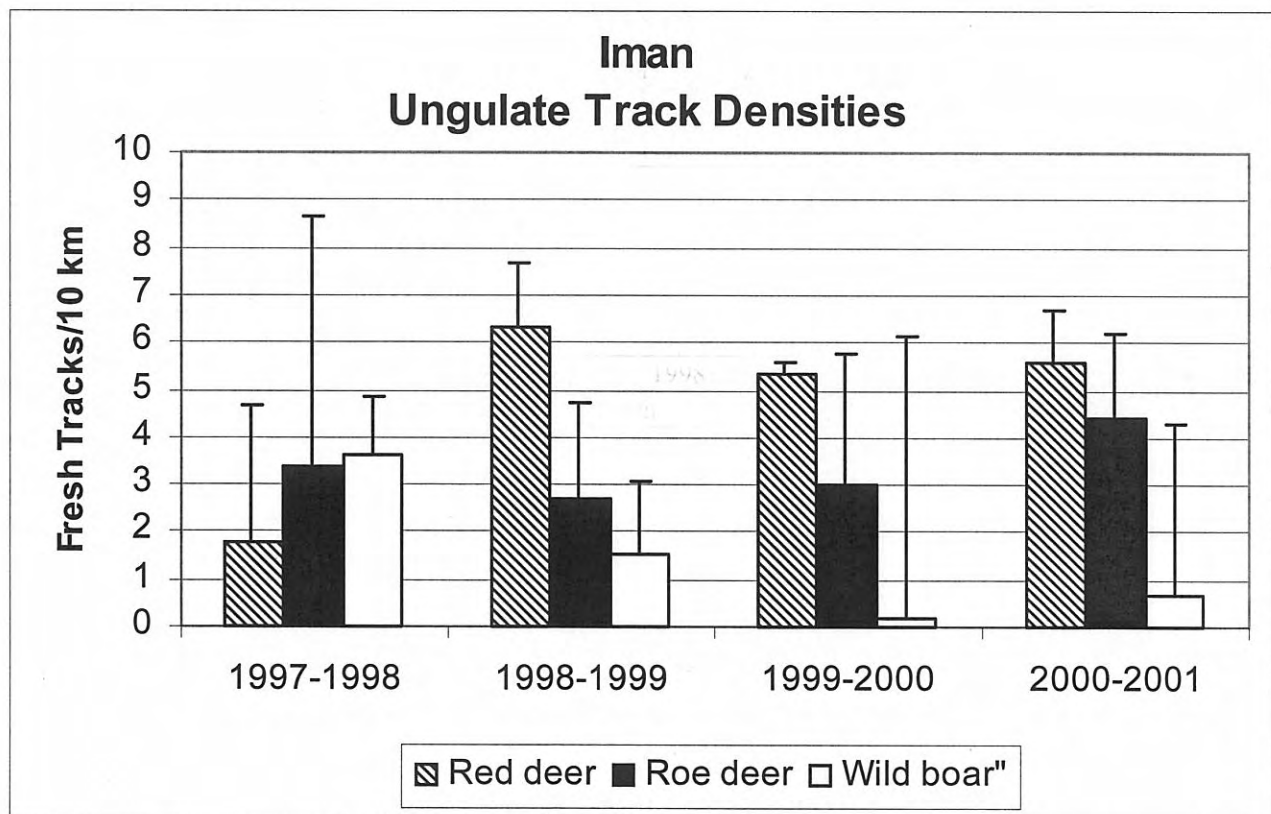


Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Totals		Total (all tigers)	
			Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults		Total independents*
Males	Females										
4	Iman	1997-1998	3	1	0	2	0	2	4	8	8
4	Iman	1998-1999	3	2	0	1	2	0	5	6	8
4	Iman	1999-2000	2	1	0	1	2	1	3	5	7
4	Iman	2000-2001	2	3	0	1	2	0	5	6	8

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
4	Iman	Red deer	12	1.79	2.88	6.33	5.27	5.34	7.23	5.56	3.71	4.76	5.20
4	Iman	Roe deer	12	3.38	5.33	2.68	2.28	2.98	3.94	4.45	7.10	3.37	4.87
4	Iman	Wild boar	12	3.63	5.07	1.55	2.37	0.19	0.40	0.66	2.03	1.51	3.18



**BIKIN RIVER TIGER MONITORING SITE**  
**Central Sikhote-Alin, Northern Primorski Krai**

**Report on results of Amur tiger monitoring program**  
**in Bikin monitoring unit in winter 2000-2001**  
**Coordinator**

**D.G. Pikunov**

**Pacific Institute of Geography, Far Eastern Branch Russian Academy of Sciences**

Simultaneous monitoring counts were conducted on January 5-14, 2001 and on February 22-28, 2001. As in past years 16 routes (total length 191 km) were traveled in Bikin monitoring unit. Routes # 1, 2, 5, 10, 11 - total 68 km - were traveled by snowmobile. Routes # 3, 4, 6, 7, 12, 13, 14, 15, 16 - total 101 km - were traveled on skies. Routes # 8 and 9 were traveled both on snowmobile and on skies - total 22 km.

By the first count, snow cover had developed without an icy crust. Snow was 28-40 cm deep, making it favorable for an efficient count. The first and second counts began 7-10 days after heavy snowfalls. From time to time light snow fell that helped to identify the age of tiger tracks correctly. Some difficulties were associated with snow cover: movements of ungulates were extremely limited in associated with short heavy snowfalls. As with ungulates, tigers also moved mostly within limited portions of their home ranges. Tiger tracks persisted for a long time because snowfalls were heavy but rare enough so there were many tiger tracks, increasing the ability to identify individual tigers.

During the second count most of professional hunters had already left the forest because low sable densities made trapping efforts mostly ineffectiveness. Their absence prevented us from obtaining additional information via personal interviews on tiger distribution over the territory, and, additionally, as there were no snowmobile trails, ski trails and hunter trails several routes that we previously counted from snowmobile had to covered on skies (a deviation from our normal monitoring protocol). Low winter temperatures (- 30-40°) made our work on routes more difficult, especially travel on snowmobiles.

Nevertheless, both counts provided sufficient information to define tiger numbers and distribution over the monitoring unit. The yearly trend of decreasing of ungulate numbers was clearly discernable along the main bed of Bikin river, where a primary snowmobile road is situated. The presence of several wild boar herds and a slight increase of in numbers of this species in western part of monitoring unit improved the quality of tiger habitat there. The large pine cone crop that developed in most areas of Primorski Krai did not occur in the Bikin basin. However, there was an abundant acorn crop in localized sites of mature oak forests that concentrated wild boar (and correspondingly tigers) in these territories. On the whole a great number of tracks on some routes and the complete absence of track on other routes, as well as an absence of tiger litters, confirmed that population status has become worse and tiger numbers have decreased. We were able to confirm a considerable number of poaching incidents of tigers in previous years, but people still appear unwilling to provide recent information.

The status of the ungulate populations is poor and in most regions of monitoring unit ungulate densities do not exceed 1-3 elk and 2-3 wild boar per 1,000 ha. Given this situation, survival for tigers is difficult. Low ungulate densities have influenced hunting behavior of tigers, which has become atypical, with isolated wild boar herds being followed by 1-2 tigers. Low ungulate numbers are probably the main reason for the absence of tiger litters. Under such conditions females are simply unable to raise viable cubs. This was

confirmed by the report of hunters that dead cubs were found, and that a female had apparently abandoned cubs 7-8 months old. In winter, such cubs left by female will usually die.

As an recommendation for monitoring methods, it should be noted that on the relatively flat western slopes of Sikhote-Alin range snow depth does not depend on aspect and topography very much. Snow depth depends more on canopy density. Probably in the future it will be reasonable to note canopy density in the places where snow depth is measured (and to write down this information into the diary). This is important because availability of food for ungulates (and as a result ungulate and tiger distribution over the territory) directly depends on snow distribution.

Survey results confirmed the presence of two or three resident males and three adult females in the monitoring unit. As we mentioned above no females with cubs as well as subadults were found.



**Amur Tiger  
Monitoring Program  
2000-2001 winter**



# Bikin 2000-2001

Tracks on routes

- First survey
- Second survey

Tracks off routes  
1999-2001

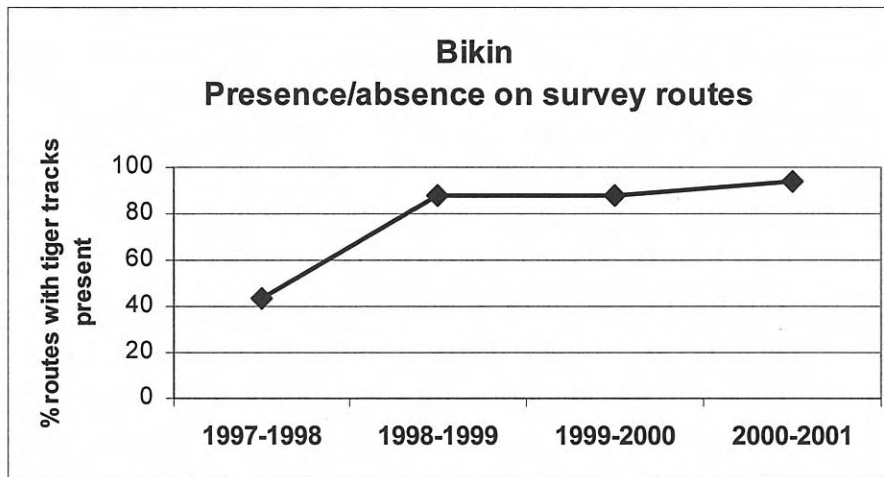
Survey routes

River system

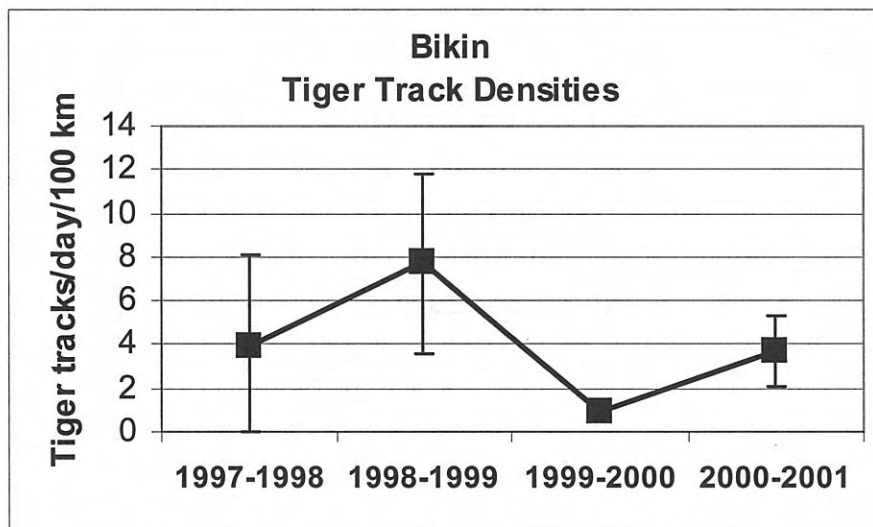
Forest type

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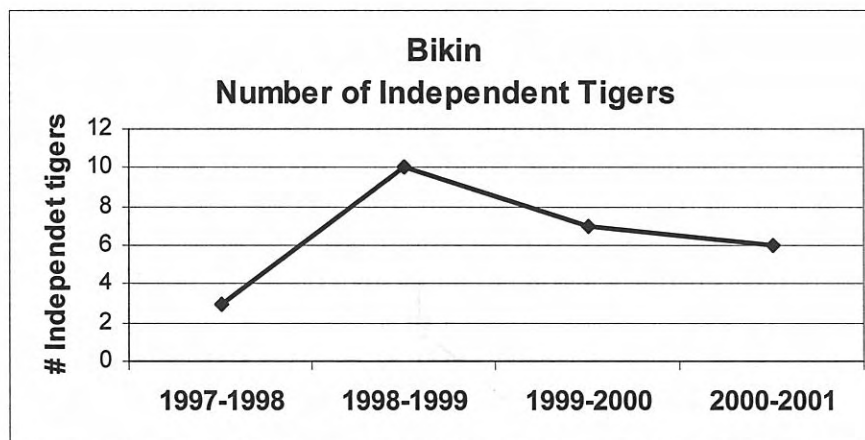




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in monitoring site across years



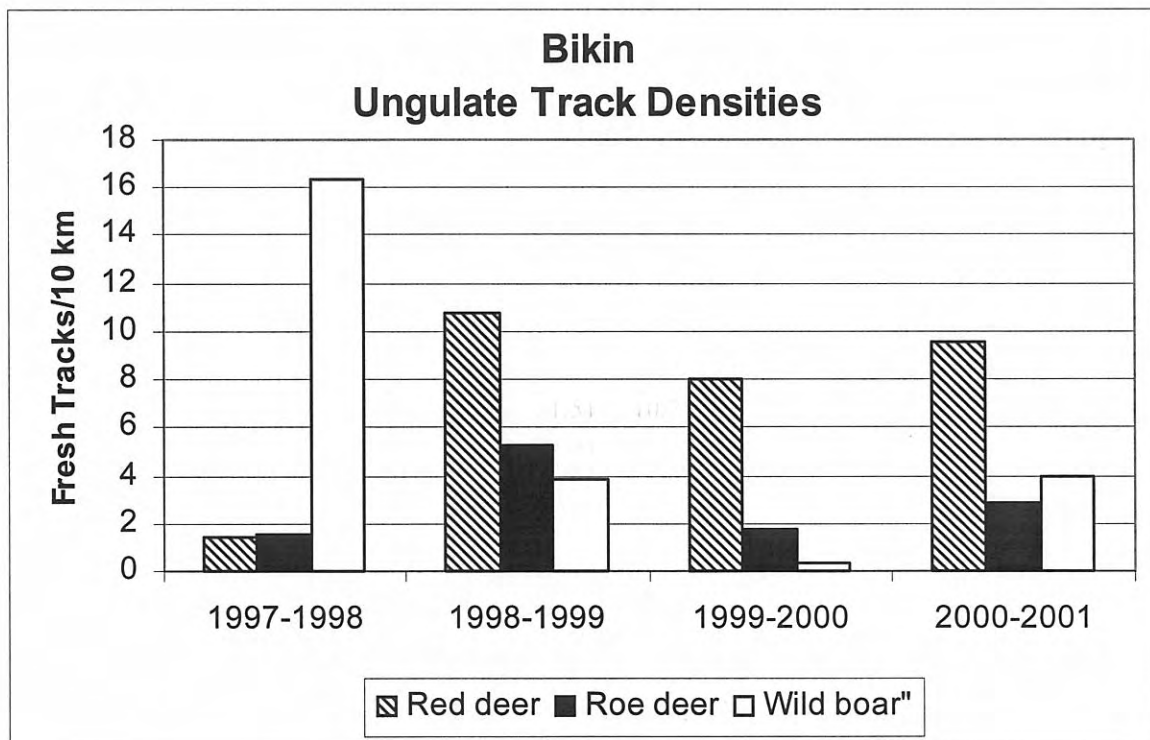
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Totals		Total (all tigers)	
			Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults		Total independents*
5	Bikin	1997-1998	0	3	0	0	3	0	3	3	6
5	Bikin	1998-1999	2	2	1	3	0	2	5	10	10
5	Bikin	1999-2000	2	2	1	1	1	1	5	7	8
5	Bikin	2000-2001	2	4	0	0	0	0	6	6	6

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
5	Bikin	Red deer	16	1.37	1.51	10.78	9.97	8.01	6.62	9.53	9.05	7.42	8.22
5	Bikin	Roe deer	16	1.49	1.91	5.30	3.03	1.74	2.85	2.88	3.15	2.85	3.11
5	Bikin	Sika deer	16	0.31	1.05	3.66	8.69	0.00	0.00	0.00	0.00	0.99	4.55
5	Bikin	Wild boar	16	16.32	61.21	3.80	4.56	0.30	0.65	3.97	5.83	6.10	30.70



# SIKHOTE-ALIN STATE BIOSPHERE ZAPOVEDNIK AND TERNEY HUNTING SOCIETY

(Coastal, or “eastern macroslope” portion of zapovednik)

Terneiski Raion

Northeast Primorski Krai

2000-2001

## Report on results of Amur tiger monitoring program

in SABZ and Terney Hunting Lease model units in winter 2001

Coordinator - E. N. Smirnov, Sikhote-Alin State Biosphere Zapovednik

1. Model units: Sikhote-Alin State Biosphere Reserve (SABZ)  
Terney Hunting Lease
2. Coordinator: Smirnov E. N.
3. Time of surveys: January 14-20, 2001  
February 14-20, 2001
4. Numbers of routes: 1-52
5. Total length of routes: In January 556 km of routes were traveled on foot and 181 km - by vehicle.  
In February – 342 km were traveled on foot and 198 km – by vehicle.
6. Conditions: Snow fell on the 10<sup>th</sup> of January and the count began on 14<sup>th</sup> of January. Snow cover did not exceed 30-40 cm. Conditions for the survey were favorable. In February the last snowfall was on the 2<sup>nd</sup> of February and the survey was conducted on February 14-20 in the presence of numerous tracks left on snow (mnogosleditsa). Snow cover, as in January, did not exceed 30-40 cm. Conditions for survey were favorable.
7. Assessment of efficiency: Both counts - in January and February - were successful. Not all forest roads were traveled completely because some of them were in poor condition or not plowed. And I hope they will never be cleaned out. Two routes (18 and 19) were not traveled because a trade hunter (the usual field worker) was absent there. But on the whole these changes did not influence picture of tiger and ungulate densities.

