of the male population participates in some form of hunting or trapping. Large ungulate species are one of the primary objectives for hunters. At the same time, the key parameter defining quality tiger habitat in the Russian Far East is prey density (Miquelle et al. 1996). Therefore a key component of successful management on unprotected lands in Primorye will be management of hunters and their use of ungulate populations. While it is certainly controversial whether Amur tigers do or could regulate prey populations, it is clear that tigers are perceived by many hunters as competitors, better to be eliminated than tolerated. Although tigers are legally protected under federal law, killing of tigers is commonly practiced for two reasons: 1) as a source of income through selling of skins and bones; and, 2) to eliminate a competitor from hunting lands. Control on trade and traditional anti-poaching approaches (which receives most of the international attention) do not address this second incentive. In the Russian Far East tigers have commonly been shot as competitors, and even today, despite the potential for great monetary gains, carcasses of shot tigers are left in the forest. Because shooting or trapping by Russian hunters is probably by far the most common source of mortality for Amur tigers, it is clear that a new relationship between hunters and tigers is essential.

Primorye has recently reorganized management of game populations. Formerly hunters were either "professional" and employed by the state organization, or "sport hunters" and part of a state-organized club. All hunting lands were formerly managed by

one of a few state managed "cooperatives". Beginning in 1995, Primorye Krai began the process of "privatizing" hunting leases. There now exists the opportunity for local individuals to "lease" hunting rights, and take responsibility for managing game populations on prescribed hunting units. This transfer of power to local individuals marks an important shift in natural resource management philosophy, away from a state-controlled monopoly (although the state still sets quotas and is ultimately responsible for enforcement), to a system in which local villagers can have a major impact on how local resources are utilized and managed. Empowerment of local people, who have a vested interest in local resources, could greatly increase effectiveness of managing wildlife populations.

This newly developing situation provides a great opportunity to influence management regimes for the benefit of tiger populations, but at the same time, the potential for ineffective, lackadaisical management by non-professionals poises an even greater threat to tiger and all wildlife populations. Most of the individuals or organizations who have only recently gained control of game resources do not have the experience to manage their leases, nor the capital to make the initial investments necessary to initiate a program that could eventually be self-sustainable. This situation provides the opportunity for small investments and some guidance to pay big dividends for tiger conservation specifically, and biodiversity conservation in general. Investment in new hunting enterprises could provide leverage to maintain management regimes beneficial to tigers and their prey. Most importantly, leasing can be done relatively quickly, efficiently, and without the bureaucratic struggle associated with state-owned protected lands.

With proper management, hunting areas can sustain relatively high densities of ungulates, as hunters are just as interested as conservationists in large numbers of game. Collection of furs, berries, herbs, mushrooms, and a host of other non-timber forest products can help to turn a leased territory into a self-sufficient enterprise capable of long-term, sustainable production. Up until 1985 there were dozens of such hunting enterprises in Primorski and Khabarovski Krai which produced many non-timber forest products and sustained high densities of ungulates and tigers. These enterprises were unable to survive the economic turbulence of the past decade, but there now exists the potential for such enterprises to be economically viable and ecologically sustainable if financial support can be provided for start-up expenses. The expertise demonstrated by a well-managed hunting enterprise could have a "ripple effect" with analogous enterprises of the region, thus helping to sustain reasonably high population densities of Amur tigers outside protected areas, while at the same time providing employment and salaries for the local inhabitants of taiga villages.

OBJECTIVES

The goal of this project was to complete the necessary legal documentation to lease a hunting unit, and then to establish a regime for sustainable use of game and non-timber forest products that is beneficial to local inhabitants, will responsibly manage ungulate populations, and provide a favorable management regime for the tiger. To obtain that goal, the following objectives were defined:

1) select a site for leasing as a hunting unit that has potential for tiger conservation, and complete the legal and bureaucratic steps necessary to obtain the lease;
2) increase numbers of ungulate species that are primary prey for tigers;
3) decrease rate of poaching through more effective patrolling and better control of access to lands;
4) where feasible and necessary, develop a road closure program to limit access to portions of the hunting unit, thereby increasing security of a defined area for tigers and prey;
5) develop and maintain a monitoring program for the Amur tiger and ungulate populations on the hunting unit.
6) where possible, increase the habitat quality for ungulate populations through hayfield "easements" and supplying salt licks;
7) develop a sustainable financial plan based on exploitation of non-timber forest products in the hunting unit;
8) create permanent and temporary employment for local inhabitants (for seasonal harvest of non-timber forest products, game, and furs);
9) demonstrate and educate local people (and policy makers) on how an efficient hunting management enterprise can be compatible with Amur tiger conservation;
10) safeguard a portion of a proposed national park until the gazetting process is complete (see below).

ACTIVITIES AND ACCOMPLISHMENTS

1. SELECTION OF LEASE SITE

Work for selecting lease lands and acquiring the necessary legal paperwork began in March, 1998. During the selection process information was gathered on the status of a variety of lands across Primorski Krai from the Department for Hunting Management, who administers leasing of rights for hunting. This information was compared with data from the last Amur tiger census (1996) and other information obtained on tiger and ungulate numbers across Primorski Krai. The following factors were also taken into consideration: logging activity; characteristics of local citizens and their attitude to tigers; poaching activity, the local Raion (or county) administration and their attitude towards tiger and habitat conservation. On the basis of this analysis, two units were tentatively selected: one in Olginski Raion, and the second in Chuguyevski Raion. After a

preliminary site investigation of both regions southern Olginski Raion was selected as an area of high potential and good habitat for tigers (Figure 1).

This parcel of land is important tiger habitat not only in its own right, but because of its position in relation to existing and proposed protected lands in the region. In southeastern Primorye Krai, Lazovski Zapovednik (110,000 ha) represents the central position in a plan for protection of tiger habitat in that region of the Russian Far East (Miquelle et al. 1999) (Figures 1 and 2). Building off this core, the proposed Upper Ussuri National Park would include some good tiger habitat on the coastal side of the Sikhote-Alin Mountain Range, and provide a link to multiple use lands on the inland side of the crest. Although Upper Ussuri National Park was proposed by the Primorye Krai Administration, the process of actually gazetting this land has been a long and tedious one. In the meantime, it is possible that the land could be usurped, and put to other purposes. The lease lands that were obtained incorporate that portion of the proposed National Park that contains high quality tiger habitat on the coastal side of the Sikhote-Alin Range, and in fact, contains more quality habitat on the coastal side than the proposed National park (Figure 2). Two major coastal river systems are entirely included within the lease – Milogradovka and Margaritovka (Figure 1) – which are both important fishery resources as well. The northern coastal boundary of the lease adjoins Basilkovski Zakaznik, which is a wildlife refuge created for protection of tigers and ghoral (the subspecies of ghoral in Primorye is listed as endangered). Thus, the lease lands act as a temporary safeguard of proposed national park lands, will act as a buffer zone when the park is established, and provides a linkage between the proposed national park and to Vacilkovski Zakaznik. In total, 165,538 ha are included in the hunting lease - nearly twice more than was originally planned in our proposal, and 50,000 ha greater in size than Lazovski Zapovednik.

