MATAI
KHOR
TIGRINI DOM
BOLSHE KHEKHTSIRSKI ZAPOVEDNIK
BOTCHINSKI ZAPOVEDNIK
Khabarovski Krai
1999-2000

Report on results of Amur tiger monitoring program
in Khabarovski Krai in winter 1999-2000
Coordinator - Yu. M. Dunishenko

1. Work conditions and schedule

Monitoring counts were conducted as usual in five monitoring units according to the schedule. Only in Botchinsky monitoring unit the first count was conducted in January because of unstable ice conditions (according to S. V. Kostomarov). The lowest intensity of work (measured as routes per 1,000 ha) was done here; snow depth was not measured along with other defeciencies.

On the whole, all routes in monitoring units were traveled completely along their previously established locations without any changes, except in the Khor monitoring unit, where two routes were added by necessity. Next year it will be necessary to add two routes in Tigriny Dom monitoring unit.

Weather conditions were favorable but this season differed from others because there was no snowfall in January and February, resulting in accumulation of numerous tracks. Due to this fact it was almost impossible to measure old tracks - they had been destroyed by wind, trampled down by numerous tigers' crossings and covered with light, newly fallen snow (caused by condensation in cold conditions). Because of this problem, many recorded tracks could not be identified and the general situation is probably distorted. Perhaps it would be advantageous to conduct analyses only on those tracks less than 7 days old.

Table 1.1. Schedule and work conducted in monitoring units in Khabarovski Krai units.

Model unit	Period of counts		Number of fieldworkers	Total length of all routes traveled during both counts	Km per 1,000 ha		
	1st count	2nd count			1999/2000	1998/1999	1997/1998
Matai	Dec. 10-29	Feb. 10-22	15	754	2.95	2.81	2.9
Khor	Dec. 21-25	Feb. 16-24	9	446	3.39	2.96	2.42
Khekhtsir	Dec. 21-23	Feb. 22	14	140	3.1	3.1	3.0
Tigrovy Dom	Dec. 9-22	Feb. 17-26	6	384	1.82	1.83	1.38
Botchinsky	Jan. 5-14	Feb. 13-20	6	320	1.04	0.95	1.13
Total			50	2044	2.15	2.02	1.93

Table 1.2. Work conducted on tiger monitoring program during first and second counts, winter 1999-2000 in Khabarovski Krai units.

Model unit	Area, 100,000 ha	Number of routes	Km traveled		Including					
					1st count			2nd count		
			1st count	2nd count	Vehicle	Snow-mobile	On foot	Vehicle	Snow-mobile	On foot
Matai	255.4	24	377	377	150	190	37	150	190	37
Khor	131.5	21	207	239	154	24	29	171	32	36
Khekhtsir	45.1	7	70	70	0	0	70	0	0	70
Tigrovy Dom	210.7	14	192	192	116	0	76	116	0	76
Botchinsky	307.0	14	160	160	0	160	0	0	139	21
Total	949.7	80	1006	1038	420	374	212	437	361	240

Notes: Route length is measured by curvimeter and may differ from computer variant.

As is seen from the information above, it is necessary to improve the quality of work done in Botchinski monitoring unit, where the number of routes should be doubled, and perhaps conduct the the count only once in February. It is necessary to reassess the boundaries of this monitoring unit. It is probably reasonable to exclude the zapovednik's buffer zone from the area defined as the study area.

2. Ungulate populations status

The situation with prey species remains poor. Within tiger range in Khabarovski Krai there are only two prey species - wild boar and elk – which actually determine the status of tigers. Roe deer represent only a small part of the diet and are available only in southern part of the region. In northern part of the range, when snow depth increases, roe deer move into foothills, and consequently out of tiger habitat.

The status of the elk population can be considered stable at the presently low levels. In spite of the fact that population structure is optimal, recruitment rates are high and there are positive signs in terms of population status, the number of animals killed by hunters and predators equals the rate of reproduction.

The wild boar population appears to be increasing. According to our calculations, the population is increasing 15.4% per year, mostly in the southern part of the region. The ban on hunting of wild boar for the past three years has resulted in insignificant increases and cannot be considered much of a success. Addition, in the 1999-2000 winter wild boar numbers decreased dramatically to the north from right bank (as one faces downriver)of the Khor river, probably due to a combination of predation and poaching.

The comparative status of ungulate populations is demonstrated in monitoring data (Table 2.1).

Table 2.1. Encounter rate of wild ungulate tracks (individuals per 10 km of route) during monitoring counts, 1997-1998 through 1999-2000 (total numbers for two counts)

Model unit	Elk			Wild boar			Roe deer		
	1997-1998	1998-1999	1999-2000	1997-1998	1998-1999	1999-2000	1997-1998	1998-1999	1999-2000
Matai	2.78	4.68	3.63	1.04	1.07	2.07	2.10	2.51	2.08
Khor		5.82	3.18		0.77	0.22		6.56	2.20
Khekhtsir	15.0	16.64	14.57	1.40	3.21	0.78	0.73	1.36	0.14
Tigrovy Dom	2.63	4.69	1.20	0.48	0.83	0.96	0.59	0.91	0.31
Botchinsky	2.01	7.94	4.25	0.04	0	0	0.52	3.49	2.75
Total	3.91	6.28	3.92	0.70	0.95	1.05	1.18	3.07	1.74

Of course, these data do not reflect population status in full measure because most routes are located along valleys, and when the snow is low ungulates usually remain up above on the slopes. Nevertheless, these data can be generally relied on to indicate trends. These data suggest that roe deer numbers are increasing. Evidently population grows thanks to "tayozhnaya rasa" (???), which is limited more by deep snow than by predators and humans.