How to assess the efficiency of conducted survey? What are the criteria? Who is the judge? I wrote about it in my previous report. I do not want to repeat.

To my mind, no dramatic changes associated with habitat or wild animals have occurred in our model units (SABZ and Terney Hunting lease). I think that situation has been stable for all the years of monitoring (for wild animals). And what about Man - the situation becomes worse and worse. People grow poor, have no job and belief in the future, there is no social support. And to put it mildly - local people have become brutal. They are looking for ways to

survive and find them in Nature. Whether we want to or not, we have to draw attention to people in small villages, situated in taiga – eventually the tigers' fate depends on them.

#### 8. Conclusions:

In comparison with previous counts, no drastic changes were found. Status of habitat actually has not changed. Wild animals' density is at the same level. The results of our counts are far from absolute and depending on many factors can differ by order of magnitude. The most difficult situation is with local people. We can do little for them but we must. But this is the theme for separate conversation.





# Sikhote-Alin Zapovednik (coastal section) 2000-2001



## Amur Tiger Monitoring Program 2000-2001 winter

Tracks on routes

- First survey
- Second survey

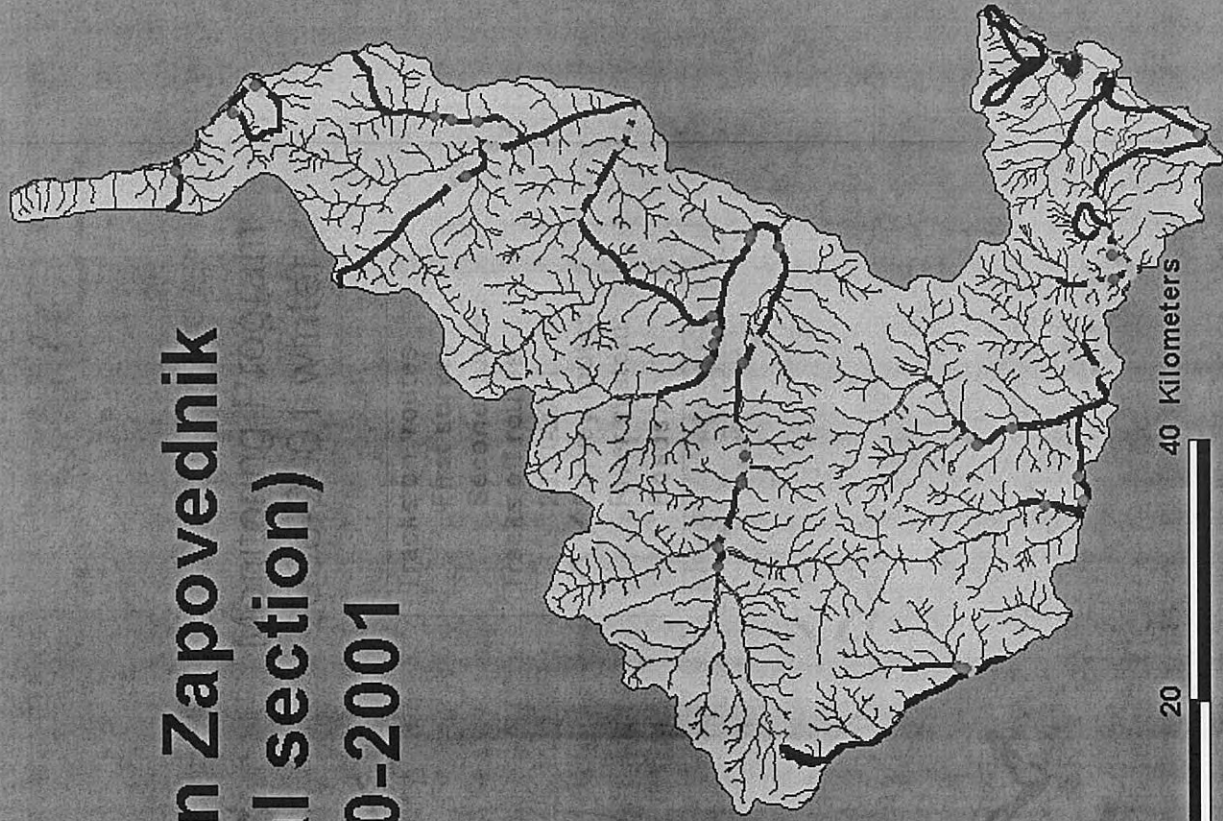
Tracks off routes

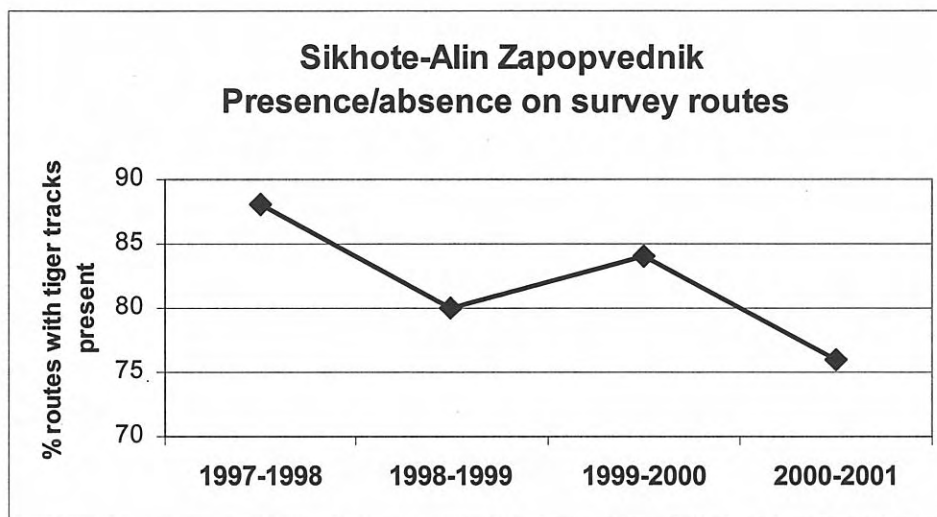
2000-2001

Survey routes

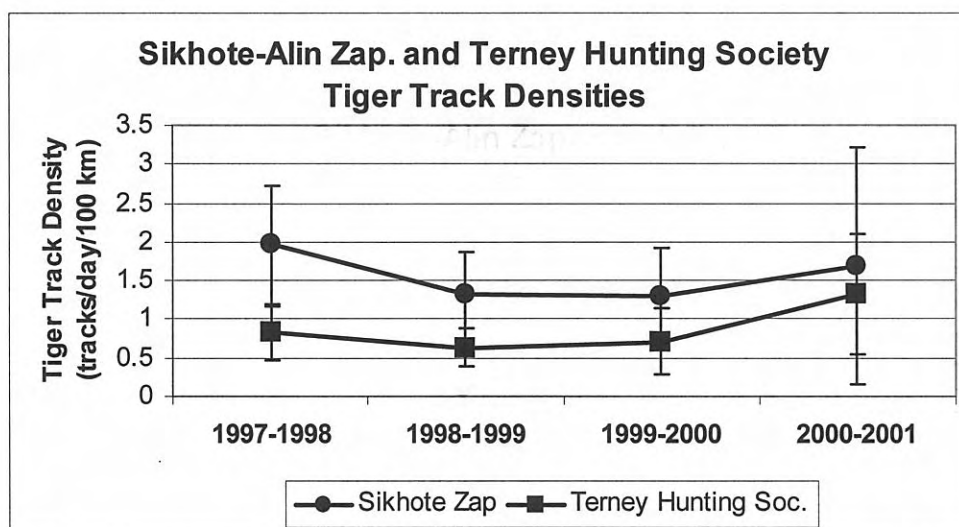
River system

Roads

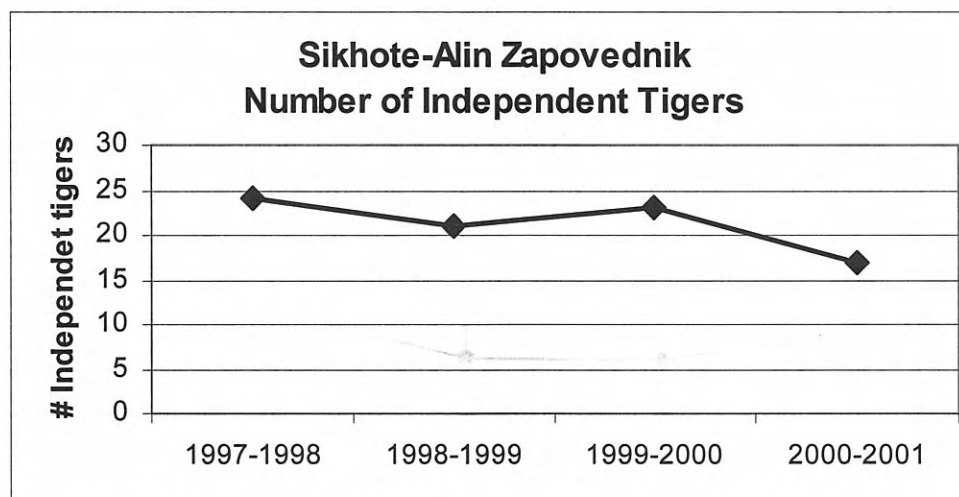




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in Sikhote-Alin Zapovednik and Terney Hunting Society, Terneiski Raion



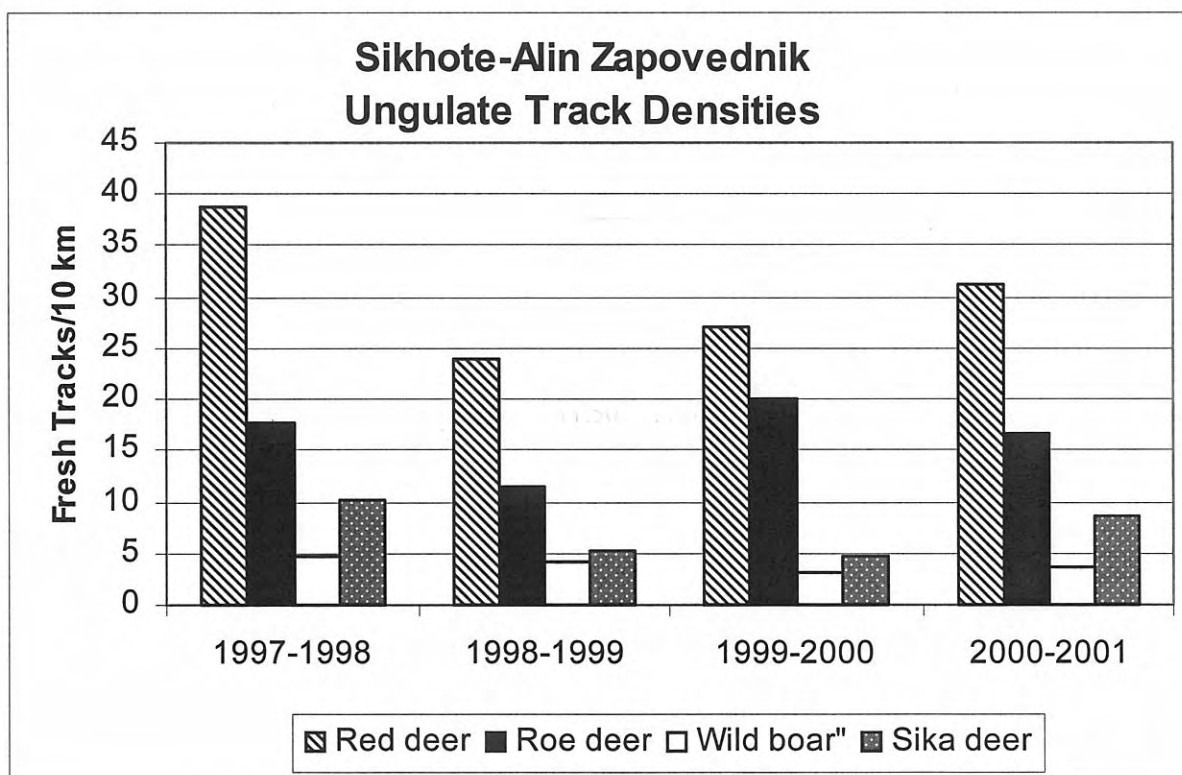
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

# Site	Year	Age						Totals		Total (all tigers)
		Adults		Un-known	Sub-adults	Cubs	Age unknown	Total adults	Total independents*	
Males	Females									
14 Sikhote-Alin Zap.	1997-1998	10	10	0	0	8	4	20	24	32
14 Sikhote-Alin Zap.	1998-1999	7	5	0	1	0	8	12	21	21
14 Sikhote-Alin Zap.	1999-2000	7	7	0	4	1	5	14	23	24
14 Sikhote-Alin Zap.	2000-2001	3	7	0	2	4	5	10	17	21

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

# Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
			mean	std	mean	std	mean	std	mean	std	mean	std
14 Zapovednik Sikhote Alin	Red deer	25	38.86	56.83	23.98	16.71	27.02	22.64	31.28	16.80	30.28	32.79
14 Zapovednik Sikhote Alin	Roe deer	25	17.60	39.80	11.50	17.62	20.05	21.05	16.77	19.66	16.48	25.89
14 Zapovednik Sikhote Alin	Sika deer	25	10.24	29.29	5.18	12.45	4.68	12.59	8.71	22.33	7.21	20.26
14 Zapovednik Sikhote Alin	Wild boar	25	4.60	4.91	4.21	4.78	3.25	5.09	3.57	4.63	3.90	4.81



## LAZOVSKI ZAPOVEDNIK

### Southeast Primorski Krai

**Report on results of Amur tiger monitoring program  
in Lazovsky Zapovednik monitoring unit in winter 2000-2001  
Coordinator - G. P. Salkina**

1. Name of monitoring unit: Lazovsky Zapovednik
2. Coordinator: G. P. Salkina
3. Time of simultaneous counts: the first count was conducted on December 14-27. The count on 10 routes out of 12 was conducted on 14-15<sup>th</sup> of December. Seven routes were traveled on the 14<sup>th</sup> of December, three routes were traveled on the 15<sup>th</sup> of December, and the remaining two routes were traveled on 17<sup>th</sup> and 27<sup>th</sup> of December. The second count was conducted on 10 routes out of 12 on 10-11<sup>th</sup> of February and two routes were traveled on 12<sup>th</sup> and 25-26<sup>th</sup> of February.
4. Routes ##: 1-12
5. Total length of routes: all routes (total length is about 130 km) were traveled on foot.
6. Conditions: the first snow fell early this winter - on 20<sup>th</sup> of November. The last snow before counts fell on the 9<sup>th</sup> of December, but then there was a strong wind that could destroy some tracks. The count on 10 routes out of 12 was conducted in 5-6 days after snowfall. During the count snow depth varied from 13 cm on the coast to 50 cm inland (count on 27<sup>th</sup> of December). During the main survey (December 14-17) maximum snow depth inland was up to 38 cm in the upper reaches and on passes. On northeastern slopes along the coast snow depth was as much as 34 cm.