2. LEGAL CREATION OF "SOUTHERN VALLEY HUNTING LEASE"

The process of gathering legal documentation for creation of a hunting lease is a complicated one that requires maneuvering through several layers of bureaucracy. A first step in securing rights to the proposed hunting lease was development of an agreement with the local county, or Raion, administration. Their approval for management by the Institute for Sustainable Use of Natural Resources is necessary before any other efforts could proceed. Additionally, a series of meetings were held with local citizens to explain the proposed leasing arrangements and how to would affect hunters, as well as all people using the land. Meetings were also an opportunity to find potential staff for management of the lease. A series of preliminary surveys of game animals was conducted on the proposed lease lands to gain an impression of what densities existed, and to assist in delineation of the borders, which was then agreed upon by the Raion administration.

With the agreement of the Olginski Administration and local land users, the official application for leasing was submitted the Primorski Krai Department of Hunting Management, and the local representative of the Russian Federation Ministry of Agriculture and Food Production. After application, a commission was convened to certify that the Institute for Sustainable Use of Natural Resources has the capacity and

Figure 1. Location of Southern Valley Hunting Lease in southwest Primorski Krai.

Figure 1

Figure 2. A proposed protected areas network for Amur tigers in the Russian Far East, showing the location of Southern Valley Hunting Lease in relation to the network.

Figure 2

capability to manage economic and financial activities while at the same time manage wildlife on the proposed lease lands. With certification of the Institute to lease wildlife habitat (Appendix I), the license was issued (Appendix II), with legal boundaries defined (Appendix III) and a legal description of the area (Appendix IV). As an appendix to the license a contract was developed between the Primorski Krai Administration's Department of Natural Resources and the Institute for Sustainable Land Use Appendix V). Finally, an agreement was signed between the Institute and the Primorski Krai Hunter and Fisherman Society (Appendix VI), which is an collective association that is supposed to assist organizations managing wildlife and fish resources (but in fact does very little.

Presently, leases are being given for 5 years in Primorye Krai, and this lease has been granted through July 22, 2003. However, the most likely scenario is that, unless a leasee has demonstrated gross negligence, leases will be extended for much longer periods of time. Therefore, it is highly unlikely that these lands will be converted to another owner if competence is demonstrated.

3. MANAGEMENT ON THE SOUTHERN VALLEY HUNTING LEASE

Organizational Steps

Creation of an organizational framework for the Southern Valley Hunting Lease was a critical first step. Identification of a director, and his closest associates, was probably one of the most critical steps in creation of the lease, for the strength of the director would largely dictate the long-term success of the lease. M. N. Mikholovko was selected as director based on his experience as conservation officer for the Department of Fisheries Management, and his well-respected status in the local community. He has selected a number of individuals to assist him in implementing the necessary management program. This dedicated core of people will define the success of this endeavor. Their energy and enthusiasm in the first stages of this effort are an excellent signal that the future of the organization is in good hands.

Attempts to educate and inform local citizens were made on many fronts. A second series of meetings with local citizens and hunters were held in the local villages (Milogradovo, Margaritovo, Moryak-Rybolov, Brovka, Listvennaya, and Scherbakovka), and people were informed of the meeting both by word of mouth, and public notices, as well as articles in local newspapers. A long article written by V. V. Aramilev was published in the County (Raion) newspaper "Zavety Lenina" to explain the status of the new hunting lease, the need to join the organization officially if hunters wanted to hunt and trap on leased lands, and how the lease would be organized.

Members of the organization not only have to pay dues, but have responsibilities associated with their right to hunt and trap. In most situations, individual hunting units are assigned to specific hunters, and each person is then responsible for appropriate "micro-management" of his parcel of land. Responsibilities include patrolling for illegal activity, abiding by harvest regimes, and assisting in the yearly survey work. The advantage of this organizational approach is twofold: for the organization it means that

each tiny parcel of land has someone who is responsible for overseeing and reporting on its status, and secondly, the member of the organization obtains "his own" piece of ground, essentially making him owner and manager of his personal parcel of land. Empowerment of the individual with a sense of ownership and responsibility is a potentially powerful force that helps stem illegal and excessive hunting – e.g., harvesting all the sable off your parcel in one year means that next year you will have nothing to harvest. The advantages to the individual are clear – he has virtually sole access to the wildlife resources on his parcel. As an indication of the significance of this opportunity to local hunters, of the 50 individuals who have joined the organization to date, more than half of them became legal hunters for the first time because they were aware that first, poaching was going to be closely monitored and was no longer an option (see below) and secondly, that this was an opportunity to obtain their own parcel of land.

Finally, a working plan was established for the years 1998-2000 (Table 1). While not all these activities may be achieved in their entirety, the objective of making a workplan was to establish goals, clearly define the priorities for effective management, and

Table 1. Workplan for 1998-2000 in Southern Valley Hunting Lease, Olga Raion, Primorski Krai, Russia

Activity	1998	1999	2000	Units
Maintenance/organization of lease				
1 Repair roads and trails		10	5	km
2 Buy and remodel/repair base for Lease		1		house
3 Create and post boundary signs	30			signs
4 Build forest cabins		1	1	cabins
Wildlife (ungulate) management				
5 Develop and enhance salt licks		15	15	salt licks
6 Maintain salt licks		30	30	salt licks
7 Develop hayfield easements		4	4	ha
8 Prepare winter foods (for deep snow periods)		10	10	areas
9 Conduct winter survey of game animals	1	1	1	surveys
10 Conduct special surveys (for raccoon dog, badger, and squirrel)		1	1	surveys
Anti-poaching patrols				
11 Organize work for two game inspectors	2	2	2	inspectors
12 Organize joint raids with Amba patrol team	12	12	12	raids
13 Maintain vehicle or secure transportation for inspectors	1	1	1	vehicle
14 Conduct raids with lease members and inspectors	12	12	12	raids

provide a means of planning how and when these activities can be completed. Many of these activities are discussed below, and are included in our set of objectives.

One of the primary tasks for Southern Valley is, of course, organizing hunting and trapping activities. Part of the process of gaining control or resources is to make it easier to legally harvest wildlife. As part of their attempt to encourage participation in the organization, membership fees for Southern Valley were set very low .Yearly fees for 1999 were only 85 rubles (about $4 in spring 1999). As in most countries, permits are required to harvest large game animals, and to trap, and these permits are provided by the Department of Hunting Management. Unfortunately Primorski Krai Hunting Management Department sets hunting permits at a relatively high rate, making it difficult for many of the cash-strapped locals to purchase permits, which of course encourages poaching. While we hope to address this issue at the regional level, the individual hunting leases can do little except minimize the costs of joining a lease and eliminating additional burdens on local hunters. Each hunting lease receives a small percentage of the total cost of each hunting license sold (Table 6), and is therefore responsible for selling licenses on its lands.