The tiger population in Khabarovsk still has sufficient prey base. Total length of all routes traveled during past 3 years is 5,209 km, where 2,496 elk tracks were found as well as 485 wild boar tracks and 891 roe deer tracks. In other words, tiger can encounter (per 10 km of route) 7,43 ungulate tracks (24 hours old) including 4.79 elk tracks (2.83 individuals), 0.94 wild boar tracks (0.79 individuals), 1.71 roe deer tracks (1.18 individuals). At an encounter rate of one elk per 3.5 km of route, one wild boar per 12.6 km of route and one roe deer per 8.5 km of route, it is clear that tigers can find prey, but the energetic costs (to obtain prey) are significantly higher than in Primorye.

Conversion of tracks into individuals, as demonstrated above, is made with the help of coefficients, obtained during monitoring counts for the past 3 years. It was determined that along routes 2,319 elk tracks were created by 1,382 individuals (conversion coefficient = 1.69), 484 wild boar tracks deposited by 411 individuals (conversion coefficient = 1.18), 1,035 roe deer tracks were created by 716 individuals (conversion coefficient = 1.45) and 196 musk deer tracks were created by 153 individuals (conversion coefficient = 1.28).
These coefficients are based on an extensive amount of information and are likely close to reality, and can therefore be used to convert track counts along routes in a variety of different analyses.

It is important to note that ungulate densities are higher in protected areas than in unprotected areas (Table 2.2.).

Table 2.2. Data on ungulates based on monitoring counts, winter 1999-2000

Model unit	Number of fresh ungulate tracks per 10 km of route								Difference (± %) between counts
	1st count				2nd count				
	elk	wild boar	roe deer	Total	elk	wild boar	roe deer	total	
Matai	4.13	1.83	2.07	8.03	3.13	2.31	2.09	7.53	-6.22
Khor	4.15	0.29	2.90	7.34	2.34	0.17	1.59	4.1	-44.1
Khekhtsir	15.0	1.43	0.29	16.72	14.1	0.14	0	14.24	-14.83
Tigrovy Dom	0.78	1.93	0.52	3.23	1.61	0	0.10	1.71	-47.06
Botchinsky	4.0	0	1.94	5.94	4.5	0	3.56	8.06	+35.6
Total				8.25				7.13	-13.6

Despite the fact that in February ungulates usually move to valley bottoms, we can see in Table 2.2 that the number of ungulates decreases between first and second count for most species. These data are approximate, but when extensive information is gathered it may reflect reality.

People hunt for ungulates intensively, as is shown in the Table 2.3, where monitoring results are given (winter 1999-2000).

Table 2.3. Ranking of hunting and poaching intensity of ungulates along all surveyed routes (based on counts conducted in February 2000).

Model unit	Hunting intensity			Hunting intensity estimated in points	Poaching intensity			Poaching intensity estimated in points
	high	medium	low		high	medium	Low	
Matai	14	3	7	3.17	5	7	12	2.41
Khor	18	3	0	4.71	18	3	0	4.71
Khekhtsir	0	0	0	0	0	0	7	1.0
Tigrovy Dom	11	3	0	4.57	8	5	1	4.0
Botchinsky	0	0	0	0	0	0	14	1.0
Total	43	9	7	4.22	31	15	13?	3.61

From data obtained during 3 years we have noted that not only the number of ungulates changes but their distribution changes also. We suppose that tracks encountered on the routes reflects these changes (Table 2.4.)

Table 2.4. Ungulate tracks encountered on the routes during the counts conducted in February each year

Model unit	Number of routes (%) where ungulate tracks were found								
	elk			wild boar			roe deer		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
Matai	90.0	91.7	75.0	60.0	37.5	66.7	90.0	83.3	79.2
Khor	82.3	82.3	47.6	17.6	17.6	9.5	52.9	52.9	38.1
Khekhtsir	85.7	100	85.7	0	14.3	14.3	28.6	28.6	0
Tigrovy Dom	90.0	92.8	64.3	20.0	21.4	0	40.0	21.4	7.1
Botchinsky	85.7	100	100	0	0	0	100	57.1	42.8
Total	86.2	92.1	71.2	18.9	21.0	23.7	65.5	55.2	52.5

From these data, we can see that only wild boar tracks encounter increased by 25.4% for three years. This fact confirms the trend mentioned above. In almost all sites the number of roe deer tracks decreases (by 8.1% per year), which is contrary to the above statement that the roe deer population is growing, if only this growth is not due to the increase of population density. The decrease in elk tracks by 7% per year it looks to be a real tendency.

We purposely analyzed track encounter rates only in February, when movement of animals has stopped and there is less confusion due to migrating animals.
Based on these data, it appears that prospects for the tiger do not look good if adequate measures to improve the prey base are not taken in the near future. Recovery of populations of prey species requires a long time and considerable funds.

3. Tiger count results

Twenty one tigers were identified in monitoring units in the 1999-2000 winter, one more than in the previous year. This change occurred in Botchinski Zapovednik, where according to V. S. Kostomarov, the number of tigers is consistently increasing (Table 3.1.).

Table 3.1. Tiger numbers and density in monitoring units in winter, 1997-1998 through 1999-2000.

Model unit	Number of tigers found			Tiger density per 100,000 ha		
	1998	1999	2000	1998	1999	2000
Matai	5	5	5	1.96	1.96	1.96
Khor	2	4	4	1.52	3.04	3.04
Khekhtsir	2	2	1	4.43	4.43	2.21
Tigrovy Dom	2	5	5	0.94	2.37	2.37
Botchinsky	3	4	6	0.98	1.3	1.95
Total	14	20	21	1.47	2.10	2.21

The number of tigers is stable in the Matai unit. Six tigers were registered here this winter, but one of them – a big male - was registered also in Khor monitoring unit, which he visited periodically. One tiger was illegally shot and two cubs appeared. Their fate is unknown because the last tracks that were located of them, they were traveling without their mother and were being followed by a male. One tiger, an adult male, was officially shot in Khekhtsir when, famished and sick, he went into house after a dog.