Before the count in February the last snowfall took place on the 1<sup>st</sup> of February. Routes were traveled 9-10 days after last snowfall (10 routes out of 12), one route 11 days after snow, and the last route 24-25 days after snow. In February snow depth varied from 0 cm in some places on passes to 80 cm in creek heads. At this time snow depth on the coast was 17 cm in coniferous forests, up to 50 cm on passes, up to 54 cm in glades and up to 74 cm in fir forests. The weather was rather cold on the 10<sup>th</sup> and 11<sup>th</sup> of February. During this count snow was crumbly, icy crust over snow occurred only in a scattering of areas. On 25<sup>th</sup> and 26<sup>th</sup> of February count was conducted on route # 4 because this route was not traveled earlier (see below). At this time snow was crumbly and was melting extensively, making it difficult to walk (that is why the route was traveled during two days) and to identify age of tracks.

7. Assessment of efficiency: In December snow depth did not obstruct our survey work along the routes. However rivers were not frozen completely and it was difficult to travel, especially on skies. In February snow was much more abundant and it was impossible to walk along the routes without wide skies in inland regions. Fieldworkers had to use only their own skies and not all people have them. Route # 4 had to be traveled on 10<sup>th</sup> and 11<sup>th</sup> of February, when the survey was being conducted. A fieldworker was brought to the route in morning on 10<sup>th</sup> of February, and he later gave the information about tiger tracks, ungulate tracks and snow depth to coordinator, who recorded all data in a Field diary. But later we received information that the route had not been traveled. A check on the work confirmed this information. There were no human tracks neither in creek valleys nor on trails where the route is situated. Therefore this route was surveyed on 25<sup>th</sup> and 26<sup>th</sup> of February, i.e. 16 days

after the beginning of the survey in the zapovednik. Our visit to the cabin in Shirokiy Log creek confirmed that this fieldworker was here during survey in December, i.e. he traveled only one-third of the route. The rest of the survey route probably was not traveled.

During the count in February an incident occurred. Because of deep snow a fieldworker who was travelling along route # 5 reached the pass (that is situated in the middle of the route) only in the evening despite the fact that he drove out of Lazo at 8 a.m. He had skis 15 cm wide. On the pass he was not able to take off his boots to dry his feet. Here the fieldworker had to wait until the moon rose (about 10:30 p.m.) and then went down to the cabin, which he reached only in the evening of the next day. As a result he incurred severe frostbite on his feet. Search for fieldworker began immediately and he was immediately provided with medical care. This person was a highly experienced and conscientious fieldworker and he gathered all the necessary data. According to zapovednik's safety code routes should be traveled by two people. To minimize such incidents coordinators of monitoring program should develop a safety code and insert it into Field diary. It is necessary to buy 24 (12?) pairs of skis of adequate width.

It is difficult to write the data on snow depth in the Table # 8. The following points are placed in the table - snow depth at the starting point of route, in the middle and at the end of the route. Instruction for coordinators says that snow depth should be measured in valley, on slopes and on the pass. Many routes pass river valleys through slopes of different aspects. Here is the question - what measurements should be done in this case? For example - if route passes through river valley, through divide, southern and northern slopes - it is clear that it is necessary to measure snow depth in valley, on different slopes and on pass in order to obtain adequate information about snow conditions of this winter. Table columns concerning snow depth should have subsections: snow depth in valley, on slopes (separately southern slopes, including southeastern and southwestern parts, and northern slopes, including northeastern and northwestern parts), on divides. Field diary should contain instructions how and where to measure snow depth, how many measurements should be done at one place or to give mean value. There is also a question - what to do with snow-wreaths and places without snow - to measure them separately or to give mean value?

#### 8. Summarizing of results:

##### *Living conditions and status of ungulate populations.*

Tiger prey species that occur in this unit include wild boar, elk, sika deer, roe deer, musk deer and ghoral. Zapovednik should provide optimal conditions for these species, and there are all types of habitat here - from oak forests to coniferous taiga. This fall there was an abundant crop of pine cones. The 2000-2001 winter was difficult for ungulates. Snow cover formed early with the first snowfall on 20<sup>th</sup> of November, which did not melt (except on southern slopes). The border of the Zapovednik is indented; valleys jut out deep into its territory. Ungulates came down to valleys beyond borders of the zapovednik, to fields and roads where they were poached. In January snow cover increased (see above), and the winter was quite cold. The weather station in Preobrazhenie registered - 22° C for only the second time in the past 15 years. Snow insolation (?) was inadequate and winter conditions ungulates were difficult, especially for sika deer, which have a hard time with snow depths greater than 50-60 cm for 2-3 months. A great number of sika deer were poached on the road between Benevskoe and Kievka village. From November to March 219 poached ungulates were registered by Zapovednik employees (most of them sika deer). Part of the population died from starvation, caused by deep snow (20 sika deer were found). The situation was aggravated by a 40-50 cm snowfall that took place between 3<sup>rd</sup> and 4<sup>th</sup> of March, followed by

sleet on the coast, resulting in an icy crust. Dead deer (which were dissected) had full stomach but filled with low-calorie food.

Average number of sika deer in a herd was six individuals. It was taking into consideration during tracks counting on "zhirovka". To count tracks of other ungulates was not difficult for fieldworkers.

In comparison with the past year total ungulate density increased by 8% (approximately, if to take average values for December and February). The elk and wild boar populations remain more stable than sika deer, but it is likely that ungulate populations (especially sika deer) will decline further before green-up begins.

*Living conditions and status of tiger population in comparison with previous information (with data of Tiger census 1996).*

In comparison with data obtained last year and during the 1996 tiger census the number of tigers has increased by one individual. Two litters consisting of five cubs appeared. Information about litters appears valid because in one case it was checked by coordinator, in another case the cub tracks were photographed. Tiger numbers can be overestimated due to inaccurate measurements of pad width and errors in identifying age of tracks. But there is no doubt that six tigers were present in the reserve during the survey. But following facts raise some doubts. During the past years visible tiger signs have become rare in the zapovednik, including the number of communicative signs (scratches, urine marks, etc.). On some routes no tigers have been found for a long time: during one survey tigers left numerous tracks, during another survey there were neither fresh nor old tiger tracks. It is indicative that only three tigers were found during the count "on white trails" (three tracks during the first day and one track - during the second day), although in past years at least six tigers were identified during such survey. That is why the number of tiger tracks per route unit does not directly reflect tiger numbers and density.

Appearance of cubs indicates that population status is improving to some extent in comparison with past two years. However, illegal hunting for deer and their death from starvation probably will destabilize the current situation.

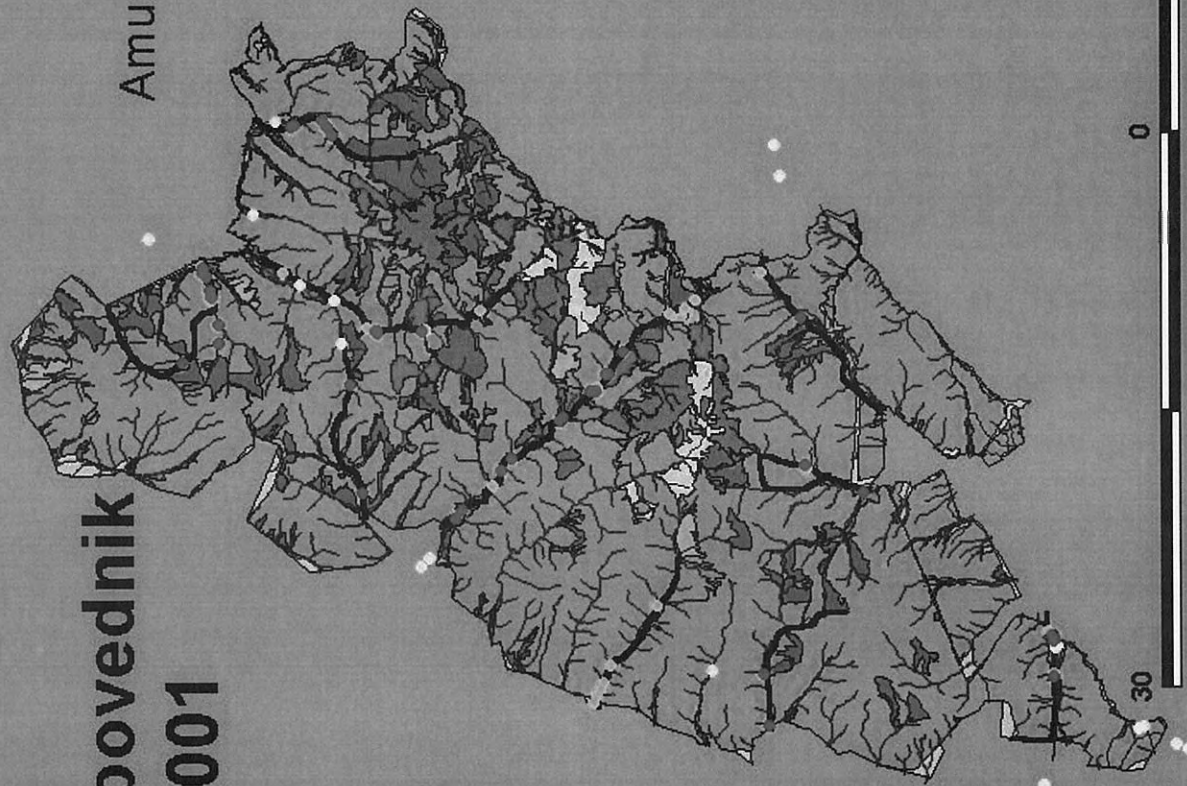
*Habitat conditions*

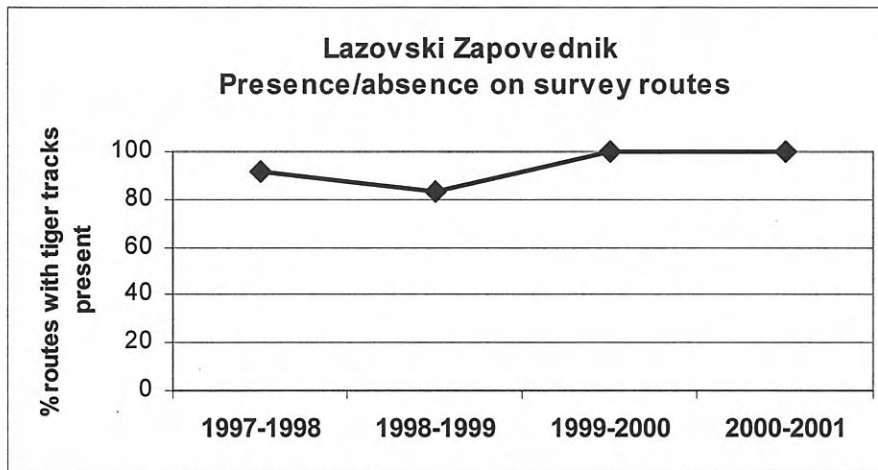
In past fire season (spring and fall 2000) there was one forest fire in the territory of the reserve, where 2.5 ha were burnt. One road (about 6-7 km long) was being reconstructed in northeastern part of coast. High recreational pressure still remains on southeastern coastal part of the reserve. In the warm season many people cross the reserve territory in order to get to the bay that is situated in an adjacent area. As far back as in 1998 the drying of Jeddo spruce in the area of 100 ha was registered. Probably this process began in 1992. The number of ungulates in the reserve is influenced by poaching that takes place near the reserve's borders and in its buffer zone, which are visited by ungulates from time to time.



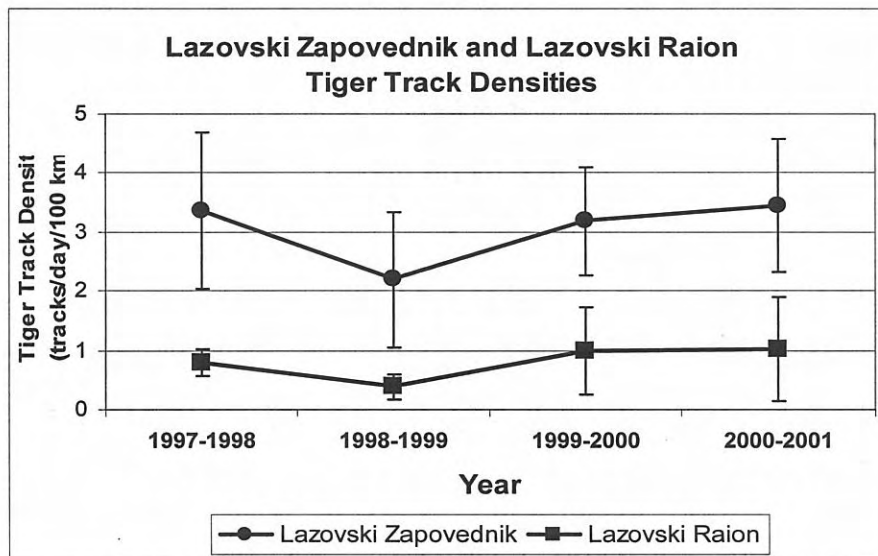
# Lazovski Zapovednik 2000-2001

# Amur Tiger Monitoring Program 2000-2001 winter





Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in Lazovski Zapovednik and adjacent Lazovski Raion



Number of Independent tigers (adults, subadults, unknown) on monitoring site

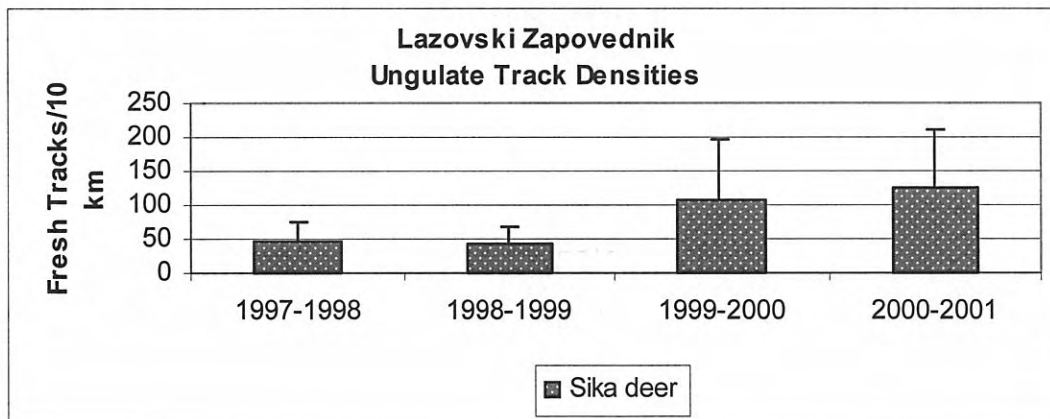
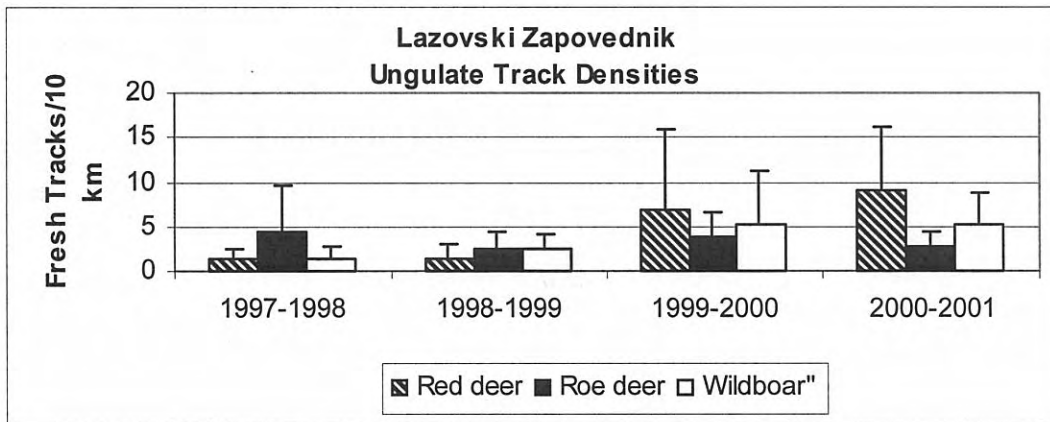


Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Totals			
			Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults	Total independ ents*	Total (all tigers)
			Males	Females							
1	Lasovski Zapovednik	1997-1998	0	0	0	0	0	6	0	6	6
1	Lasovski Zapovednik	1998-1999	0	1	0	0	2	7	1	8	10
1	Lasovski Zapovednik	1999-2000	3	4	0	0	0	3	7	10	10
1	Lasovski Zapovednik	2000-2001	1	2	0	0	5	8	3	11	16

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
	Lasovski												
1	Zapovednik	Red deer	12	1.23	2.39	1.49	2.64	6.94	15.66	9.16	12.57	4.71	10.46
	Lasovski												
1	Zapovednik	Roe deer	12	4.30	9.26	2.40	3.60	3.90	4.89	2.73	3.05	3.33	5.61
	Lasovski												
1	Zapovednik	Sika deer	12	45.18	50.58	43.85	39.94	108.28	158.11	123.38	155.86	80.17	117.63
	Lasovski												
1	Zapovednik	Wild boar	12	1.45	2.16	2.52	2.73	5.24	10.45	5.08	6.45	3.57	6.39



**LAZOVSKI RAION**  
**Southeast Primorski Krai**

**Report on results of Amur tiger monitoring program  
in Lazovsky Raion model unit in winter 2000-2001  
Coordinator - G. P. Salkina**

1. Name of model unit: Lazovsky raion - Krivaya river basin and coast
2. Coordinator: G. P. Salkina
3. Time of simultaneous counts: December 27-30 and February 16-22 (survey on 10.5 routes out of 11 was conducted on February 16-21, 2001)
4. Routes ##: 1-11
5. Total length of routes: nine routes were traveled on foot, two routes were partly traveled on foot and partly by vehicle. Total length of routes is about 145 km.
6. Conditions: the first snow fell early this winter - on 20<sup>th</sup> of November. The last snow before counts fell on 23<sup>rd</sup> of December; then there was a strong wind that could eliminate some tracks. The count was conducted 4-7 days after snowfall. During the count snow depth varied from 10 cm on the coast to 100 cm on the divide in the upper reaches of Krivaya river. In Krivaya valley snow depth was 29-48 cm. Snow depth on northern slopes was up to 45 cm, on southern slopes - up to 37 cm, on passes - 40-100 cm.