Furs provide a source of important revenue for trappers, but for the past 5 years or so, fur prices have been very low, and selling has been difficult. As reorganization of the fur industry in Russia occurs, prices are increasing again. A potentially valuable source of revenue for any individual lease can arise from selling if all members collectively contribute their furs, and sell them as a unit. This approach provides greater bargaining opportunities, and provides greater profits for both the individual and the lease. This process, and how it will be administered by Southern Valley, is still developing.

One task that was not included in the original budget, but was deemed essential to long-term success of the lease, was purchase of a building from which to base operations. Providing the lease with a permanent address, a location where members can gather, and, if centrally located, a location from which they can base activities (anti-poaching raids, distribution of hunting licenses, and a common meeting ground), are all activities that provide the lease and its coordinators with a concrete, physical sense of existence in addition to the practical utility of such a building. Therefore, the original budget was adjusted slightly (by using excess funds from the line items “Publications” and “construction of gates for road closure”) to provide sufficient funds for purchase of a building in the village of Listvennoe (in this impoverished community a 3-room house, in need of repair, was purchased for approximately $900). Repair of the building is ongoing, and the maintenance of a garden will ensure produce will be available for workers (Appendix VII. Figs. 23 and 24). In the future, it will be essential to add other buildings – mostly cabins from which a variety of operations can be conducted. It is believed that tourism may be a source of revenue in the future (primarily by wealthier people from Vladivostok, or perhaps international hunting trips), in which case, a series of additional cabins would be needed to cater specifically to the needs of such clientele.

Anti-poaching Activities

A number of steps were taken in the process of rescuing the land from the extensive misuse and illegal use of resources that has occurred during the 1990's. The first step, already underway in Southern Valley, is to secure the land from illegal use from outsiders. Both education and aggressive enforcement are necessary tools. Education was provided in many forms, including town meetings, newspaper articles, and informal discussions with locals. Additionally, 30 signs were created and placed in key areas around the lease to effectively designate the boundaries and to inform local citizens of the change in land management regimes for this area.

Due to lack of enforcement of hunting regulations in the recent past, many people have become accustomed to using the land and resources independent of any laws, so it will be a gradual process of eliminating poaching and illegal activities. To this end, aggressive patrolling of the newly leased lands is essential. A total of 68 poaching raids were conducted on the lease during the 5-month,1998-1999 winter period, resulting in a total of 58 encounters with individuals and groups (a total of 102 people). In total, 5 violations were uncovered, resulting in confiscation of 5 rifles, and a levying of appropriate fines (App. VII, Figs. 22, 25, 26). Purchase of a 4-wheel drive vehicle with funds from this grant was critical to the success of this phase of activities. In fact, providing mobility for patrolling and management activities may be one of the most important contributions of the grant.

A second stage in securing the land - to instill a sense of empowerment and ownership of the hunting lease - will be a more gradual, long-term process. Ultimately, it is imperative that members of the lease feel that it is in their **own** best interest to protect **their** resources. This change in perspective takes time in a country where state control of all resources had engendered, at the local level, a sense of "if it is ours, its mine" and "take it before anyone else does". When members begin to feel that they have something valuable and truly their own, hopefully there will be a fierce desire to protect it from outsiders, as well as avoid abuse from within the membership. In comparison to some other hunting leases that we are familiar with, it is our opinion that this process is progressing faster in Southern Valley than elsewhere. We attribute this change largely to the strong leadership and active enforcement of laws by the director of the lease, as well as the considerable effort to educate locals.

Management of Ungulates

Ungulate densities over much of Primorye are depressed due to the past 5-7 years of intensive, uncontrolled hunting that has occurred in the absence of local enforcement. Therefore, the most important component of ungulate management on Southern Valley has been, and in the near future, will continue to be, anti-poaching patrols and maintaining strict enforcement of the allocated harvest regime. This harvest quota, set by the State, is generally very conservative (see below and Table 4), in acknowledgement of the high, illegal take. Therefore, if total harvest (legal and illegal) can be reduced to a level close to the actual legal take, ungulate populations will increase. Although it is still

too early to see a response, the amount of energy put into anti-poaching activities, and the increasing recognition of local residents and outsiders that illegal hunting will not be tolerated on Southern Valley lands, is probably the signal most important form of management that will increase ungulate populations. This increase will not only benefit local hunters, it will provide the potential to host outside hunters (both Russian and international) that could greatly increase revenue for the Lease.

Increase in prey numbers will be beneficial to tigers in two ways: 1) greater abundance of prey will provide for greater numbers of tigers, greater potential for reproduction by females, and greater survivorship of young; 2) greater abundance of prey will help alleviate the opinion of locals that tigers are competitors that decrease prey populations. If prey abundance is high enough that hunters can get fill their license, and there remains prey sufficient for tigers, then both tigers and humans can coexist without real or perceived competition. Overall, this is one of our primary objectives.

Other steps were taken to increase the quality of habitat for ungulates. Two tons of salt were bought to supplement natural and man-made salt licks. Salt here is considered to be in deficit for wildlife, and saltlicks are actively used by nearly all ungulate species App. VII, Fig. 9). Excess salt was stored in Moryak-Rybolov, and will be distributed at recognized saltlicks at regular intervals throughout the year, but efforts will focus primarily in late spring and early summer, when ungulate sodium requirements are at a maximum, and saltlicks are most intensively used.

To increase overwinter survival of ungulates, and to be prepared for severe winters that threaten a large percentage of the ungulates population (and such winters are not that uncommon in this region), two actions have already been taken. Easements are being organized in association with a farming cooperative (Milogradovskoe Co. Ltd.) that would allow for hay or crops to be left unharvested as a food source for ungulates. Such easements can provide relatively high quality forage if snow depths are low enough to allow access (which is usually the case). In the case of severe winters, there exists the potential to provided cuttings from preferred woody browse species. For such a feeding program to be effective, it must be started early in winter, so that animals locate and become accustomed to the forage resource, and it must be done extensively across the area to insure that, wherever there are concentrations of game, there is access to forage. One of the advantages of the existing system of allocating specific lands to each member of the organization is that it provides a work force distributed throughout the area that knows where ungulates concentrate, and can be employed to provide feed to them where and where it is needed.

One final step that assists in recovering numbers of ungulate numbers is road closures. Open roads provide easy access to both legal and illegal hunting, both of which can decrease prey populations. Obviously, it is easier to poach tigers as well where road access occurs. To date, access to one of the larger river basins, the Koryabaya, has been limited with a road closure. This region is traditionally reported to retain tigers, including a breeding female, and is one of the primary components of the proposed Upper Ussuri National Park on the eastern slope of the Sikhote-Alin Range. Reducing access will provide security for both tigers and ungulates. Although the local populace is far from accepting the concept of road closures, this activity may become a key management tool for recovering prey populations and regulating distribution of hunters and poachers.

Survey of Game Animals and Establishment of Quotas.