The stable number of tigers indicates that population itself is in a stable phase in which growth is sufficiently high enough to equal removal (mortality). The population structure according to monitoring data is as follows:

Table 3.2. Tiger population structure, winter 1999-2000

Model unit	Males	Females without cubs	Females with cubs	Cubs	Unknown sex	Total
Matai	0	0	1	2	2	5
Khor	3	1	0	0	0	4
Khekhtsir	0	1	0	0	0	1
Tigrovy Dom	3	0	1	1	0	5
Botchinsky	2	0	2	2	0	6
Total	8	2	4	5	2	21

Structure of the population also appears to be stable. Insignificant variations of some parameters are probably a result of errors in sex and age identification. Nonetheless, the number of cubs, which can be determined with minimum error, is on average 25% of the population from year to year (Table 3.3.).

Table 3.3. Changes of tiger population structure in monitoring units from 1996 to 2000

Population components	1996	1997-1998		1998-1999		1999-2000	
	%	individuals	%	individuals	%	individuals	%
Adult males	31.2	4	28.6	6	30.0	8	38.1
Adult females without cubs	17.2	3	21.4	1	5.0	2	9.5
Females with cubs	9.4	2	14.3	5	25.0	4	19.0
Cubs	25.0	4	28.6	5	25.0	5	23.9
Unknown sex	17.2	1	7.1	3	15.0	2	9.5
Total	100	14	100	20	1000	21	100

A balance in productivity was achieved by an increase in the number of reproducing females, which compensated for the decrease in litter size (Table 3.4.).

Table 3.4. Data on tiger litters in monitoring units, winter 1999-2000

Model unit	Adult females		Total number of cubs in litters	Average size of litter			
	with cubs	without cubs		1996	1998	1999	2000
Matai	1	0	2		2.0	1.0	2.0
Khor	0	1	0				
Khekhtsir	0	1	0		1.0	1.0	
Tigrovy Dom	1	0	1			1.0	1.0
Botchinsky	2	0	2			1.0	1.0
Total	4	2	5	1.67	1.5	1.0	1.25

The total number of cubs/litter remains low, despite a slight increase in 2000. At the same time since 1997, the index of cubs per mature female is actually stable - 0.83 cubs (the number of cubs per one adult female). These data indicate that tiger the population has a great reproductive potential, which could be efficiently realized if the prey base increases.

No significant changes in the number of tiger tracks found during counts were noted (Table 3.5.).

Table 3.5. The number of tiger tracks (less than 7 days old) found on the routes

Model unit	Number of tiger tracks on the routes					
	1st count			2nd count		
	1997	1998	1999	1998	1999	2000
Matai	7	5	6	4	20	9
Khor	8	14	15	3	3	16
Khekhtsir	8	3	1	4	1	0
Tigrovy Dom	6	7	6	13	8	5
Botchinsky	4	8	7	6	6	17
Total	33	37	35	30	38	47

Taking into consideration the fact that in 1997 and 1998 routes were not traveled completely, and in 2000 their length increased, the number of tracks has not significantly deviate from its basic value, although during February counts the number of tracks tends to increase.

4. Monitoring of tiger habitat

Information about new roads construction, number of logging sites and logging areas only partly reflects changes of tiger habitat, because this information is generally incomplete. To get all the information is impossible due to enormous trips and expenses. In 1999-2000 these changes were noted:

Table 4.1. Changes of tiger habitat, winter 1999-2000

Model unit	New roads, km	Number of logging sites	Area of logging sites, ha
Matai	275	27	2002
Khor	16	10	850
Khekhtsir	0	0	
Tigrovy Dom		7	520
Botchinski	0	0	
Total	291	44	3372

It is evident that small forest fires play an important role (but it is difficult to find information about them in reports) as well as human activity in forests.