Before the count in February the last snowfall took place on the 1<sup>st</sup> of February. Routes were traveled 15-20 days after the last snowfall (10 routes out of 11), the second part of the last route was traveled on the 21<sup>st</sup> day after snowfall. During the count snowmelt was extensive, and the temperature was above zero. It was difficult to travel along routes because snow stuck to skies, and one route was traveled during two days, including a night spent in the forest. In February snow depth varied from 37 cm in valley bottoms to 68 cm on northern slopes in Krivaya river basin. Snow depth in this river valley was 48-57 cm. At this time snow depth on the coast was 0-70 cm. Here on northern slopes snow was 67-70 cm deep, on southern slopes - 0-70 cm deep and in river and creek valleys - 0-70 cm deep.

7. Assessment of efficiency: Two routes were partly traveled on foot and partly by vehicle because it was necessary to travel routes ## 4 and 5 completely in one day because there were no cabins to stay overnight (cabins were burnt). That is why we tried to drive fieldworker as far as possible along the road and then finish the route on foot. Route # 6 was also traveled by a combination of vehicle and on foot. This route is situated in river valley where there are many crossings, i.e. this area was difficult to travel by vehicle. That is why we should not leave the driver (who brought fieldworkers to the place) alone. It was impossible to use more fieldworkers or assistants because the vehicle was small.

In February the count was delayed due to incident which occurred during the survey in the Zapovednik (see report on Lazovsky Zapovednik).

On the whole surveys were conducted by experienced people in an appropriate timeframe.

8. Summarizing of results:

*Living conditions and status of ungulate populations.*

Tiger prey species that inhabit the monitoring unit include wild boar, elk, sika deer and roe deer. Abundant pine nut crop was available in fall of 2000, but much of it was gathered by people. The 2000-2001 winter was difficult for ungulates. First snow fell on 20<sup>th</sup> of

November and it did not melt (except on southern slopes). Ungulates came down to the valleys, fields and roads where they were easily poached. In January snow depth increased substantially, and the winter was quite cold. The weather station in Preobrazhenie registered 22° C, only the second such record in the past 15 years. Snow insolation was inadequate and winter conditions were difficult for ungulates. The sika deer population especially was hard hit. It is generally accepted that this species copes poorly with snow depths greater than 50-60 cm for 2-3 months. At the beginning of March, because of greater snow depths (about 60 cm more), the conditions for ungulates in this model unit were more difficult than in Lazovsky Zapovednik. By the 8-12th of March snow cover was up to 1 m, and an icy crust formed, strong enough to support a man, and leave no human tracks. During the count 28 poached deer were found, and 13 deer died from starvation (including the beginning of March).

The number of ungulate tracks found this year was on average less than past year. The number of elk tracks decreased by 5-6 times; the number of wild boar tracks remains at the same low level.

*Living conditions and status of tiger population in comparison with previous information (for example with data of Tiger census 1996).*

In this model unit the tiger population density (adult tigers) has reduced (even taking into consideration a possible underestimation) twice in comparison with the winter season 1995-1996. This winter one litter which consisted of three cubs was registered. In 1995-1996 (up to February 1996) four litters totalling five cubs were present in this territory. Therefore, the number of tiger cubs has been reduced in half. Tigers were not found in the southwestern part of the unit, where no tracks were observed on five routes during the count. No tiger tracks were also found on one route situated in the northeastern part. Last year there were no tiger tracks here as well, but a tiger walked within the valley where the route is situated. Last year tiger signs (marked trees) were found on two routes. This year no tiger tracks or signs were found on another route (neither during the counts nor during the whole season). Tiger habitat is being eliminated by the densely populated valley of adjacent Partizansk Raion. Tigers can be still found in remote areas, which are difficult for hunters to access or to develop.

Illegal hunting for ungulates and death due to starvation will probably have a negative impact on this tiger subpopulation in the future.

*Habitat conditions*

During this year, no considerable movements of human population occurred in this model unit. In Krakovka Bay the owner of one of recreation departments is constructing a smoking-shed. We suppose it will be used for smoking of meat of wild ungulates, sika deer in particular, which are widely distributed here, even though this population of sika deer in Lazovsky Raion is listed in the Red Book of the Russian Federation.

Industrial development did not increase. According to the information of Lazo Forestry District, the area of logging activity in this model unit was less than past years. Data obtained from Tikhookeanski Forestry (military forestry that includes Medonos creek basin)

indicated that there was no logging here. But information we have does not confirm this statement. Logging took place both in this and past years.

According to the information obtained from local forestries and local people, no fires happened burned last year in this model unit.

Recreational pressure from citizens of epy adjacent densely populated Partizanski raion remains high. In summer many people are looking for ginseng here. In the upper reaches of Krivaya river in Maly Port hunting lease there is a reproduction area, where hunting is limited. But ungulate density remains very low there. It is especially evident in Medonos creek area, where route # 4 is situated. No fresh tracks of ungulates were found there and old tracks are also very rare. Many more ungulate tracks were found on the next route that is situated on the other side of divide along the river valley, which flows into the sea. Probably deep snow made access to this area very difficult.

Hunting pressure on ungulate populations increased in comparison with the past year. The number of licenses distributed for hunting elk and wild boar is more than ungulate populations' density can bear. Hunters with license have a right to stay in the territory, but they kill sika deer instead of elk, wild boar or roe deer.

On the whole, it is our opinion that tiger habitat and living conditions in this model unit continue to deteriorate.



# Lazovski Raion 2000-2001



Tracks on routes

- First survey
- Second survey

Tracks off routes

- 2000-2001

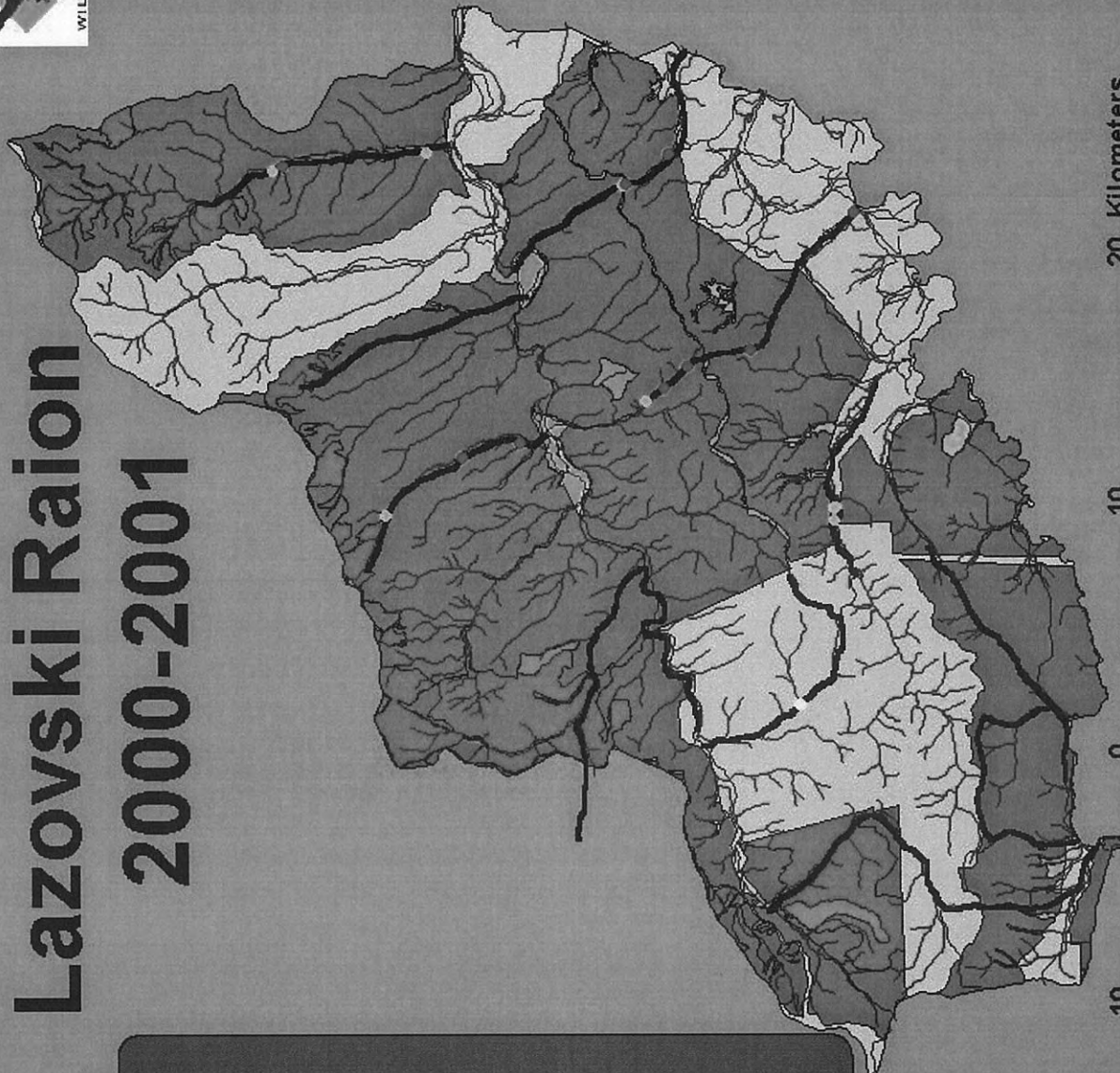
Routes

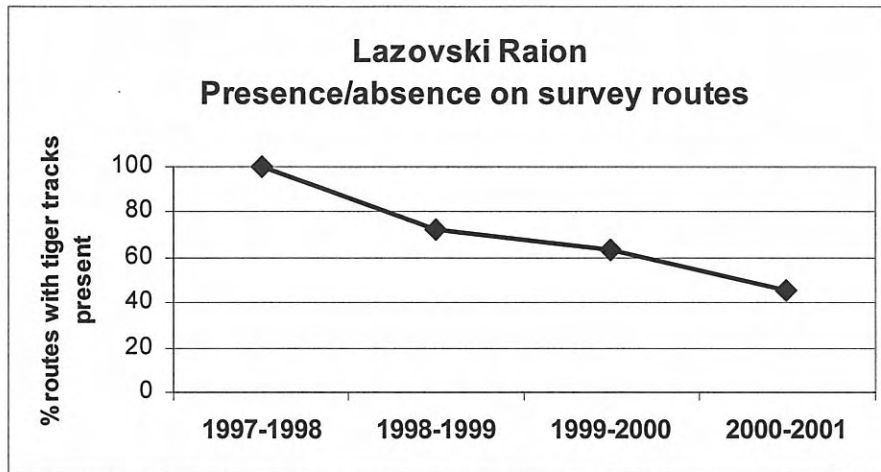
Roads

River system

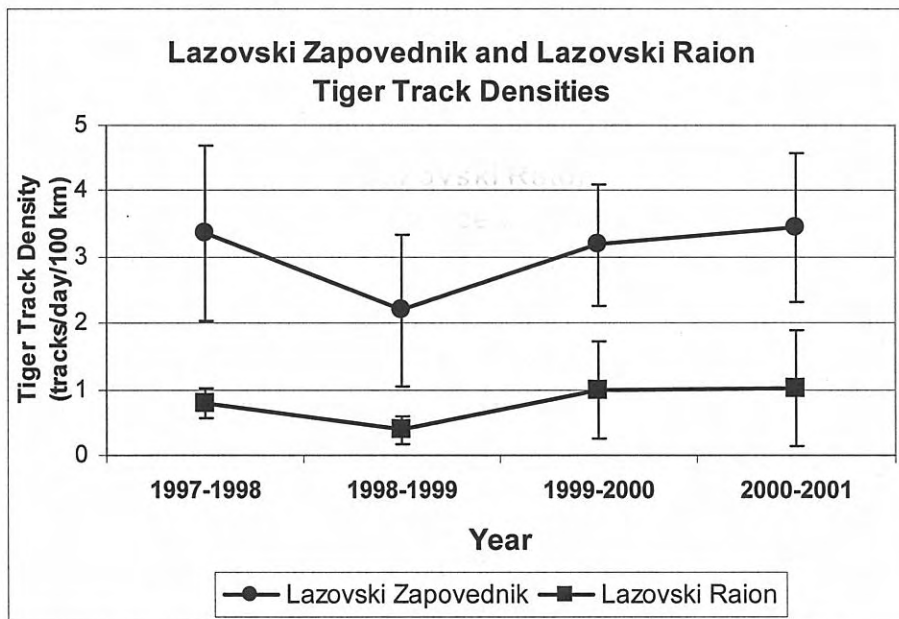
Forest types

0	4	6	7	11	12	13	16	19	20	21

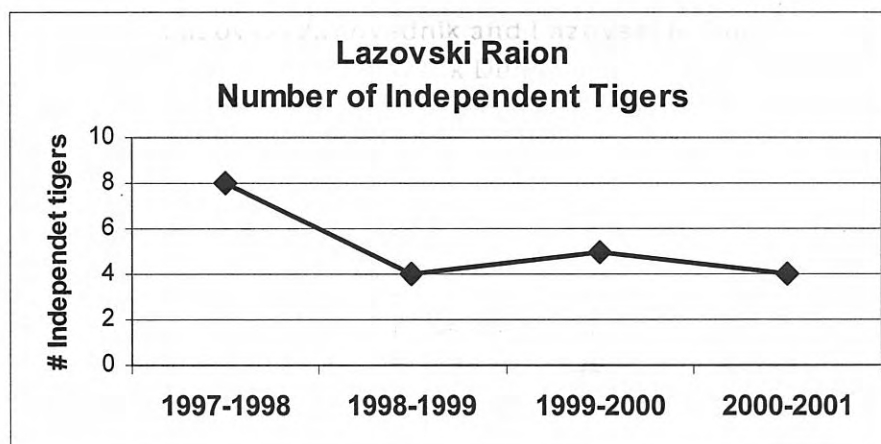




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in Lazovski Zapovednik and adjacent unprotected site in Lazovski Raion