One of the obligations of maintaining a lease is conducting yearly surveys of game animals in accordance with the methodologies established by the Department of Hunting Management. Two types or surveys are conducted: winter counts of tracks are conducted for the majority of animals (App. VII, Fig. 15), but for those species not active in winter (e.g., raccoon dogs and badgers), spring counts are conducted. Results of the 1998 and 1999 surveys are provided in Table 2, although it should be recognized that only the latter (1999) was conducted under the auspices of this grant (i.e., responsibility for managing the lease had not yet been awarded to the Institute for Sustainable Use of Natural Resources in winter 1998) and therefore it is likely that quality of that earlier count is suspect. In any case, the methodology employed by the Hunting Management Department does not allow direct comparisons of yearly surveys statistically because there are no estimates of error or variation in these counts.

Nonetheless, these surveys, along with expected numbers and estimates of allowable offtake, provide the basis for setting quotas for the lease. Table 3 represents a

Table 2. Results of Game Animal Surveys of Southern Valley Hunting Lease, 1998 and 1999.

	Number of Animals	
Species	1998*	1999
Red deer	642	351
Wild boar	174	585
Roe deer	484	1112
Sika deer	-	1991
Musk deer	174	200
Brown bear	54	-
Sable	217	339
Otter	18	46
Raccoon dog	168	170
Lynx	14	94
Yellow-throated Marten	47	-
Siberian weasel	281	28
Mink	189	244
Hare	112	220
Manchurian Hare	332	340
Squirrel	1342	6100
Grouse	986	1154

*not conducted by members of Southern Valley Hunting Lease.

translation of an official document that determines maximum harvest for each game species in Southern Valley Lease. This table presents values established by the Department of Hunting Management to be “normative”, or expected for the lease, given its geographic position, climate, and habitat types, and defines minimum values below which hunting on each particular species would be prohibited. Based on the survey data from Table 2 (column 3 in Table 3 does not match Table 2 in all cases because an estimate of winter mortality is incorporated), an estimate of fall numbers is extrapolated based on expected recruitment of young. Finally, maximum harvest levels, given projected fall 1998 extrapolations, are provided. Final harvest quotas are always more conservation (Table 4) in acknowledgement of the errors associated with the extrapolation, as well as the level of illegal offtake that occurs.

Table 3. Estimates of expected animal numbers (given region and habitat types), minimum Allowable numbers below which hunting would be restricted, actual count values for for spring 1998, extrapolated estimates for fall 1998, and maximum harvest estimates. for Southern Valley Hunting Lease.

	Animal numbers			Extrapolated	
Species	Expected Numbers	Minimum Allowable	Actual spring 1998	numbers fall 1998	Maximum harvest
1 Badger	500	280	383	383	77
2 Squirrel	2400	1100	1342	4120	unlimited
3 Otter	50	15	18	23	3
4 Raccoon dog	210	150	168	168	84
5 Snowshoe hare	220	95	112	252	101
6 Manchurian hare	640	280	332	896	448
7 Siberian weasel	430	200	281	773	464
8 Red fox	70	25	39	69	21
9 Mink	240	140	189	425	170
10 Lynx	25	10	14	23	3
11 Sable	430	180	217	469	141
12 Yellow-throated marten	80	20	47	85	21
13 Red deer	570	320	462	541	65
14 Wild boar	280	120	174	412	144
15 Roe deer	580	350	484	615	92
16 Musk deer	450	140	176	225	41
17 Sika deer	600	500	820	1091	listed in red book, no hunting
18 Brown bear	75	30	54	73	12
19 Pheasant	300	85	100	100	45
20 Hazel grouse	1300	600	986	3451	1035

Table 4. Harvest quotas for ungulates and bears set by State Commission for Southern Valle Hunting Lease, 1998-1999 seasons.

Species	For sport hunting and consumption	For antler harvest	Summer	During rut	Total
Red deer	24	2	2	2	30
Wild boar	29		1		30
Roe deer	28		2		30
Musk deer	5				5
Brown bear	3				3
Himalayan black bear	5				5

Tiger survey

Surveys of tiger are not required by the Hunting Management Department, as tigers are not game animals. Nonetheless, as part of this project, we requested that representatives of Southern Valley Lease conduct a survey to gain a general impression of the numbers of tigers on the leased lands. Accordingly, beginning in August, game inspectors of the lease and knowledgeable hunters were requested to measure and report all tiger tracks encountered (App. VI., Fig. 13, 14). In summer, tracks are frequently encountered along unpaved roads and trails throughout the lease lands. Unfortunately, snow cover during the 1998-1999 season was sparse, and southern slopes were practically without snow the entire winter. Therefore, conditions for collecting data on numbers and distribution of tigers within the lease were not ideal. Nonetheless, the following information summarizes information on tiger distribution in the region:

1. During winter a tiger appeared around Magraritovo and Moryak-Ribolov (front pad width = 8.5) and ate a dog. Probably this same animal was responsible for tracks of the same size located 10-12 km from the villages.
2. A tiger with a pad width of 7.7 cm was located repeatedly along the coastline from Moryak-Ribolov to the north during the summer, but did not appear in winter (based on track size, possible a young non-resident animal).
3. A tiger with a front pad width of 9.0 cm was reported in the area around Milogradovo and reportedly attempted to catch a dog.
4. An adult male with a pad width of 11 cm was repeatedly reported in the upper and middle portions of the Milogradovka River Basin.
5. An adult female (9.5 cm) with two cubs (6.0 and 6.2 cm) was also reported in upper and middle Milogradovka.
6. A tiger on undetermined sex and age (pad with 9.2), but distinguishable from the adult female, also traveled through the middle and upper Milogradovka Basin.
7. An adult male with a pad with of 12 cm was reported in Magraritovka River Basin.
8. An animal of undetermined sex and age (pad width 10 cm) also occurred in the Magraritovka River Basin.

9. An animal of undetermined sex and age (pad width 8.7 cm) was reported in the region of Sherbakovka village.

Assuming that animal #2 left the region, the Southern Valley Hunting Lease reported 8 adult tigers and two cubs. The presence of cubs is especially significant, as it indicates that conditions are sufficiently good to allow for reproduction to occur. Recognizing that home ranges of some of these animals no doubt extends beyond the boundaries of the lease, we can crudely estimate that adult tiger density in this region is approximately 0.48 adults/100 km^2, and that total density (including cubs) is 0.6 animals/100 km^2. This estimate of total density is higher that the average density of tigers in 10 monitoring units in unprotected areas across Primorski and Khabarovski Krais (0.44/100km^2), but lower than nearby monitoring units in Olga Raion (0.72) and Lazo Raion (0.83). This difference may simply be due to differences in methodologies, and the fact that conditions for locating tracks were poor in Southern Valley due to lack of snow. Future surveys may show different patterns. The importance of this initial work is that it demonstrates that resident tigers do exist on the lease lands, and that reproduction is occurring.

Table 5. Estimate of tiger numbers on Southern Valley hunting lease, based on records of tracks from summer 1998 through winter 1999.