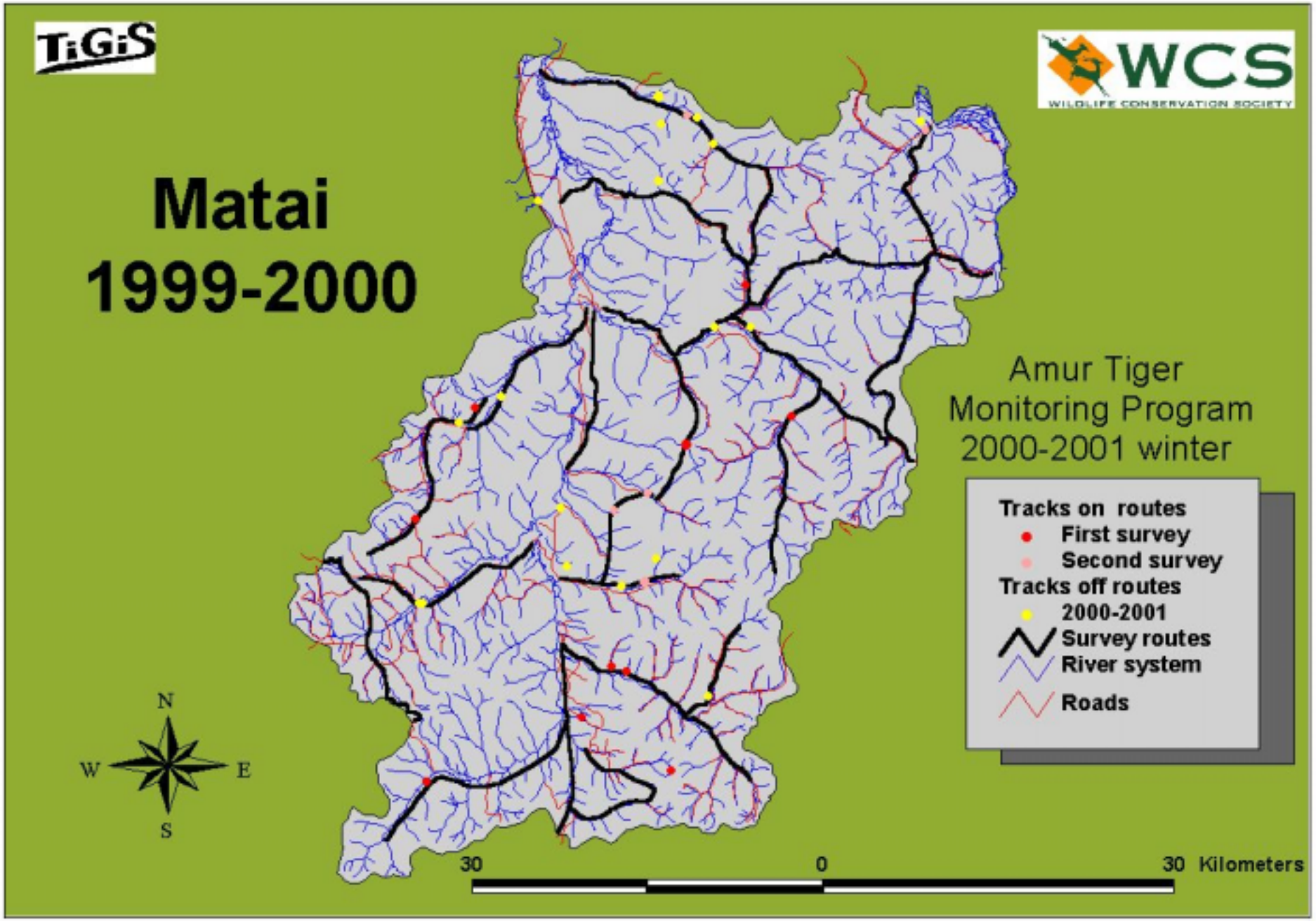
In spite of the fact that annual size of logging activities in monitoring units is less than 1% of their total area, the negative impacts are profound. Roads associated with logging increase accessibility of forests, leading to deterioration of their protective qualities due to cutting of coniferous trees, destruction of remnant pine and oak forests, and destruction of horse-tail (*Equisetum* spp. - an important winter forage) by heavy machinery. All these events have a negative influence on the tiger prey base. Continuing logging of forests has resulted in a complex patchwork that consists of different forest types (different in species composition and age). Mature forests, where ungulate densities could be high, represent less than 20% of monitoring units. For red deer and musk deer, areas logged 3-20 years ago, depending on their location, still can provide quality habitat, but for wild boar such areas are essentially lost as habitats for 50-70 years, if not forever.

In this connection within all tiger range all areas proposed for logging activities should undergo an obligatory environmental assessment that demonstrates that the advantages of logging, outweigh the disadvantages. Presently, such assessments are not done.

The same situation exists with forest roads. Numerous roads have been constructed up through the present. Some of them are in poor condition and overgrown, others are used only in winter, but in general roads are disasters for wild animals. Year-round roads reduce wildlife habitat forever, and seasonal roads also result in human disturbance. Animal numbers sharply decreases areas bisected by roads, as well in adjacent zones that incur indirect influences.

Therefore, the following measures are necessary:
1. Obligatory environmental examination and assessment of damage from new road construction and use.
2. Inventory of all roads, their classification according to the extent of use and effect on fauna. Destruction of roads, which will not be used for economical activity in near future.