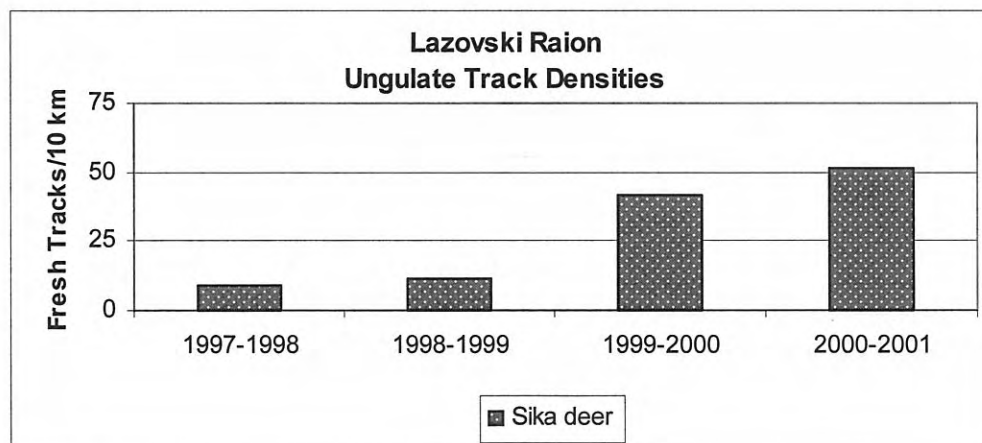
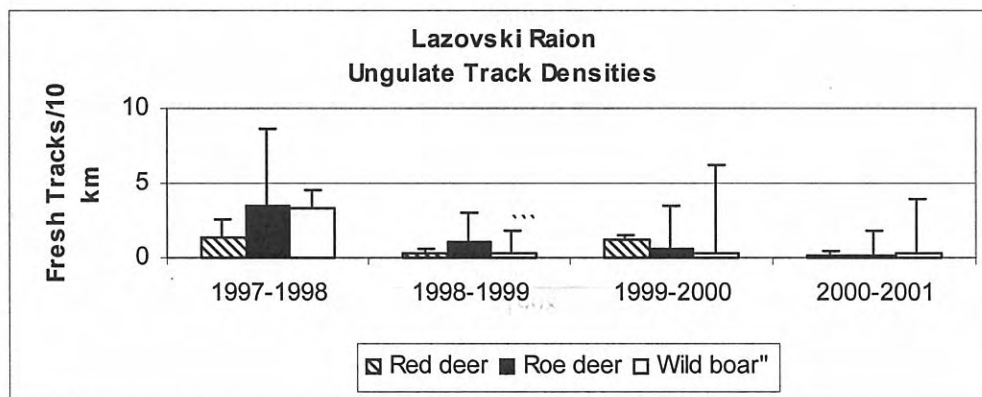
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Age unknow n	Totals		
			Adults		Un- known	Sub- adults	Cubs		Total adults	Total independ ents*	Total (all tigers)
			Males	Females							
2	Lazovski Raion	1997-1998	0	2	0	0	0	6	2	8	8
2	Lazovski Raion	1998-1999	0	1	0	0	2	3	1	4	6
2	Lazovski Raion	1999-2000	3	1	0	0	0	1	4	5	5
2	Lazovski Raion	2000-2001	0	2	0	0	3	2	2	4	7

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
2	Lazovski Raion	Red deer	11	1.41	3.68	0.25	0.56	1.18	3.76	0.18	0.46	0.76	2.62
2	Lazovski Raion	Roe deer	11	3.42	5.47	1.01	0.97	0.67	1.41	0.11	0.36	1.30	3.05
2	Lazovski Raion	Sika deer	11	9.31	6.99	11.43	12.10	41.79	65.13	51.64	105.40	28.54	62.98
2	Lazovski Raion	Wild boar	11	3.28	2.03	0.30	0.61	0.30	0.49	0.27	0.59	1.04	1.70



**USSURISKI ZAPOVEDNIK AND USSURSIKI RAION**  
**Southcentral Primorski Krai**

**Report on results of Amur tiger monitoring program**  
**in Ussuriisky Zapovednik and Ussuriiski Raion model units in winter 2000-2001**  
**Coordinator - V.K. Abramov**

**Organizer:** Abramov V. K.

**Coordinators:** Kovalev V.A. – Ussuriiski, Nadezhdinski, Mikhailovsky raions  
Kosach S. P. – Shkotovsky, Mikhailovsky raions

The territory consists of two parts: central (the territory of Zapovednik – 40,432 ha) and outlying (areas adjacent to zapovednik – 141,926 ha).

**Central part (Ussuriiski Zapovednik)**

Number of routes – 11 (## 1, 5-8, 12, 14, 15, 17, 22, 23), total length of routes – 100.8 km, including 1 route traveled by vehicle (16.6 km) and 10 routes traveled on foot (84.2 km). The survey was conducted on 22-24 of December and on 15-17 of February.

**Outlying part (Ussuriiski Raion)**

Number of routes – 13 (## 2-4, 9-11, 13, 16, 18-21, 24), total length of routes – 198.1 km, including 75.9 km traveled by vehicle and 122.2 km traveled on foot. The survey was conducted on 21-23 of December and on 15-18 of February.

**Survey conditions.** In December 2000 snow depth depended on route location. Snow was 2-3 cm deep along the roads, where tracks were measured, and in the forest snow was 20-29 cm (up to 35 and 42 cm) deep. In February snow depth had not changed significantly despite previous snowfalls, but snow condition had changed greatly. Snow became dense and in some places it was covered with a thin crust of ice. Along roads snow was 2-7 cm deep, and 20-30 cm deep (in some places up to 35-48 cm) under forest canopy.

Survey efficiency – encounters of ungulate and tiger tracks encounter was low. The main reason for this was the absence of animals. The absence of animals is caused firstly by a decrease in ungulate numbers and secondly by a high level of human disturbance (every day people visited the forest to gather pine cones).

Sometimes it was very difficult to travel along the route by vehicle because the roads were not passable. As those road sections are situated in lowlands, they were not frozen and it was necessary to rent a bulldozer or tractor to travel along such routes. It is necessary to provide additional funds for tractor rental and fuel to conduct the survey in the future.

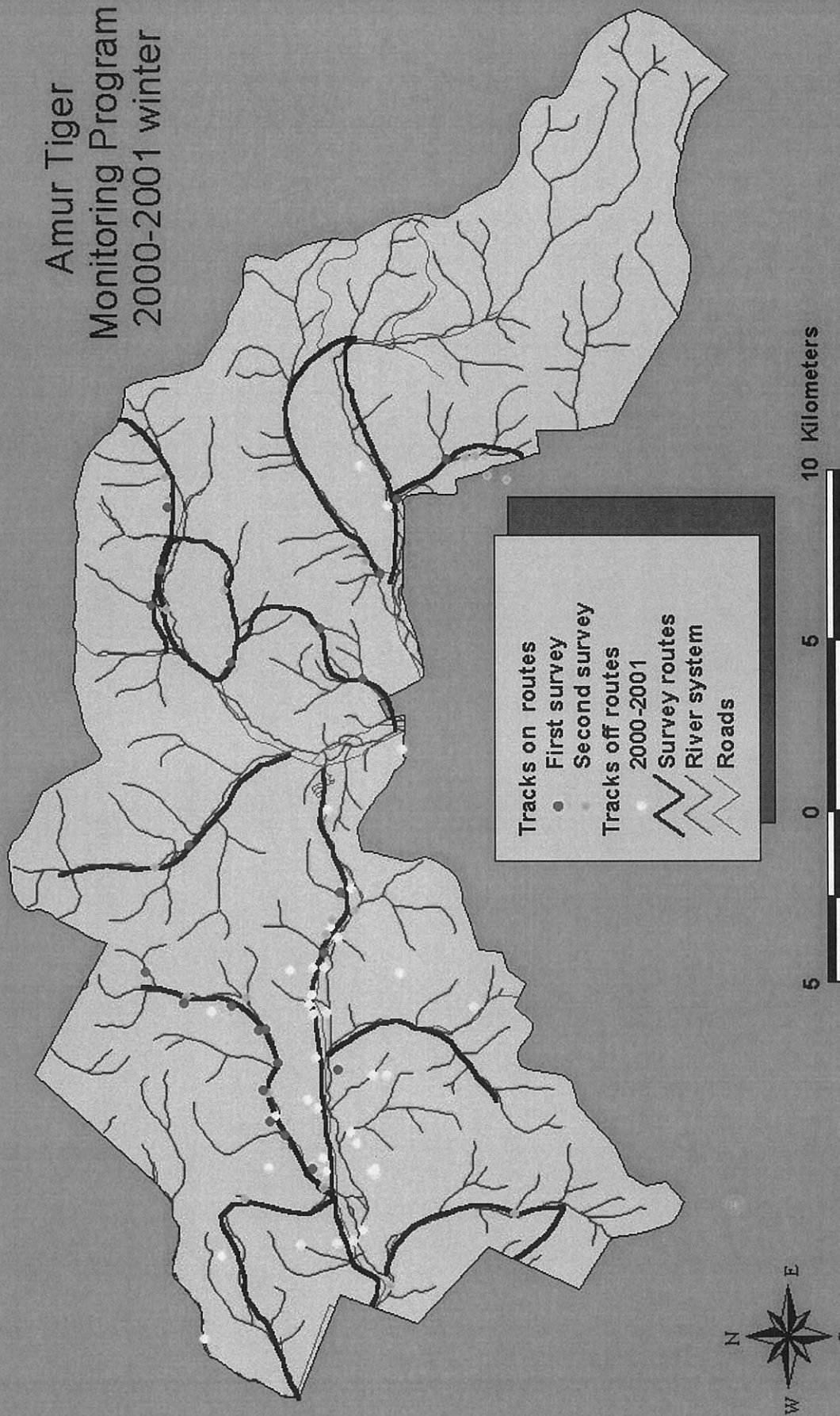
Habitat conditions for tigers and ungulates became significantly worse in Ussuriiski Raion due to the increase in human disturbance, a worsening management regime, and an increase in poaching, resulting in a decrease in ungulate numbers. During the past year the number of ungulates (roe deer, elk, and wild boar) was reduced by half in the outlying part (Ussuriiski Raion). The number of tigers was reduced by six individuals from last year (in 2000 – 12 individuals, 2001- 7 individuals). It is likely that most of them were poached in summer in Ussuriiski Raion. A litter disappeared (a female with two cubs) in the hunting lease along Kamenushka and Perevoznaya rivers (Aramilev's hunting lease).

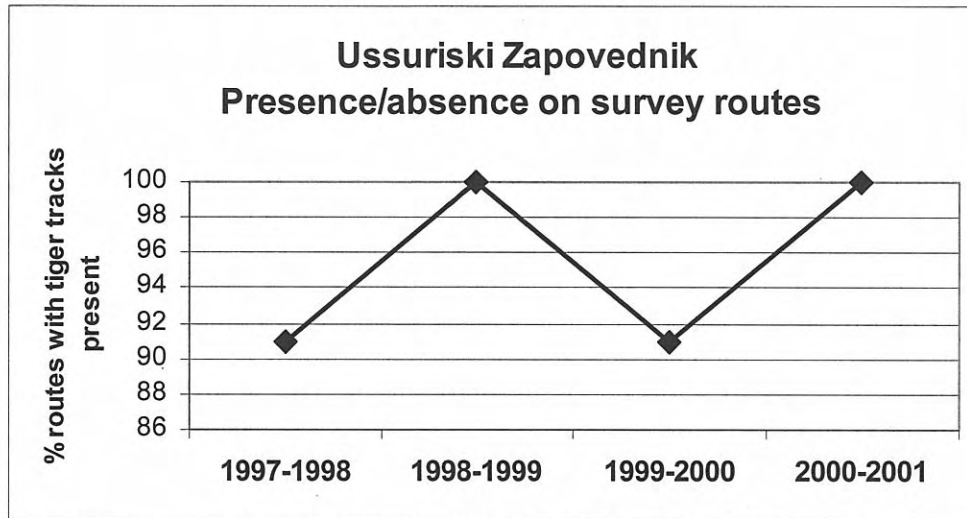
Eight tigers were wintering in monitoring unit in the 2000-2001 winter season: one female with two cubs, one female without cubs, two males and two individuals of unknown sex and age.



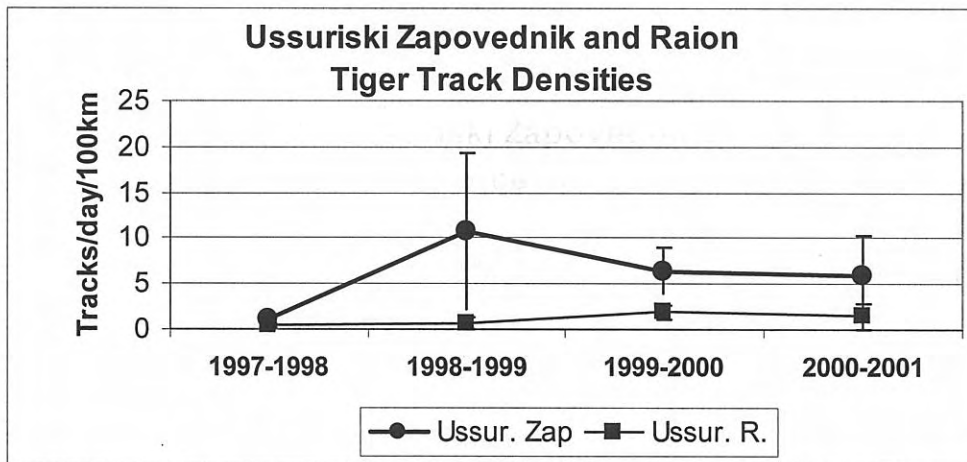
## Ussuriski Zapovednik 2000-2001

Amur Tiger  
 Monitoring Program  
 2000-2001 winter

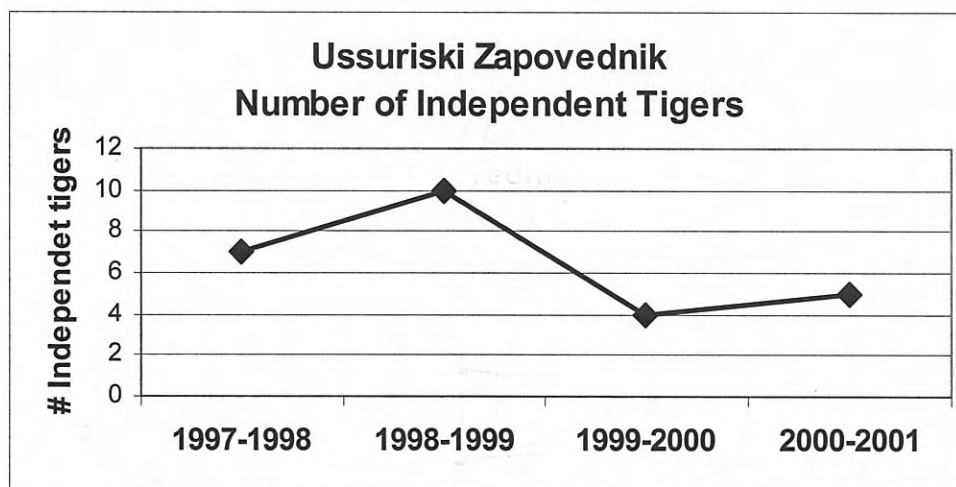




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in Ussuriski Zapovednik and adjacent unprotected site in Ussuriski Raion