Adult males	Adult females	Transient	Unknown sex/age	Cubs	Total count	Density of residents (#/100 km2)	Density of resident adults (#/100 km2)
2	1	1	5	2	11	0.6	0.48

PROSPECTS FOR FINANCIAL STABILITY OF THE SOUTHERN VALLEY HUNTING LEASE

Obviously, one of the key questions concerning such a new organization, and the new approach to wildlife management in Primorski Krai, is whether it is financially viable. There is great concern that, while newly created, locally controlled wildlife management units may be politically appealing in that they transfer power to local people and eliminate the costs of wildlife management from the state budget, the financial costs are transferred to that sector of the populace (mostly villagers) who are least likely to be able to bear the burden of costs associated with managing and controlling a hunting lease. It is our contention that initial, external support (such as that provided by the Save the Tiger Fund) can jumpstart such a new organization, provide empowerment quickly, assist in regaining control and management of wildlife resources, and reduce the threat to tigers and their prey by moving quickly to secure habitat. However, it has never been clear

whether these locally managed wildlife units would be financially sustainable beyond the initial sponsorship.

We requested that the managers of the lease develop a financial plan to determine actual costs, and whether it is possible to generate sufficient revenue to meet these costs. This business plan is detailed in Tables 6 and 7. Projected costs depend on many variables that are not completely known, including:

1. Income from membership dues is based on the assumption that there will be 200 members in the future. It is believed that the lands can support this many hunters, but whether such large numbers will actually join (4 times more than the present membership) is yet unknown.
2. Income from hunting licenses represents only that portion of the fee that can be retained by the organization (the majority goes to the Krai Department of Hunting Management). The high harvest rates presumed in this scenario are dependent on a significant increase in ungulate densities above existing levels. It will require at least 3-4 years of intensive anti-poaching activities and habitat management to allow an increase in numbers sufficient to sustain such harvests.
3. Income from sale of furs has been almost non-existent in the past few years due to a collapse of the fur market in Russia. This situation appears to be largely attributable to the general collapse of the economy, and not specifically to the demand for furs. Costs of furs are returning to original levels, and markets are being developed where furs can be sold and auctioned. Organizing the sale of furs is an important component of managing the lease, and can provide an important potential source of income for both members and the organization itself. Sale of furs in bulk brings a better price than sale by individuals, and it is therefore in the interest of both individuals and organizations to band together. In our future efforts we will focus on assisting this and other leases in more effective sale and distribution of furs.

A comparison of the projected estimate of expenses associated with managing the lands and organization (Table 7) and the potential income (Table 6) suggest that there could actually be a slight surplus. However, at present the organization is a long ways from generating such revenue, as the accounting of in the last quarter of 1998 through the second quarter of 1999 demonstrates (Table 8). Clearly, there is a need for significant growth in the number of members and non-members who purchase hunting/trapping licenses for Southern Valley, and, for that it occur, there must be a significant increase in game populations. It is likely that 4-5 years will be needed to determine what levels of membership and license fees can be realistically expected from the local populace, and, only at that time, will it be possible to project accurately what the expected revenue will be.

Despite these limitations, it is likely that revenue generated from sale of licenses and furs (i.e., revenues generated from wildlife resources) will be insufficient to meet expenses. There are likely additional costs of management and maintenance that are probably inadequately represented in the accounting of Table 7. The cost of vehicle

Table 6. Projected incomes from hunting, trapping, and membership fees on Southern Valley Hunting Lease, Olginski Raion, Primorski Krai, Russia.

Source	Income estimate	Total income (rubles)
Membership dues:	200 members x 85 rbl	17,000
License Fees for Ungulates & Bears		
Elk, for members	30 members x 120 rbl	3,600
Elk, for non-members	20 x 400 rbl	8,000
Roe deer, for members	40 members x 60 rbl	2,400
Roe deer, for non-members	20 x 150	3,000
Wild boar, for members	50 members x 80 rbl	4,000
Wild boar, for non-members	20 x 200 rbl	4,000
Musk deer, for members	30 members x 35 rbl	1,050
Brown bear, for non-members	10 non-members x 2000 rbl	20,000
License Fees for Waterfowl: Spring season		
For members	10 members x 50 rbl	500
For non-members	10 x 100 rbl	1,000
License Fees for Waterfowl: Fall season		
For members	10 members x 50 rbl	500
For non-members	10 x 100 rbl	1,000
License Fees for woodcock and snipe		
For members	50 members x 10 rbl	500
For non-members	50 hunter days x 20 rbl	1,000
License fees for badgers		
For members	10 members x 100 rbl	1,000
For non-members	50 hunter days x 20 rbl	1,000
License fees for hare		
For members	100 members x 10 rbl	1,000
For non-members	50 non-members x 30	1,500
License fees for fur-bearers		
Squirrels	2000 skins x 2 rbl	4,000
Raccoon dogs	20 skins x 30 rbl	600
Red fox	10 skins x 30 rbl	300
Siberian weasels	100 skins x 2 rbl	200
Mink	50 skins x 5 rbl	250
River otters	2 skins x 100 rbl	200
Sable	140 skins x 30 rbl	4,200
Yellow-throated martens	5 skins x 3 rbl	15
Lynx	4 skins x 100 rbl	400
YEARLY INCOME FROM HUNTING/TRAPPING FEES		82,215

Table 7. Projected yearly expenses and balance for Southern Valley Hunting Lease

Source	Income estimate	Total income (roubles)
15% of membership fees to Krai Hunting Society	15% x 17000	2,550
Fuel for vehicle	3000 l x 2.5 rbl/l	7,500
Purchase and preparation of salt	30 sites x 50 kg x 2 rbl/kg	3,000
Easements of hayfields	4 ha x 1000 rbl/ha	4,000
Preparation and establishment of signs	30 signs x 100 rbl/sign	3,000
Maintenance of vehicle		30,000
Miscellaneous expenses		300
Salaries		
Director of lease	500 rbl/mo x 12 + (52% tax)	9120
2 Inspectors	300 rbl/mo x 12 + (52% tax) x 2	10944
Accountant	300 rbl/mo x 12 + (52% tax)	5472
TOTAL EXPENSES		75,886
TOTAL REVENUES		82,215
YEARLY BALANCE		6,329

purchase (replacement of present vehicle in the future, or need for additional vehicles), construction of cabins, maintenance of the base station, as well as other miscellaneous supplies will be required to maintain the lease. Salaries of employees of the lease are at a minimum presently, and to retain the quality of management, it will be essential to increase revenues that can guarantee good salaries.

Table 8. Actual revenue (in rubles) generated during first winter of Southern Valley Hunting Lease.