3. To improve control and protection along roads.


TiGiS
WCS
WILDLIFE CONSERVATION SOCIETY
Matai
1999-2000
Amur Tiger
Monitoring Program
2000-2001 winter
Tracks on routes
First survey
Second survey
Tracks off routes
2000-2001
Survey routes
River system
Roads
N
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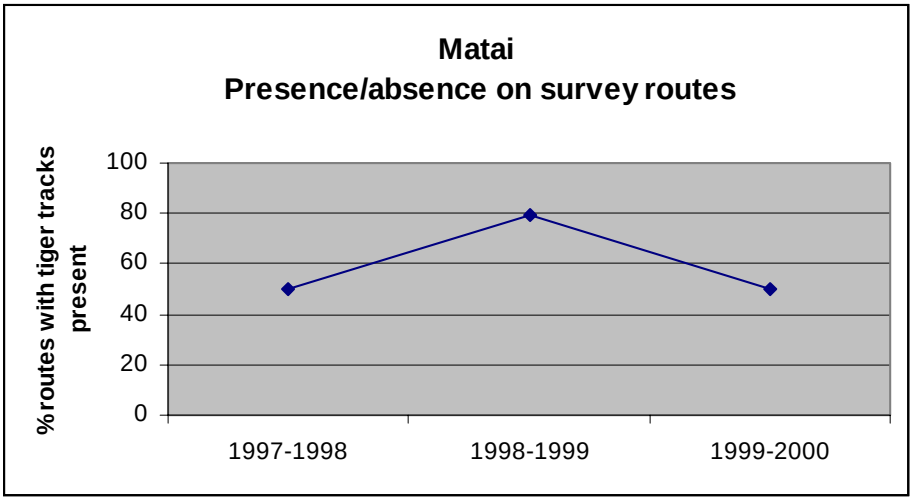
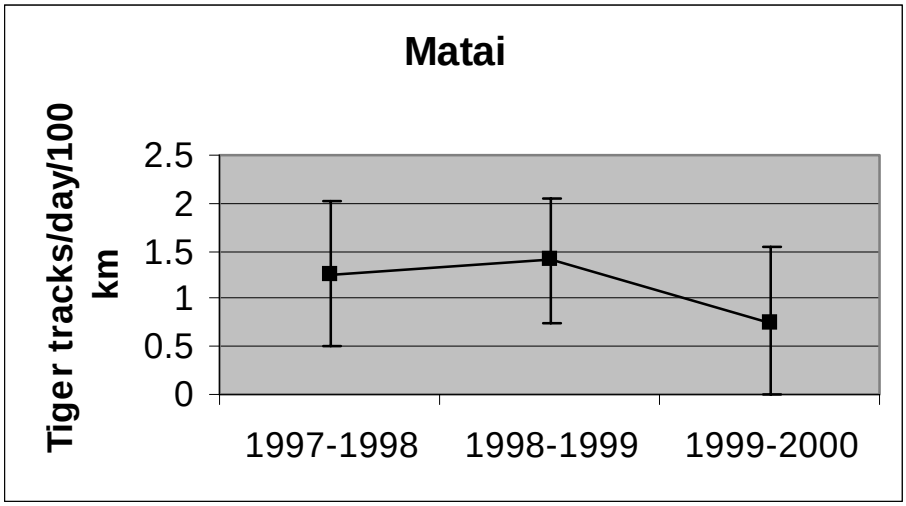
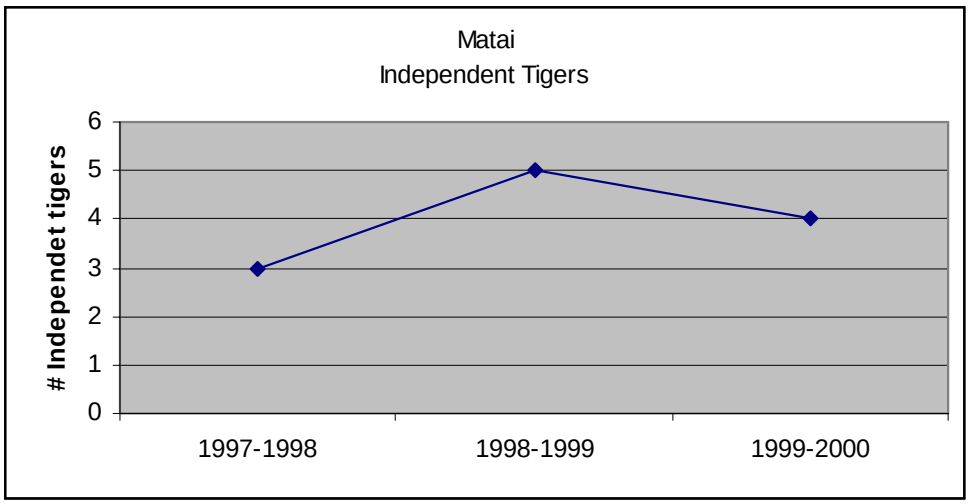


Percentage of routes with tiger tracks reported (both surveys combined).



Comparison of track densities in monitoring site across years



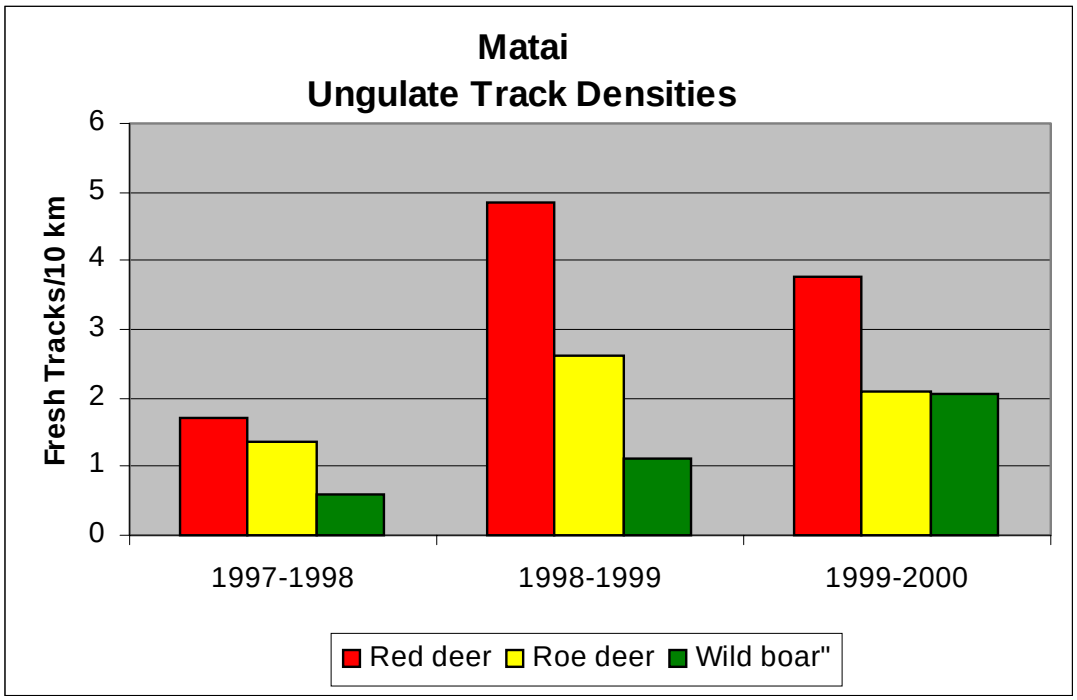
Number of Independent tigers (adults, subadults, unknown) on monitoring sites, 1999-2000