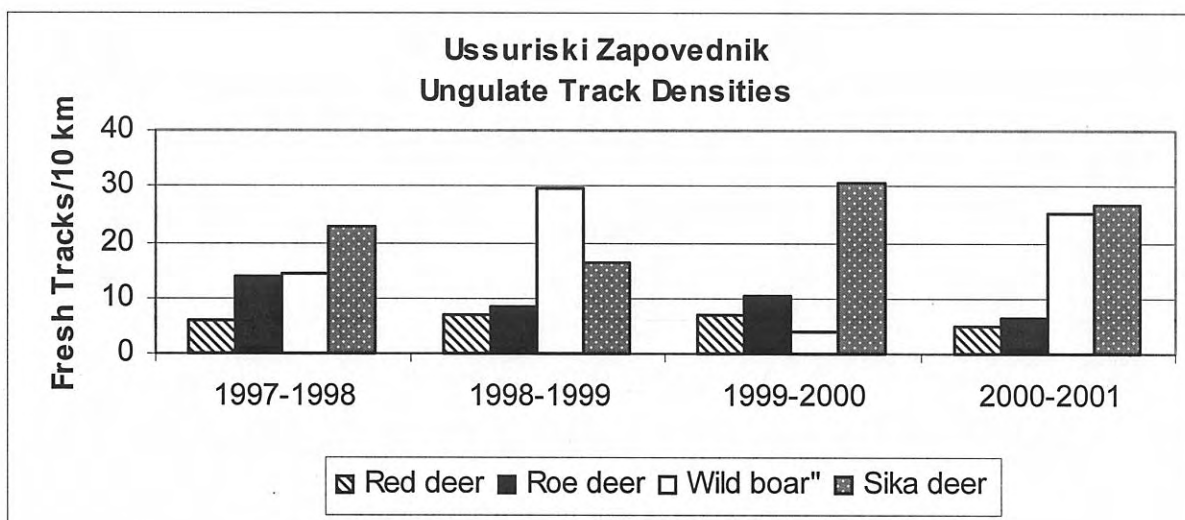
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

# Site	Year	Age						Totals		Total (all tigers)
		Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults	Total independents*	
		Males	Females							
3 Ussuriski Zapovednik	1997-1998	0	0	0	1	0	6	0	7	7
3 Ussuriski Zapovednik	1998-1999	0	1	0	2	0	7	1	10	10
3 Ussuriski Zapovednik	1999-2000	1	2	0	0	3	1	3	4	7
3 Ussuriski Zapovednik	2000-2001	2	2	1	0	2	0	5	5	7

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

# Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
			mean	std	mean	std	mean	std	mean	std	mean	std
3 Ussuriski. Zap.	Red deer	11	6.06	6.25	7.03	5.71	6.98	6.98	5.03	4.78	6.27	5.83
3 Ussuriski. Zap.	Roe deer	11	13.81	16.11	8.61	10.45	10.33	10.65	6.49	4.81	9.81	11.17
3 Ussuriski. Zap.	Sika deer	11	22.56	25.16	16.12	17.82	30.72	45.74	26.65	30.41	24.01	30.86
3 Ussuriski. Zap.	Wild boar	11	14.09	17.65	29.56	32.90	4.13	3.31	25.21	27.41	18.25	24.54



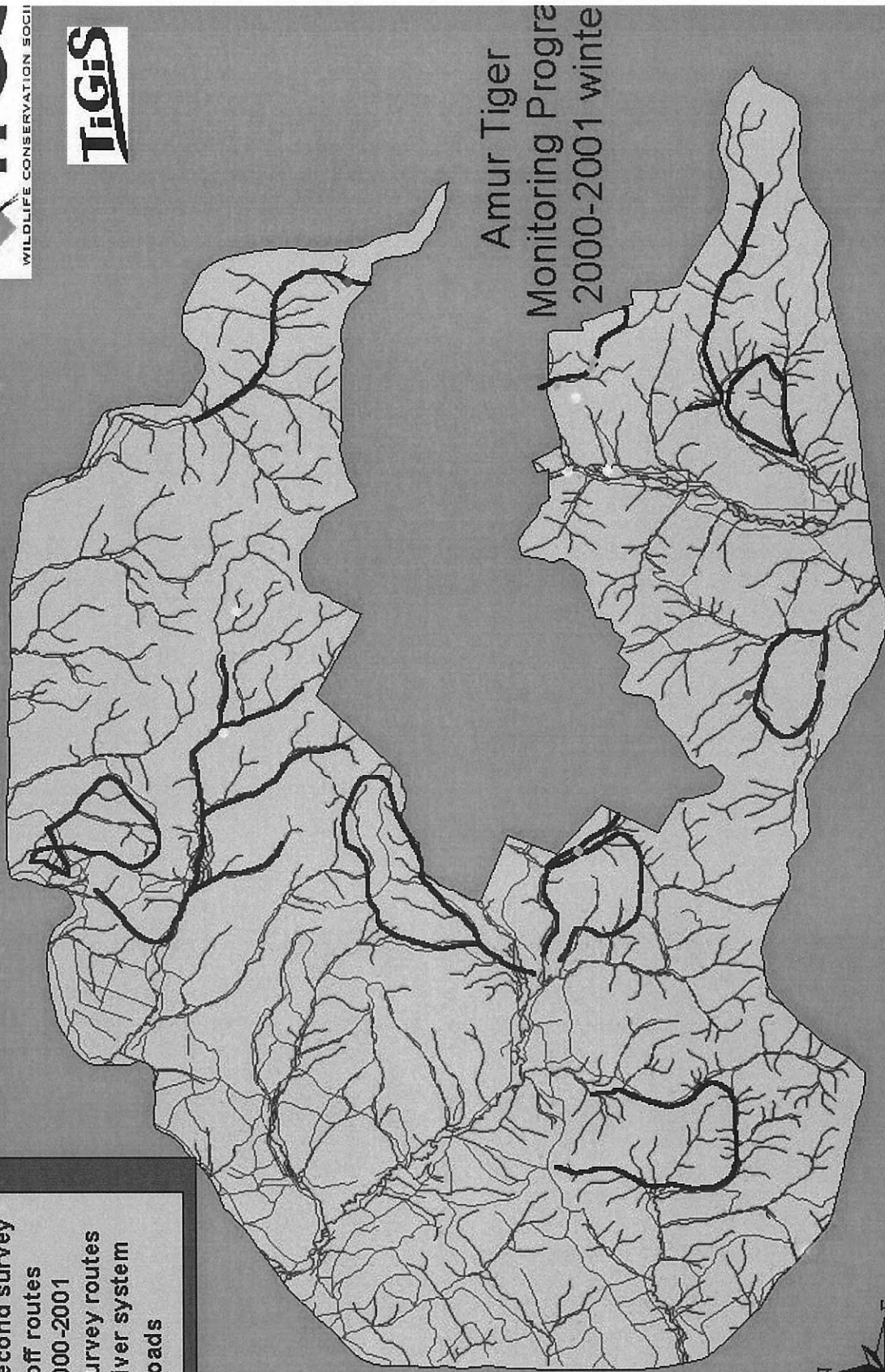
# Ussuriski Raion 2000-2001

## Tracks on routes

- First survey
- Second survey

## Tracks off routes

- 2000-2001
- Survey routes
- River system
- Roads



Amur Tiger  
Monitoring Progra  
2000-2001 winte

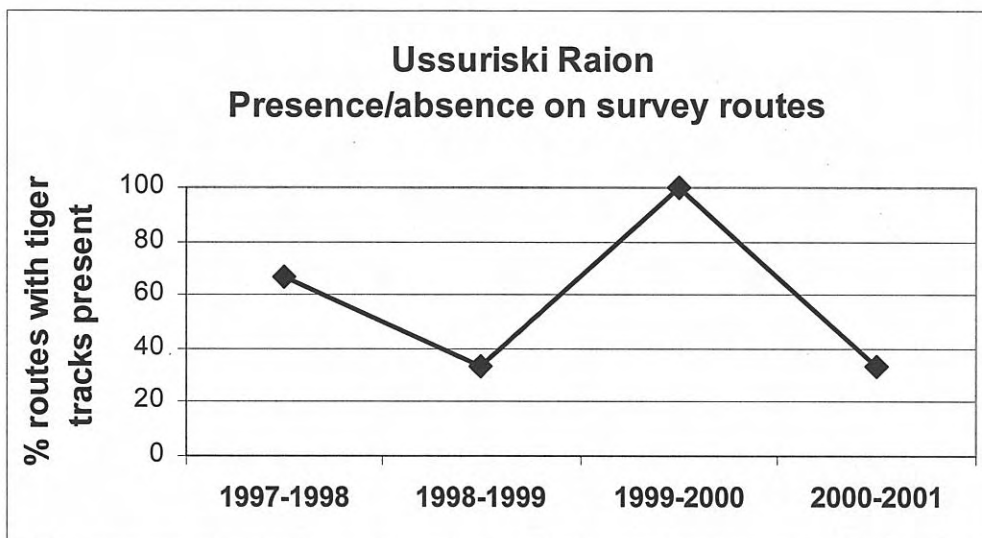
16 Kilometers

8

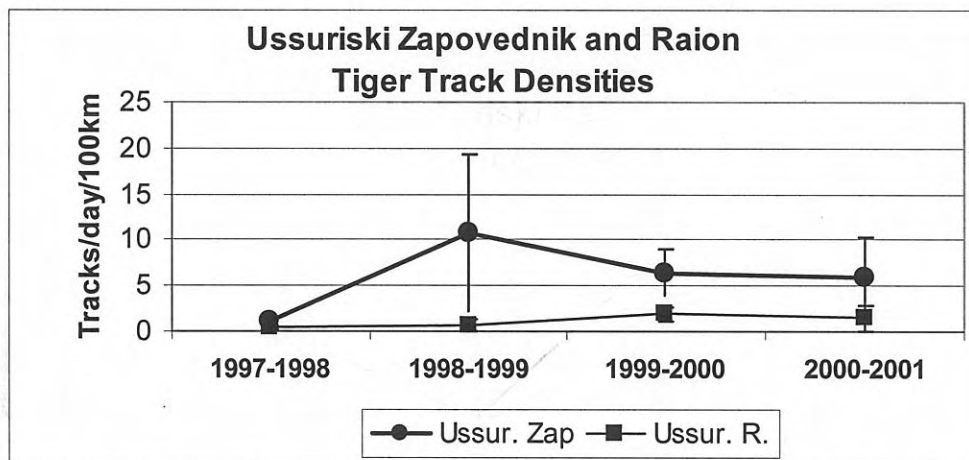
0

8

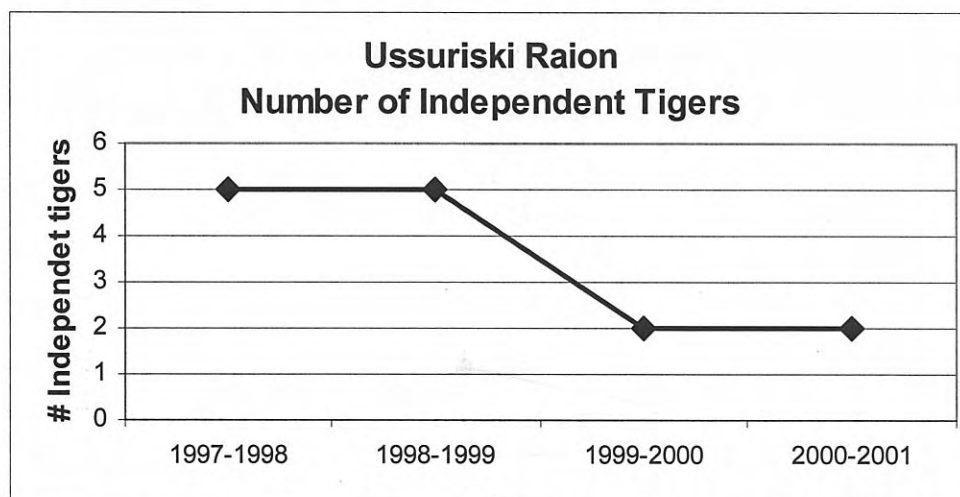




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in Ussuriski Zapovednik and adjacent unprotected site in Ussuriski Raion



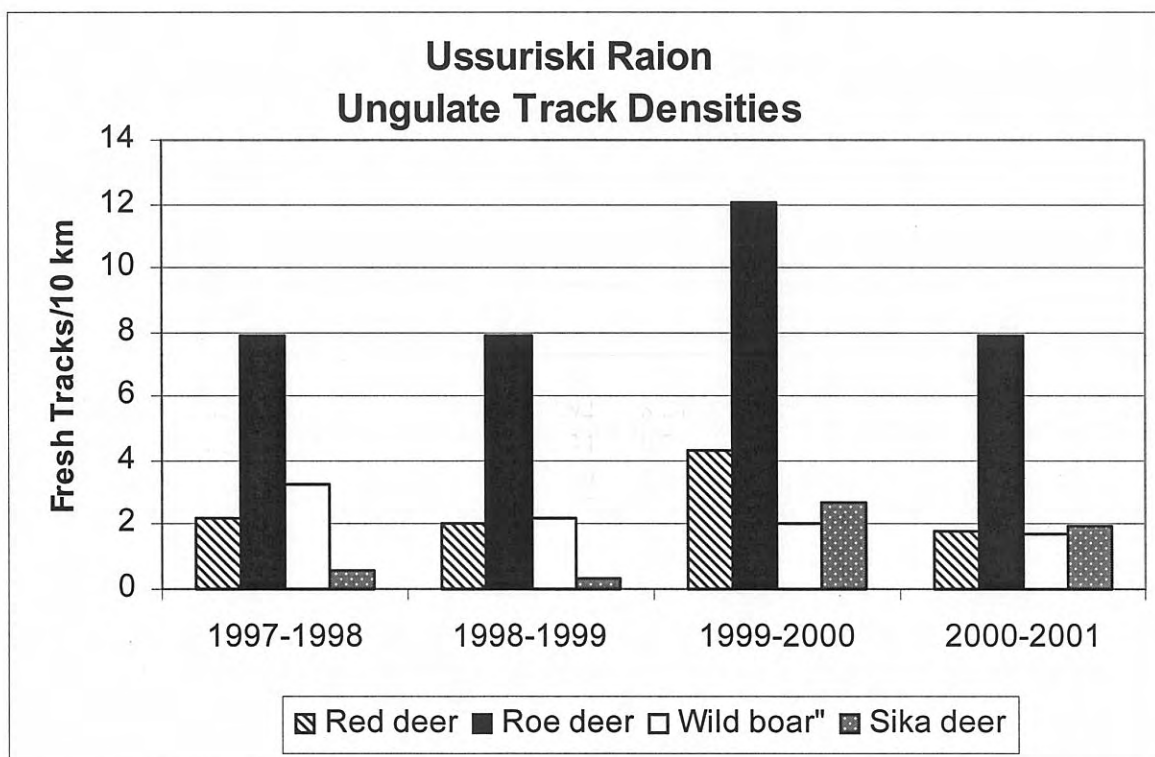
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

# Site	Year	Age						Totals		Total (all tigers)
		Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults	Total independents*	
		Males	Females							
13 Ussuriski Raion	1997-1998	0	0	0	3	0	2	0	5	5
13 Ussuriski Raion	1998-1999	0	2	0	0	2	3	2	5	7
13 Ussuriski Raion	1999-2000	1	1	0	0	0	0	2	2	2
13 Ussuriski Raion	2000-2001	1	1	0	0	0	0	2	2	2

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

# Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
			mean	std	mean	std	mean	std	mean	std	mean	std
13 Ussuriski Raion	Red deer	12	2.16	2.96	2.02	2.04	4.28	3.67	1.79	2.02	2.56	2.86
13 Ussuriski Raion	Roe deer	12	7.93	9.01	7.92	8.24	12.05	7.70	7.86	5.19	8.94	7.64
13 Ussuriski Raion	Sika deer	12	0.59	1.27	0.34	0.74	2.69	3.56	1.98	3.33	1.40	2.65
13 Ussuriski Raion	Wild boar	12	3.24	3.98	2.19	3.03	2.07	2.68	1.71	3.63	2.30	3.31



## **BORISOVKOE PLATEAU**

### **Southwest Primorski Krai**

#### **Report on results of Amur tiger monitoring program in Borisovskoe Plateau monitoring unit in winter 2000-2001 Coordinator - D.G. Pikunov, Pacific Institute of Geography**

Counts were conducted on December 1-9, 2000 and on February 27 - March 11, 2001.

As in past years 14 routes that evenly covered the whole territory of the monitoring unit were traveled. The total length of routes was 217 km.