	1998	1999		
Source of revenue	4th qtr	1st qtr	2nd qtr	Totals
Introductory membership fees		2550	850	3400
Membership fees		2545	2160	4705
Hunting/trapping licenses	3877	79	1771	5727
Totals	3877	5174	4781	13832

In summary, there is a need to find sources of revenue in addition to those generated from the traditional management of wildlife resources. Potential sources include tourism, "high-end" hunting trips (both for wealthy Russians and foreigners) and exploitation of non-timber forest products. No one has grand expectations that large numbers on foreign tourists will come to see the Southern Valley Hunting Lease. However, local tourists, for instance, from Vladivostok, are likely to visit if they are aware of the site, and view it as a "get-away" from the city (approximately a 4-hour drive from Vladivostok and about 3 hours from Nakhodka). On another hunting lease managed by the Institute for Sustainable Use of Natural Resources, an organization pays a sizeable sum to retain a cabin and some hunting rights. Payment by this organization, nearly by itself, makes maintenance of the site financially feasible for the Institute, and this sort of relationship could bring greater financial stability to Southern Valley. Wealthy Russian hunters (individuals or groups), if catered to properly, could provide a significant amount of income with minimum impact on wildlife (such individuals are often not particularly good hunters, but are interested in the experience). Southern Valley may also be able to attract foreign hunters. Ussuri wild boar are considered the largest subspecies, and some of the largest specimens come from Olga Raion. European hunters may be particularly interested in such a trophy hunt. Brown bears, though not the size of individuals from Kamchatka, are nonetheless very large (over 700 pounds), so that, in addition to boar and elk, there are a number of potentially interesting game for foreign hunters. The final draw for at least some potential clients is the possibility to hunt "alongside" the Siberian tiger, and to become familiar with its domain. We have already made initial inquiries to explore possibilities with various international hunting organizations.

Additionally, Southern Valley Hunting organization has not started to exploit and sell non-timber forest products, which were in the past, and could again be again, an important source of income. Reorganization of the infrastructure for collection, preparation, distribution, and marketing of the berry/edible plant/medicinal plant "industries' is still emerging. On another hunting lease, we provided the capacity for packaging and selling honey that was produced by many members of the local hunting society, and that produce is providing a source of income for the society, as well as the individuals that produced the honey. It is this type of activity that must be investigated for Southern Valley as well.

The results of these preliminary assessments suggest that, despite some potentially large costs associated with managing hunting leases, it possible for them to become viable, financially self-sustaining organizations. However, it is clear that initial income is insufficient, and it will require at least 4-5 years for organizations to become fully functional. It is also likely that start-up costs are likely to be an insurmountable obstacle for many such organizations. Therefore initial investments, such as this grant from Save the Tiger Fund, are critical. Purchase of vehicles, a base of operations, and salaries for a few key individuals are likely the key start-up costs that will be crucial to any attempt to provide support. Success of any single operation will be dependent on the individuals identified to direct the operation. And long-term success is likely to be determined by the ability of a director, or the organization as a whole, to develop a source of revenue in addition to the money earned through exploitation of game animals. Effective and selective use of tourism, non-member trophy hunting, and exploitation of non-timber forest products are the most likely sources of this additional revenue.

MEASURING SUCCESS OF THE PROJECT

As a means of assessing the effectiveness of this project, we list our original objectives, as defined in the proposal submitted to NFWF, the activities initiated to achieve those objectives, and a brief statement defining the results of those activities. Some of our original objectives (e.g. increasing prey populations, demonstrating compatibility of tiger conservation and use of wildlife resources by locals) will obviously require much longer periods of time to fully assess. Increasing wildlife populations, and changing opinions are not things that can be done in a year – they are processes. Yet we feel we have made significant inroads towards seeking to means to define a coexistent relationship between local people and tigers. We are not providing anything inherently new to these people, except attempting to demonstrate that, with proper management, tigers and people do not necessarily compete for prey populations, and that there can be real, material benefits to supporting tiger conservation (as demonstrated by this grant).

The results of this project have demonstrated that relatively small initial infusions of cash can bring real changes in attempts to increase security for tigers on non-protected lands. It is clear that incidents of poaching have decreased significantly in the Southern Valley since inception of the hunting organization. Not one incidence of a tiger poaching has been reported since the Institute initiated activities on the land. Most of the serious local hunters realize that opportunities for ignoring the law are disappearing, and membership into a hunting society will be the only means of continuing the livelihood that they know. With this knowledge should come, eventually, a change in attitude towards the land and its resources. We cannot say yet that tigers and hunters are living in peaceful coexistence, because tigers are still viewed as competitors. Nonetheless, it is hard to get hunters together for long before talk turns to tigers. And that talk is not all about tigers as a problem animal. Discussion of encounters with tigers, and stories about exploits of tigers, always contain an element of admiration. Sponsorship of hunting leases is coming as a result of the international admiration for tigers. If we can build on that sense of admiration on the local level, and make it clear that there are material benefits to retaining tigers on hunting leases (in the form of real, international financial assistance), we will have come a long ways in our attempt to secure a place for tigers in non-protected habitats in the Russian Far East.

Table 9. To measure success, we present the original objectives, as detailed in the proposal to NFWF, activities implemented to achieve the Objectives, and a brief statement of results for the Southern Valley Hunting Lease.

Objective	Activity	Result
1 Select and lease a site for hunting management	Site selected, all applications completed and submitted	Site leased for 5 years, through July 2003
2 Increase number of ungulates	Road closed; anti-poaching activities initiated; salt licks established; easements for hayfields created	Too early to assess, but first surveys conducted
3 Decrease rate of poaching	Road closed; conservation officers hired; anti-poaching activities initiated; raids with Amba patrols coordinated; information distributed to local villagers	5 rifles confiscated; no reports of tigers poached; local attitudes changing
4 Develop road closure	Road into Korabaya Basin closed	Access still available from Lazo - more closures may be necessary
5 Develop monitoring program for ungulates and tigers	Surveys of ungulates completed; general assessment of tiger numbers conducted	Have basis for comparisons with future ungulate counts; a minimum of 11 tigers counted
6 Increase habitat quality for ungulates	Hayfield easements developed, salt licks developed; plans for supplemental winter browse, in case of emergency, developed	Too early to assess
7 Develop sustainable financial plan	Financial plan developed, income from hunting licenses obtained	Need growth in sources of revenue from tourism, sport hunting, and/or non-timber forest products
8 Create employment for locals	Hired individuals for management; provided opportunities for harvesting furs and game; seeking more profitable sale of furs; provided means for legal use of wildlife resources	Most of the serious hunters have joined the organization; need more opportunities for financial gain (e.g. harvest of non-timber forest products)
9 Demonstrate compatibility between tiger conservation and use of wildlife resources	Education of local people for need to conserve tigers; ungulate management to increase prey populations	Too early to assess, but changes have begun
10 Safeguard unprotected tiger habitat	All activities of Hunting lease	This parcel of land is probably better managed than if it were already converted to a national park (which would likely not receive adequate state support)

FINANCIAL REPORT

The financial report is provided in Table 9. Monies were used in close accordance with the approved budget with the exception of purchasing a building to serve as a base for the Hunting Lease. The rationale for this purchase is detailed above (see section 3, Management of the ….Lease: Organizational Steps). A detailed financial report, including receipts of purchases, is available upon request.

Table 10. Financial accounting for project "Leasing habitat for the Amur tiger".

Budget Category	Approved budget	Actual expenses
Vehicle	6000	6058
Vehicle parts and repair	600	620
Fuel	1200	1015
Field equipment and Supplies	1000	985
Signs to demarcate boundaries	400	400
Gates for road closure	500	250
Licensing costs	1000	960
Publications	1000	358
Ungulate management	1000	998
Travel	300	452
Purchase of building for lease	0	900
Salaries		
Project Coordinator	3000	3000
Director of Lease	2400	2400
Two forest guards	2400	2400
Total	20800	20796

APPENDICES

The following six documents are included as reference material for Southern Valley Hunting Lease. For ease of reference, translations of the first 4 appendices follow directly after the original.