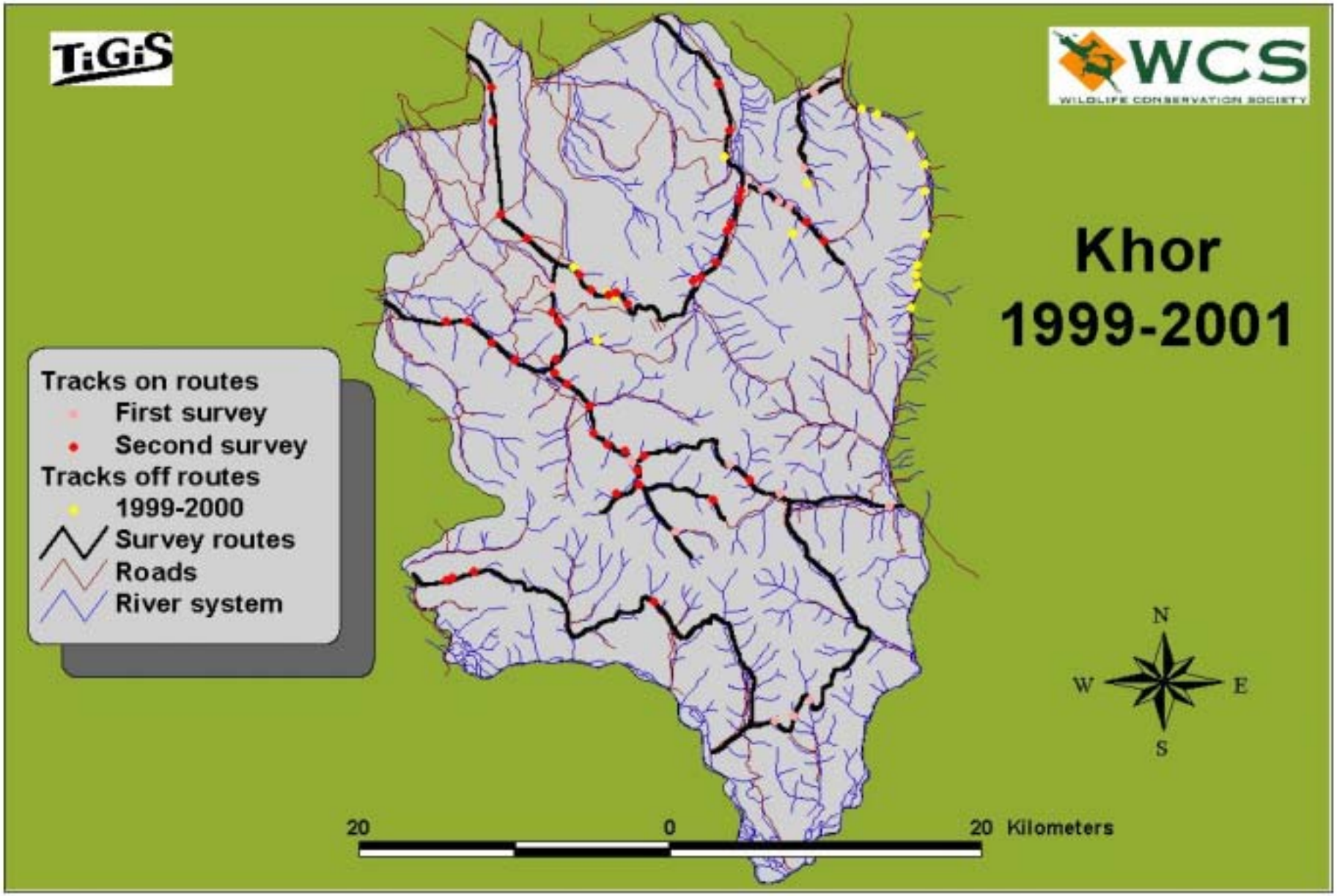
Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

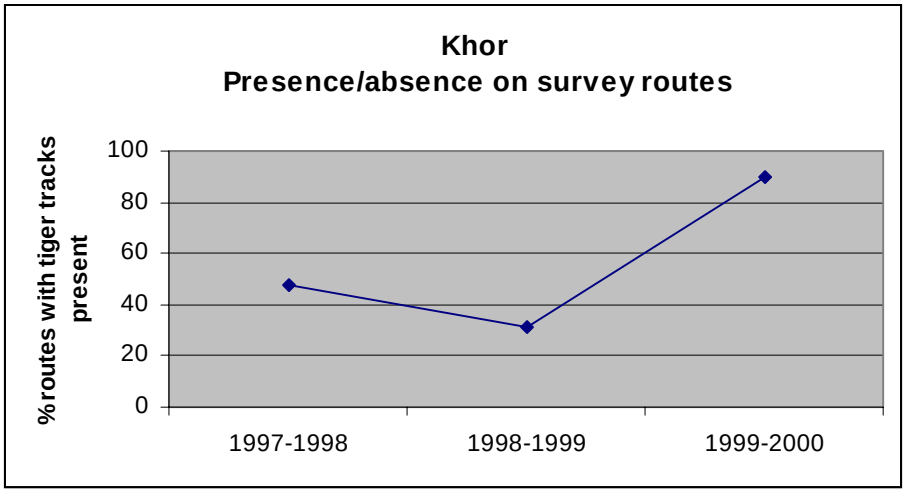
			Age						Totals		
			Adults								
#	Site	Year	Males	Females	Un-known	Sub-adults	Cubs	Age unknown	Total adults	Total independents*	Total (all tigers)
12	Matai	1997-1998	1	2	0	0	0	0	3	3	3
12	Matai	1998-1999	0	2	0	2	0	1	2	5	5
12	Matai	1999-2000	1	1	0	2	2	0	2	4	6
12	Matai	2000-2001	1	2	1	0	2	0	4	4	6

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 3 years.