Routes # 1, 2, 3, 5 and 8 were traveled on foot (total length is 73 km). Routes # 4, 7, 11, 12, 13 and 14 were traveled by vehicle (total length is 94 km). Routes # 6, 9, 10 were traveled both by vehicle and on foot (total length - 50 km). Route # 10 was traveled only during the first count, during the second count the route was not traveled due to technical reasons. Heavy atypical snowfall took place in southwest Primorye on 27<sup>th</sup> of November. Most of routes were traveled 4-7 days after heavy snowfalls, when average snow depth was 15-25 cm. So the snow conditions were favorable for efficient count of tigers and ungulates. Snow conditions were also favorable for tracking individuals, as necessary, to measure their tracks accurately.

A more difficult situation existed in the second count, in association with snow depth and distribution of tigers and ungulates. Snow depths occurred up to 50-60 cm, and periodical thaws created a thin crust of ice on top of the snow that made travel difficulty for all large animals. Ungulates and predators had to gather on southern slopes, where snow was melting after thaws. There was a lack of food for ungulates on the slopes in comparison with valley bottoms, where there exist a variety of shrubs - important food for deer. Ungulates very rarely came down to valley bottoms, even if in the absence of a navigable road along the valley. Such ungulate behavior is not typical and it is associated with uncharacteristic snow conditions. Usually when ungulate hunting for ungulates is closed in the second part of winter, most ungulates stay in valley bottoms, where monitoring routes were set up. The same situation occurred on mountain plateaus. Even on the most remote plateaus (e.g., plateau between Borisovka river and Nezhinka river, where maximum ungulate densities were observed during the first count) ungulates left the territory after development of an icy crust had formed. Ungulates gathered on southern slopes. Animals had to leave the territory, even wild boars, despite the abundance of pine nuts - their favorite food. Permanent survey routes and atypical snow conditions were the reason why the second count gave slightly distorted information about ungulates and large predators distribution. Nevertheless, integrated results of both counts reflected the whole situation correctly enough. It has become more evidently that definition of the time frame for both counts should be more flexible and dependent on heavy snowfalls.

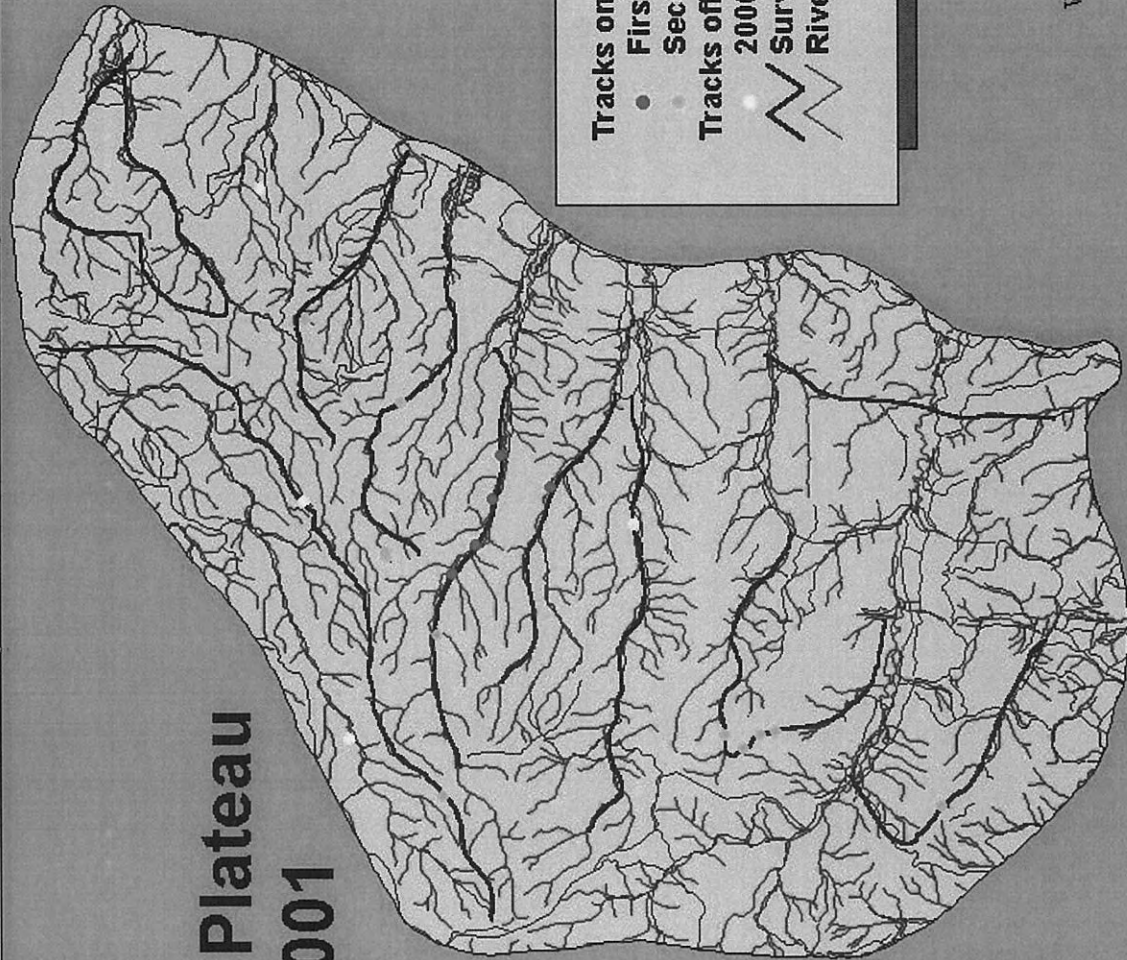
The first survey on Borisovskoe Plateau coincides with the height of hunting season for ungulates and results in a great deal of disturbance, which influences the distribution of both ungulates and predators. During the first count on part of monitoring unit, where hunting grounds of Nezhinskoe Hunting Lease are situated, the number of ungulates and tigers was minimal. It is possible that existing hunting methods including battue with unlimited number of participants make it possible that not only ungulates but also tigers can be shot. In the 2000-2001 winter season a female with one cub (T-7 and T-8), which were registered in upper basin of Vtoraya Rechka in December 2000, disappeared without leaving a trace. In addition, an adult female disappeared from southern part of monitoring unit, where her tracks (#1, 2, 3, 4, and 5) were registered on the 1<sup>st</sup> and 2<sup>nd</sup> routes. This was confirmed by the absence of her tracks on Penyazhinskiy (# 3) route, which was a part of her home range in past years.

Mass battues (legal and illegal), industrial logging (including mature oak forests) and a decreasing number of ungulates are undoubtedly the reasons of tiger habitat deterioration. The monitoring survey results indicate that in the 2000-2001 winter season in Borisovskoe Plateau monitoring unit only two tigers were present – a resident male and adult female. Only the total prohibition of hunting and industrial logging in the whole territory of Borisovskoe Plateau, Barsovy Zakaznik and Khasan Raion up to Kraskino settlement (to the west from highway between Ussuriisk and Kraskino) will help to protect small populations of ungulates and large predators. Otherwise, there will be no chance for natural dispersal of ungulates and predators into northern provinces of China and North Korea from Russia.





# Borisovkoe Plateau 2000-2001



**Tracks on routes**

- First survey
- Second survey

**Tracks off routes**

- 2000-2001

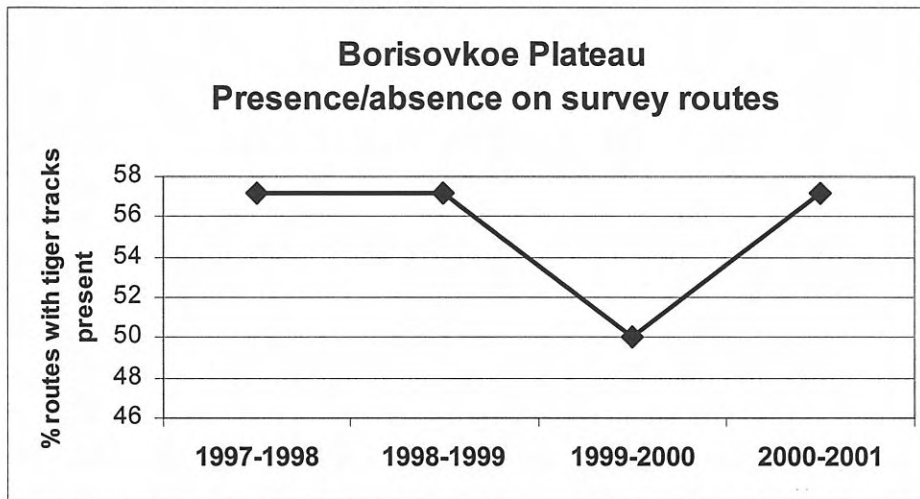
**Survey routes**

**River system**

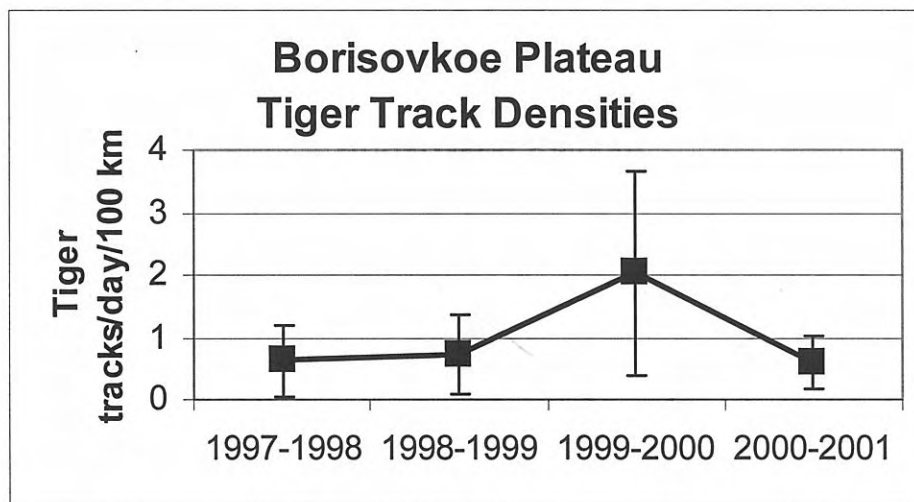


18 Kilometers

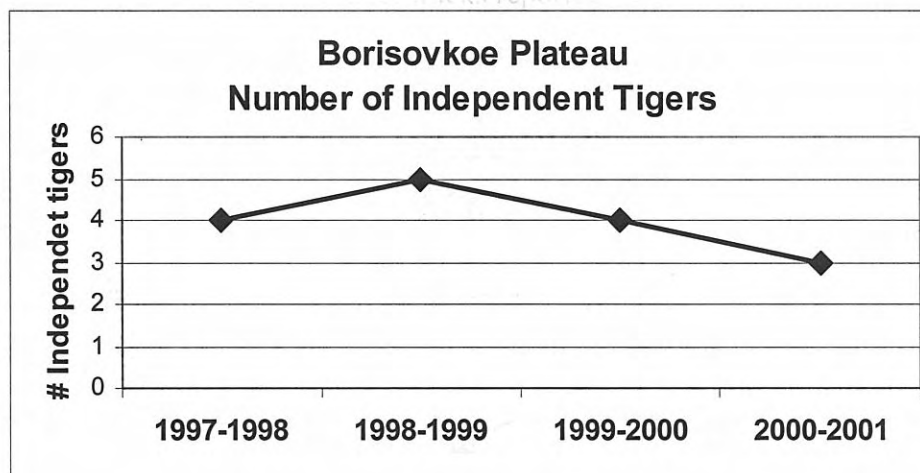




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in monitoring site across years



Number of Independent tigers (adults, subadults, unknown) on monitoring site

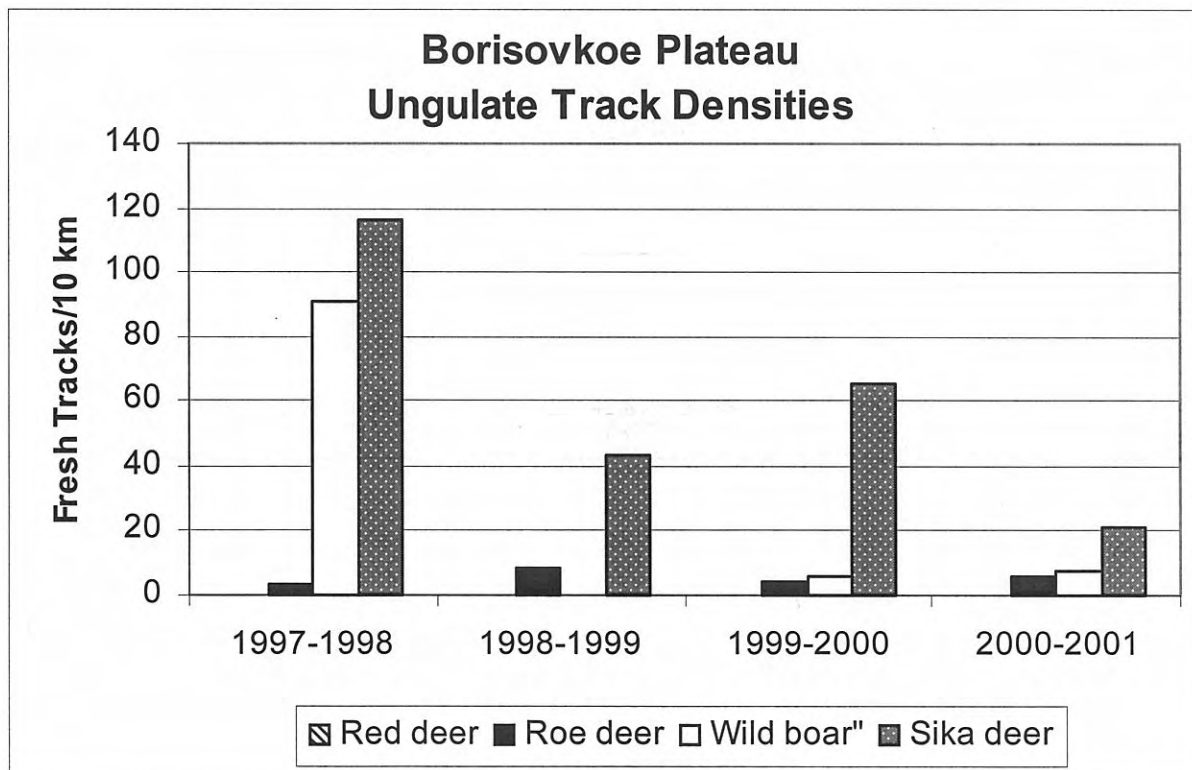


Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Totals		Total (all tigers)	
			Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults		Total independents*
			Males	Females							
6	Borisovkoe Plateau	1997-1998	1	2	0	1	1	0	3	4	5
6	Borisovkoe Plateau	1998-1999	1	1	0	2	1	1	2	5	6
6	Borisovkoe Plateau	1999-2000	1	2	1	0	1	0	4	4	5
6	Borisovkoe Plateau	2000-2001	1	2	0	0	1	0	3	3	4

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
6	Borisovkoe Plateau	Red deer	14	0.02	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
6	Borisovkoe Plateau	Roe deer	14	3.38	5.29	8.48	15.22	4.58	6.46	6.22	5.57	5.66	9.07
6	Borisovkoe Plateau	Sika deer	14	116.29	183.22	42.87	56.99	65.74	87.40	20.81	16.99	61.43	108.88
6	Borisovkoe Plateau	Wild boar	14	91.09	122.25	0.26	0.84	5.53	5.95	7.47	12.02	26.09	70.83



**SANDAGOY**  
**Olginski Raion**  
**Southeast Primorski Krai**

**Report on results of Amur tiger monitoring program  
in Sandagou monitoring unit in winter 2000-2001**  
**Coordinator - V.V. Aramiley, Institute for Sustainable Use of Natural Resources**

This winter survey in the monitoring unit was conducted on December 17-18, 2000 and on February 10-11, 2001. By the beginning of December stable snow cover had formed in the monitoring unit and we were able to conduct the first count in December. In the second part of winter snow cover increased but all routes were passable on skies and the second count was conducted according to the schedule. All 16 routes were traveled twice during this winter survey. All routes in our monitoring unit are traveled on foot. When snow is deep fieldworkers use skies. Routes are traveled according to existing scheme and has not varied between years. The actual number of kilometers traveled on routes can be accurately determined with the help of GPS and route length marked on the map can be determined more accurately with the help of computer program.