Appendix I. Certification of commission on hunting leases

Appendix II. License for Hunting Lease

Appendix III. "Appendix 2 to License": Legal description of location of hunting lease

Appendix IV. "Appendix 3 to License": Definition of habitat types on the hunting unit

Appendix V. "Appendix 4 to License": Agreement between the Primorski Krai Department of Natural Resources and the Institute for Sustainable Use of Natural Resources on responsibilities for managing the Hunting Lease "Southern Valley".

Appendix VI. Agreement between Primorski Krai Society for Hunters and Fisherman and the Institute for Sustainable Use of Natural Resources

Appendix VII. Photographic representation of Southern Valley Hunting Lease and activities conducted under the Save the Tiger Fund grant.

Appendix I. Certification of commission on hunting leases

CERTIFICATE

Issued on the basis of certification of the applicant – "NON-STATE ENTERPRISE THE INSTITUTE FOR SUSTAINABLE USE OF NATURAL RESOURCES" - the city of Vladivostok (address: 7, Radio street, Vladivostok, 690041), which was conducted on the 22-nd of May 1998 by commission on professional certification of the Primorski Krai hunting land users (leaseholders of hunting lands) for the purpose of determining its capacity to manage a hunting lease in Primorski Krai.

RESOLUTION: Level of readiness for managing a hunting lease requires observance of the regulating Legislation in force at present, hunting lease statements and hunting regulations in Primorski Krai.

The Applicant obtains the right to 0btain a license in accordance with the established protocol and for developing an agreement for a hunting leasing in Primorski Krai.

Certificate issued: 1998/05/28

Chairman of certifying commission V.Shafranovsky

Secretary of commission S.Shvedov

Members of commission:

V.Gaponov O.Korotkova
I.Suslov N.Pogodin
T.Aramileva I.Popov

The applicant is recorded in the book of registration under the # 096 of the 22-nd of May, 1998.
Signature of a person responsible for registration S.Shvedov

(seal)

Appendix II. License for Hunting Lease

LICENSE

FOR USE OF HUNTING LEASE

Series 101 Number Type of license

Issued to non-state enterprise Institute for Sustainable Use of Natural Resources, Vladivostok
(subject of hunting lease activity, got this license)

in the name of Aramilev Vladimir Valerievich
(Name of a person representing hunting lease activity)

for purpose of (and other use types) hunting lease conducting activity

Unit is located in Olginsky Raion, Primorsky Krai according to Appendix 2
(name of administrative and land use raions, area demarcated by natural boundaries; map-sketch is enclosed)

Justification for obtaining rights Certification by Krai Commission on Hunting Lease Use of the 22-nd of July, 1998, report 14
(resolution of commission, #, date, notes)

Expiry date of license the 22-nd of July, 2003

Integral component parts of this license are the following documents: Appendices 1,2,3,4, listed on the 2-nd page of this license
(names of documents, number of pages)

Deputy of Chairman of Natural Resources Committee of Krai Administration

V.Shafranovsky
(date, signature, name)
1998/07/22

(seal)

Head of Primorsky Krai Hunting Administration

N.Drachyov
(date, signature, name)
1998/07/22

(seal)

The License user Institute for Sustainable Land Use, Vladivostok

1998/07/22 V. Aramilev
(date signature name)

Appendix III. “Appendix 2 to License”: Legal description of location of hunting lease

Location of hunting lease pg 2

Appendix 2
of lease license
user License
serial ОЛГ # 101
from the 22nd of July, 1998

LOCATION OF HUNTING LANDS GRANTED FOR LEASE

I. Description of hunting lands borders:

The southern border takes its beginning from the Sea of Japan shore along borders of Lazovsky and Olginsky Raions between the Neprokhodimy and Dubrovka springs and goes to the Northwest along watershed boundaries between the Proletnaya and Chorny Yar, Verbnaya and Katyukova, Molodyatino and Velichkina, Levaya and Pravaya Listvennaya and Dubovyi-Prokhodimyi, Burunduchya, Sopochnaya and Peschanka pads to the mountain Otkrytaya (1267.5). Further to the northwest along the watershed between the Milogradovka River and tributaries of the Kievka River through Lysaya Mountain (1224.7) and Mramornaya Mountain (1161.3) to Gorelaya Mountain (1471.9). Further the border turns to the Northwest along watershed boundary between tributaries of the Milogradovka River and tributaries of the Ussury River through altitudes 634.0; 938.4; 1026.7; 1323.8; 1298.3. Further the border goes along watershed between tributaries of the Margaritovka and Ussury Rivers to Snezhnaya Mountain (1682.3). From there the border bends around the upper basin of Kruglyanka spring (Margaritovka basin), turns to the southeast along the watershed between the Kruglyanka and Zvonky springs to the mouth of Kruglyanka creek. From the Kruglyanka creek down the Margaritovka river to the mouth of Pyreiny creek and further along the watershed divide between the Pyreiny and Senokosny creeks and Nikonova village to the mountain ridge between the Margaritovka and Mineralnaya Rivers. Then the border goes to the Southeast along watershed between the Vasilkovka and Margaritovka Rivers through the Narzanovaya (825.1), Khrebtovaya (751.6), Novopetropavlovka (754.0) Mountains to the Margaritovo-Mazurka road. From the pass the border turns to the Southwest and goes along this road to the Koryavaya Creek, further up along the creek to a section of a felling area (apiary), from this place to the southwest to the merger of Popova creek and Popova tributary, further up to the ridge between the Koryavaya and Bezymyanny spring up to the mouth of Koryavaya and down along the Koryavaya river right bank to the Moryak-Rybolov Bay. Further along the sea shore to the Milogradovka River mouth and up to the Martynovka creek and then upstream to the crossing with the Olga-Milogradovo road, from this crossing to the West through altitude 380.1 to the Limovaya pad and along it down flow to the Milogradovka river, further up the Milogradovka river flow to " Zagon " , from it to the South along forest and fields bordering to Listvennaya village. Further the border goes to the Southwest along the Milogradovka River to Milogradovo village, further goes out to the Verbnaya River and up the flow to the Barsuchya Pad Creek, along it up through a pass to the Mokraya Creek to the Neprimetnaya Bay and further to the Southwest along the sea shore to the border with the Lazovsky Raion.