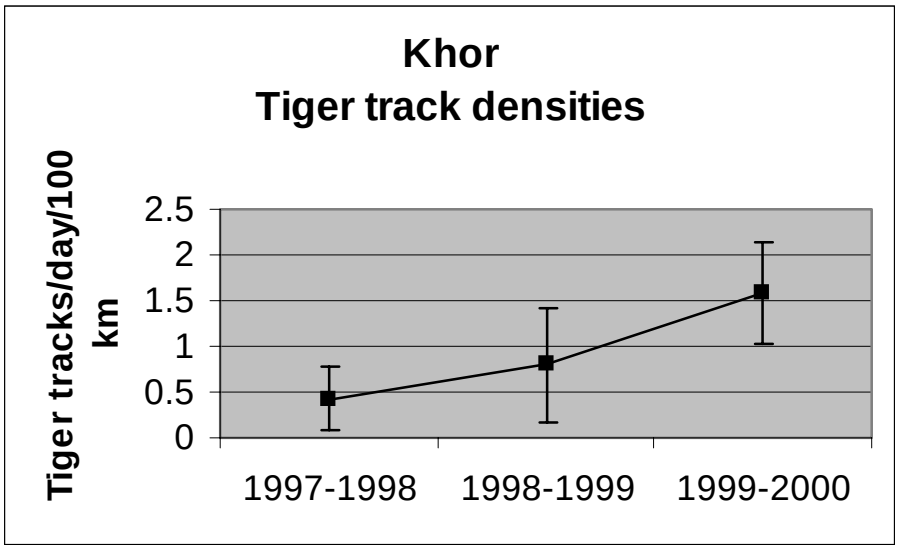
#	Monitoring Site		n	1997		1998		1999		Total
				mean	std	mean	std	mean	std	mean
12	Matai	Red deer	24	1.714	1.768	4.852	4.043	3.764	3.974	3.134
12	Matai	Roe deer	24	1.371	1.761	2.618	2.119	2.102	1.221	1.905
12	Matai	Wild boar	24	0.591	0.939	1.111	1.093	2.052	2.026	1.424



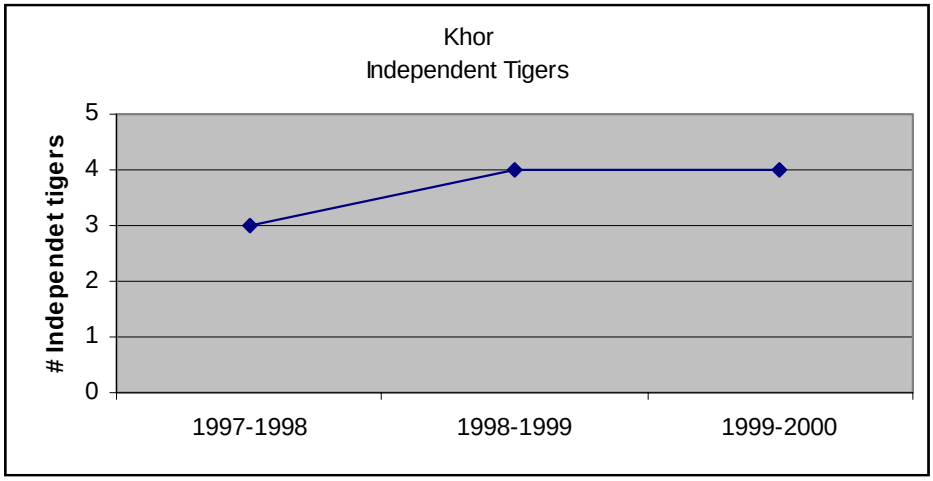

TiGiS
WCS
WILDLIFE CONSERVATION SOCIETY
Khor
1999-2001
Tracks on routes
First survey
Second survey
Tracks off routes
1999-2000
Survey routes
Roads
River system
N
W
E
S
20
0
20 Kilometers