During the first count, average snow depth was 15-30 cm depending on height above the sea level and snow was evenly spread across the territory. Three weeks passed since the last snowfall and convenient conditions had formed for counting tiger tracks. In February snow cover increased up to 40-50 cm and routes could be traveled only on skies. Only ten days passed after the last snowfall and that is why fewer tiger tracks were registered. Cold weather had an influence on activity of tigers, at nights temperature went down to 30-35° C below zero and in daytime it did not exceed 15-18° C below zero. Usually in daytime wind rose up to 10-15 m/sec. Tiger distribution and their track activity (movements) were determined by the distribution of ungulates and their physiological condition. After deep snow cover had formed in December some ungulates went along creeks down to river valleys. After sunny weather had set in and snow depth on steep slopes decreased ungulates went up from river valleys to slopes again. But because of deep snow and low temperatures ungulates did not move widely and stayed on local sites: wild boars - in areas with good harvest of pine cones, deer - on steep slopes with herbaceous food, elks and roe deer - in areas with adequate food and minimally acceptable snow cover. Tigers correspondingly stayed not far from areas where ungulates concentrated and went out to roads, trails and river valleys more rarely.

In comparison with the past year ungulate numbers increased despite a difficult 1999-2000 winter season with deep snow. As in the past minimum ungulate densities were observed in areas adjacent to Mikhailovka and Furmanovka villages. But this year "Chin San" hunting lease was established here with our assistance, and local hunters obtained rights for long-term use. Now they are owners of the territory, and should organize the hunting season and protection of hunting resources.

The number of tigers in the monitoring unit has been stable for the two past years. The sex-age composition of tigers in the monitoring unit seems appropriate and does not provide any indicators that would cause anxiety. The particular feature of this year is the absence of litters. A young tiger with a pad width of 7.5 cm should walk with his mother but this one individual did not. It is worth mentioning that last year an animal with the same pad width was also registered in this monitoring unit.

Logging in monitoring unit territory takes place within confined areas. Hardwooded, broadleaved species are mainly logged, but coniferous trees are also logged near Furmanovka village. Logging here is not large-scale and comprises only about 150 ha for the past year. There were no crown fires in monitoring unit, but ground fires were found in localized parts of the northeastern section of the unit.

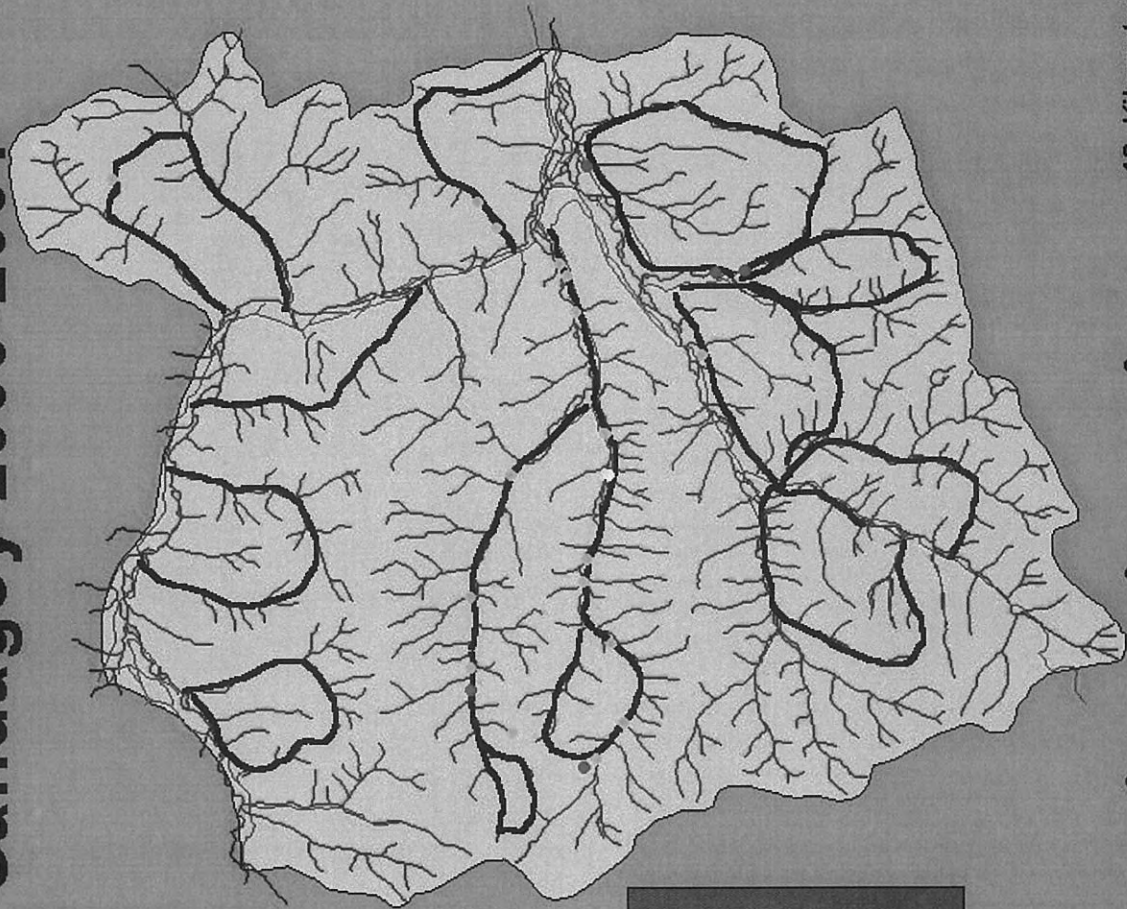


# Sandagoy 2000-2001

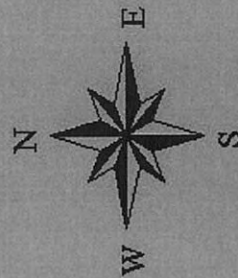


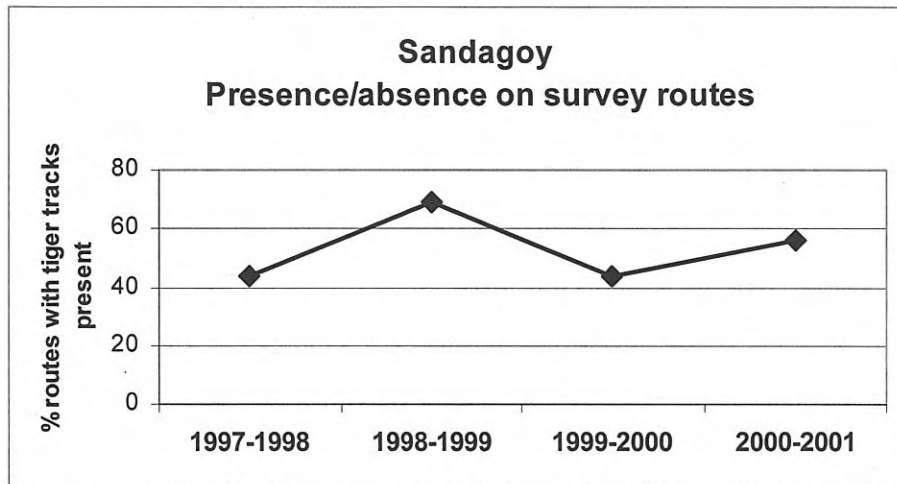
Amur Tiger  
Monitoring Program  
2000-2001 winter

- Tracks on routes
  - First survey
  - Second survey
- Tracks off routes
  - 2000-2001
- Survey routes
- River system
- Roads

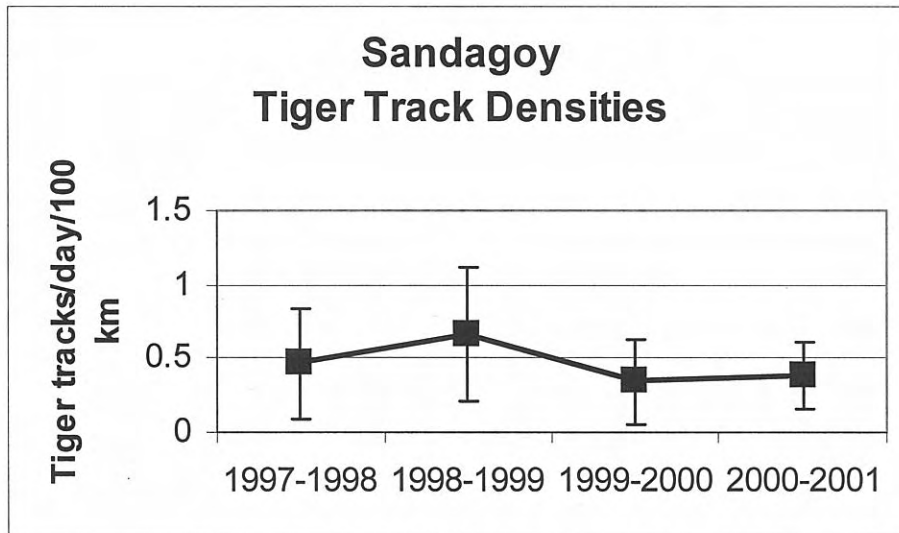


16 Kilometers

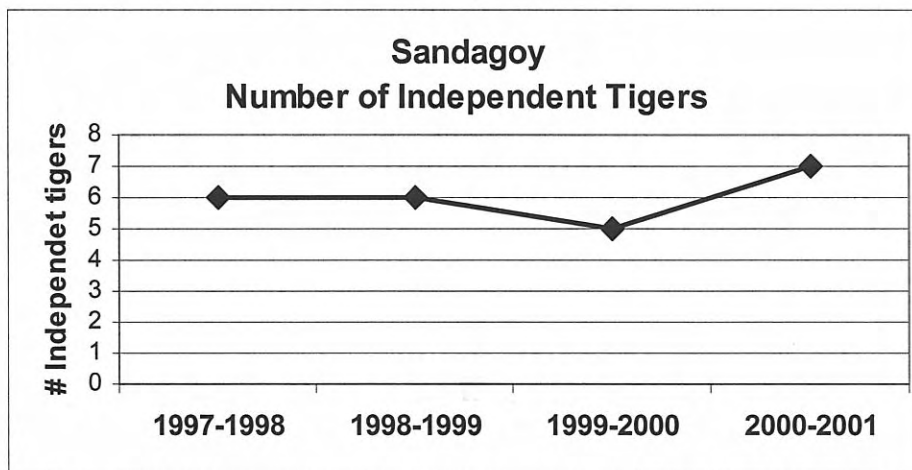




Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in monitoring site across years



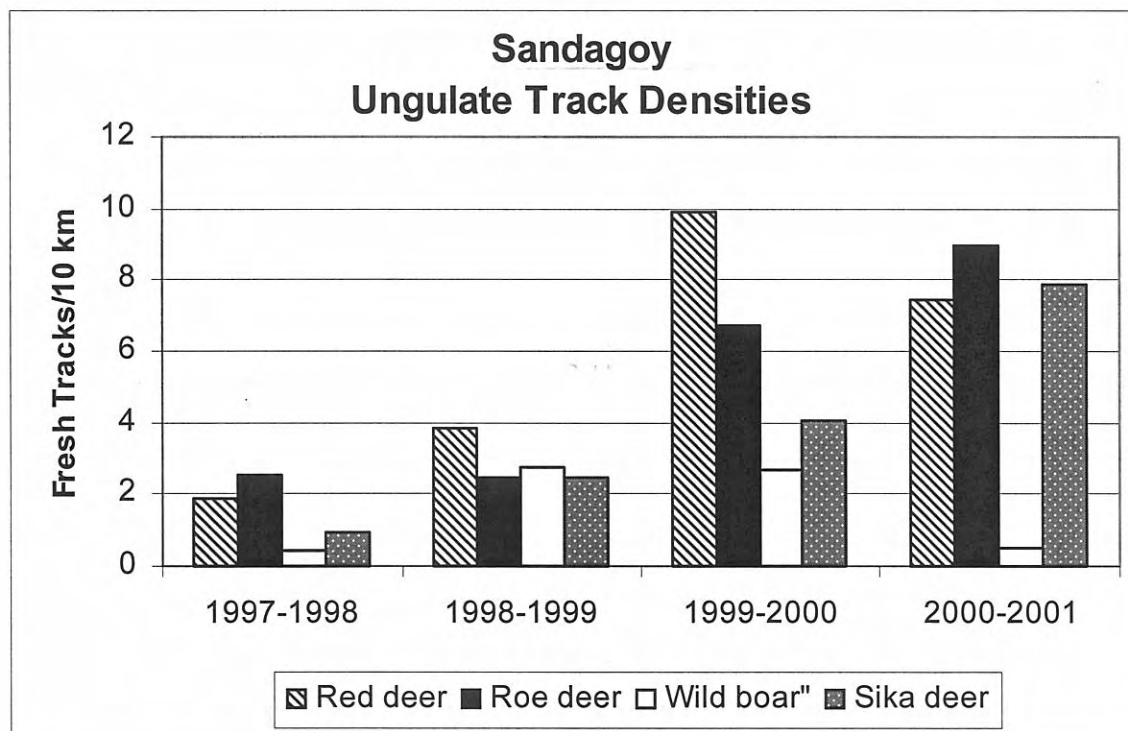
Number of Independent tigers (adults, subadults, unknown) on monitoring site

Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

#	Site	Year	Age					Totals		Total (all tigers)	
			Adults		Un- known	Sub- adults	Cubs	Age unknown	Total adults		Total independents*
			Males	Females							
7	Sandagoy	1997-1998	1	1	3	0	1	1	5	6	7
7	Sandagoy	1998-1999	0	1	0	0	0	5	1	6	6
7	Sandagoy	1999-2000	1	1	0	0	0	3	2	5	5
7	Sandagoy	2000-2001	2	1	0	1	0	3	3	7	7

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 4 years.

#	Monitoring Site	Prey species	n	1997		1998		1999		2000		Grand Total	
				mean	std	mean	std	mean	std	mean	std	mean	std
7	Sandagoy	Red deer	16	1.87	2.78	3.84	3.76	9.90	10.78	7.41	8.55	5.76	7.75
7	Sandagoy	Roe deer	16	2.50	2.67	2.44	2.25	6.70	5.69	8.98	8.57	5.16	6.01
7	Sandagoy	Sika deer	16	0.91	1.68	2.46	3.55	4.06	3.98	7.91	13.77	3.83	7.71
7	Sandagoy	Wild boar	16	0.42	0.68	2.76	4.07	2.68	4.04	0.54	0.99	1.60	3.07





**SINEYA**  
**Chugevski Raion**  
**Central Primorski Krai**

**Results of monitoring program in Sinyaya monitoring unit in winter 2000-2001**  
**Pavel Fomenko, WWF-RFE Program Coordinator**

Sinyaya monitoring unit is situated in the central part of Chuguevsky Raion (Primorski Krai). Coordinator of survey is P. V. Fomenko – WWF RFE Program Coordinator.

Both counts were conducted in accordance with the schedule.

15 routes were traveled. Total length of the routes and their location were the same as last winter. Deep snow cover made it necessary to use snowmobiles during both counts.

Weather conditions were extreme, both in relation to snow depth and average winter temperatures. Snow depth was 15-20 cm more than last year.

There were no any organizational problems because the survey was conducted by the same fieldworkers as the last year. Weather conditions also did not influence the work efficiency.

Despite the very difficult conditions for wintering ungulates, there were not reports of mortality (winter kill). In comparison with past years, the numbers of roe deer and wild boar (insignificantly) have increased. The elk population in study area is stable.

The number of tigers in the monitoring unit is stable. Almost all animals are identified excluding one big male tiger. In addition two females with cubs were found (one of them was registered outside of the monitoring unit). The death on one cub was reported (probably he was killed by a male). There was no information about poached tigers.

Habitat conditions have not changed significantly. Small ground fires in spring and fall did not impact the habitat significantly. There were no crown fires. Selective logging did not damage the habitat. As usual hunting pressure on ungulates is considerable but it is compensated for by recruitment.



# Sineya 2000-2001



Amur Tiger  
Monitoring Program  
2000-2001 winter

Tracks on routes

- First survey
- Second survey

Tracks off routes

- 2000-2001

Survey routes

River system

Roads