II. Location of hunting lands towards the main landowners:

#	Landowners (administrative forestry enterprises, agricultural enterprises)	Forestry and agricultural land quarters numbers	Area (thousand ha)
1.	Olginsky administrative forestry enterprise		
	Margaritovskoye forestry enterprise	from 7 to 10; from 14 to 19; from 24 to 27; from 32 to 78; from 95 to 108; from 117 to 249	165,538

N.Drachyov,
head of Primorsky Krai
Hunting Administration

Appendix IV. “Appendix 3 to License”: Definition of habitat types on the hunting unit

Appendix 3
for hunting lease
use License
serial ОЛГ # 101
of the 22-nd of July, 1998

EXPLANATION OF HUNTING LANDS GRANTED ON LEASE

I. Total area of hunting lands: 165,538 ha
Forested lands: 165,539 ha
Agricultural lands: 0
Other lands (settlements, industrial lands, transportation lands, deer farms, fur farms, etc.): 0

II. Habitat types on hunting lease

□#□	Types of hunting lands□	Area (ha)	% of total
1.□	Korean pine forest□	4.747□	2.8□
2.□	Broad-leafed-Korean pine forest□	7.736	4.7
3.□	Korean pine-fir forest□	□	□
4.□	Spruce-fir forest□	23.145□	14.0□
5.□	Larch forest□	4.451□	2.7□
6.□	Small-leafed deciduous forest□	22.899□	13.8□
7.□	Broad-leaved deciduous forest□	3.714□	2.2□
8.□	Oak forest□	94.927□	57.4□
9.□	Clear-cut□	□	□
🗁🗀	Burn□	□	□
11.□	Open (sparse) stands□	0.988□	0.6□
12.□	Meadows□	□	□
13.□	Alpine□	2.413□	1.5□
14.□	Agriculture□	□	□
15.□	Wetlands□	0.348□	0.2□
16.□	Swamps□	0.17□	0.1□
17.□	Roads, human settlements□	□	□
18.□	Closed zones□	□	□
□	TOTAL□	165.538□	100%□

N.Drachyov, head of Primorsky Krai
Hunting Lease Administration
(seal, signature)

Appendix V. "Appendix 4 to License": Agreement between the Primorski Krai Department of Natural Resources and the Institute for Sustainable Use of Natural Resources on responsibilities for managing the Hunting Lease "Southern Valley".

Appendix VI. Agreement between Primorski Krai Society for Hunters and Fisherman and the Institute for Sustainable Use of Natural Resources

Appendix VII. Photographic representation of Southern Valley Hunting Lease and activities conducted with assistance from the Save-the-Tiger Fund.

Fig. 3. Korean pine-fir-birch forest.

Fig. 4. Oak with Korean pine understory.

Fig. 5. Oak forest in lower Milogradovko River Basin.

Fig. 6. Milogradovko River.

Fig. 7. Spruce-fir forest.

Fig. 8. Larch forest with azalea understory.

Fig. 9. Manchurian red deer at natural salt lick.

Fig. 10. Female Mandarin duck near nest site.

Fig. 11. Wild boar “rub” tree.

Fig. 12. Leaning Yellow birch used as a marking tree by tigers and bears.

Fig. 13. Tiger track on road.

Fig. 14. Track measurement used for monitoring tigers in Southern Valley.

Fig. 15. Setting out for winter surveys.

Fig. 16. Collecting information on tiger tracks.

Fig. 17. Coastline of Southern Valley Hunting Lease.

Fig. 18. Signs delineating boundary of Southern Valley Hunting Lease state, “Institute for Sustainable Use of Natural Resources’ Southern Valley Hunting Lease, Hunting without a license not permitted”.

Fig. 19. Setting signs designating Southern Valley Hunting Lease.

Fig. 20. Sign designating Southern Valley Hunting lease on main road passing through area.

Fig. 21. Poaching of a sika deer.

Fig. 22. Investigating sign for possible poaching by patrol group (including local policeman on right).

Fig. 23. Vehicle and building purchased with a grant from Save the Tiger Fund.

Fig. 24. V. V. Aramilev (right) and M. N. Mikhovkol (Director of Southern Valley lease) in front of building purchased as a base for the lease.

Fig. 25. Person detained illegally fishing in Southern Valley Hunting Lease.

Fig. 26. "Protocol" or ticket being written up for illegal fishing in Southern Valley Hunting Lease.

MAP LEGENDS

Figure 1. Map showing relation of Southern Valley Hunting Lease to Vladivostok and Lazovski Zapovednik.

Figure 2. Relationship of Southern Valley Hunting Lease to proposed Upper Ussuri National Park and the proposed protected area network for tiger conservation.

Southern Valley
Hunting Lease

Southern Valley
Hunting Lease

Lazovski Zapovednik

Sea of Japan

Vladivostok

Nakhodka

Ussurisk

Ussuriski
Zapovednik

Milogradovka River

Margaritovka River

Milogradovo

Margaritovo

Vacilkovski
Zakaznik

Moryak-Ribolov

LEFTOVOERS

At this stage meetings with local citizens were aimed at explaining the proposed project and to assess the potential for hiring staff for management and control of the lease. A comprehensive survey of commercially harvestable animals, as well as Amur tigers, was conducted after the hunting season in the area proposed for leasing. At the same time borders of the leasing were agreed upon with the Raion Administration and other land users. Finally, an application for obtaining the lease was submitted to the Hunting Department in the format required by the legal "Statement about Hunting Leases in Primorsky Krai".

The proposed application was agreed upon with Olginsky Raion Administration and land users, and was formally submitted for examination by in Primorsky Krai Hunting Administration of Russian Federation Agricultural and Food-Stuffs Ministry Hunting Department and by the Primorsky Krai Administration Committee for Natural Resources. The review process fully endorsed the application.

At the next stage it was necessary for a certifying commission to approve the capacity of the Institute for Sustainable Land Use to manage the lands and provide appropriate management and financial solvency in handling the lease. The commission endorsed the Institute for Sustainable Land Use, which received the appropriate certificate and obtained the right to manage the defined lease for wildlife (a copy of which is enclosed).

Yet another licensing commission was conducted to legally define the specific boundaries of the lease, which required agreements with the Primorsky Krai Administration Dept. of Natural Resources, the Primorsky Krai Hunting Administration, and the Primorsky Krai Committed for Environmental Protection (liscense enclosed).

The next stage in this process required a series of meetings between representatives of the Institute for Sustainable Land Use and the Olginsky Administration, as well as the local specialists on wildlife conservation and land use within the Raion. After the Raion Administration approved the concept of appropriating multiple use lands that included habitat protection for tigers further developments were initiated.

Anti-poaching patrolling of the hunting ease was organized and implemented. A series of raids have been conducted in the hunting lease with participation of V. V. Aramilev. While conducting patrols there was a continuous effort to educate people, both local as well as outsiders traveling through for vacations or hunting/fishing opportunities, of the change in management regime of Southern valley.

Managing the Hunting Season

Preparation for the fall/winter hunting season has already begun. Local citizens are usually allocated hunting units within a lease, and this process has been initiated. Quotas ungulates and fur bearing species are set by the state, and licensees based on these quotas were obtained from Hunting Lease Administration. These licensees were distributed among local citizens and appropriate documents were delivered for local people to obtain specific hunting unit.

In the fall/winter season work will be initiated on ungulates, fur-bearing animals, and tiger conservation in the leased area. At the end of the hunting season a survey of tigers and ungulates will be arranged in the leased area. If there is heavy snows in winter, supplemental feeding of ungulates will be organized. In spring a set of measures for increasing ungulate numbers will be conducted.