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



Comparison of track densities in monitoring site across years



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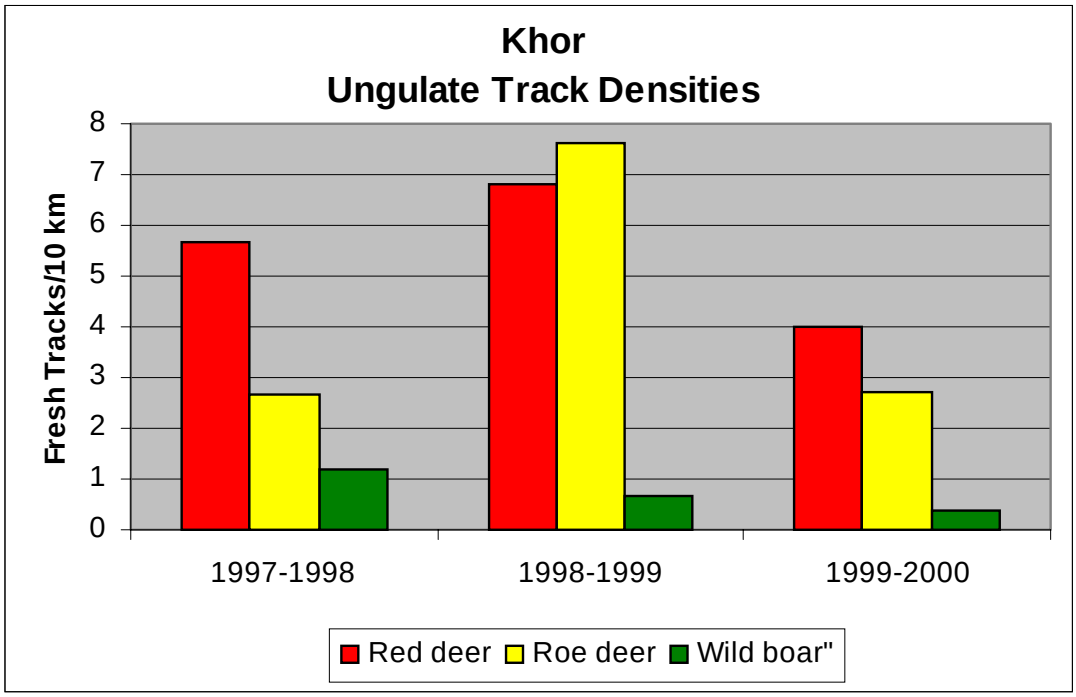
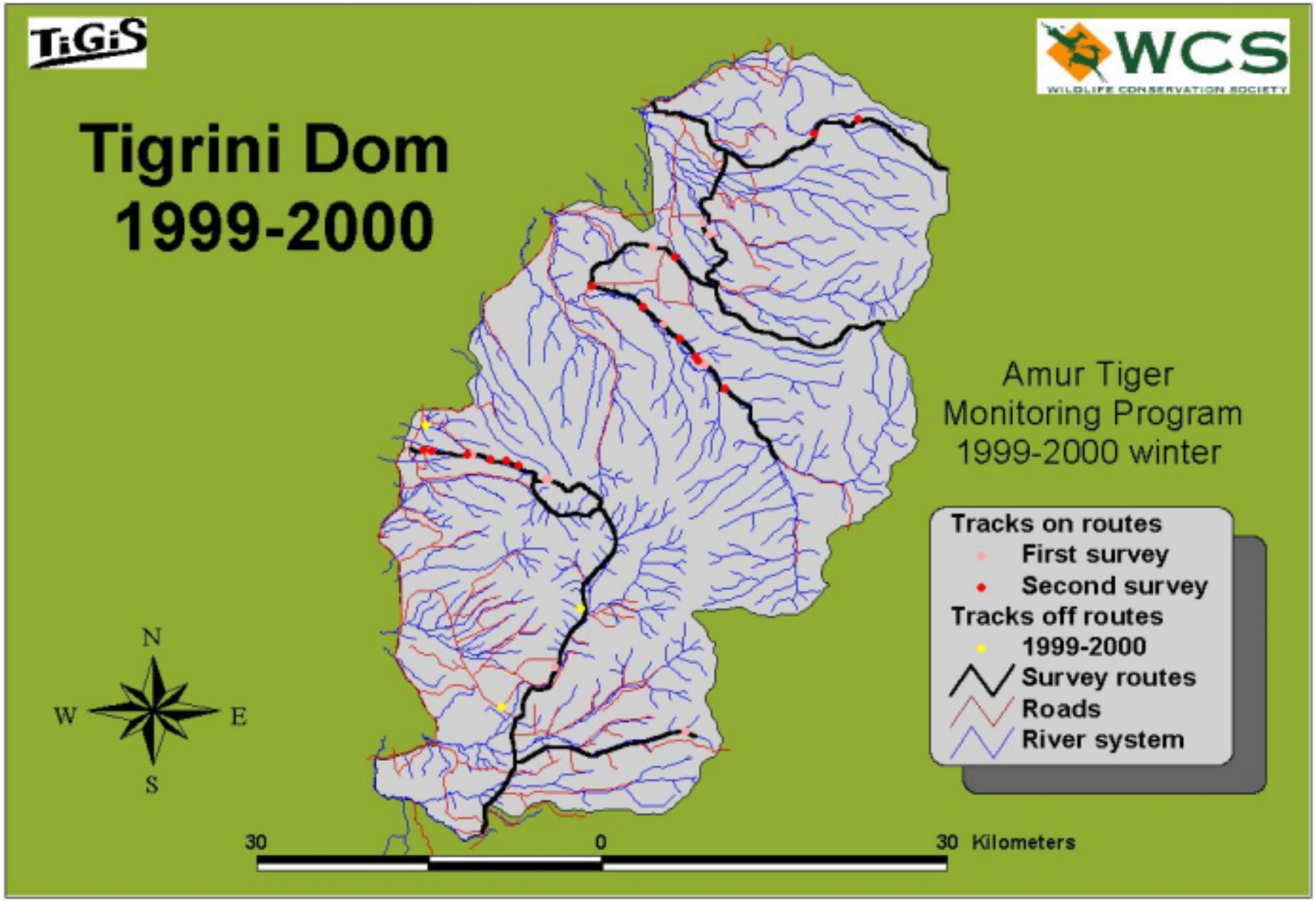
			Age						Totals		
			Adults								
#	Site	Year	Males	Females	Un-known	Sub-adults	Cubs	Age unknown	Total adults	Total independents*	Total (all tigers)
8	Khor	1997-1998	2	1	0	0	1	0	3	3	4
8	Khor	1998-1999	2	2	0	0	2	0	4	4	6
8	Khor	1999-2000	2	2	0	0	0	0	4	4	4
8	Khor	2000-2001	2	2	0	0	1	0	4	4	5

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 3 years.

#	Monitoring Site		n	1997		1998		1999		Total
				mean	std	mean	std	mean	std	mean
8	Khor	Red deer	19	5.690	5.429	6.821	5.892	3.978	4.456	5.195
8	Khor	Roe deer	19	2.690	3.474	7.601	5.358	2.731	3.380	4.094
8	Khor	Sika deer	19	0.058	0.252	0.000	0.000	0.000	0.000	0.014
8	Khor	Wild boar	19	1.181	2.330	0.658	0.980	0.373	0.736	1.237




TiGiS
WCS
WILDLIFE CONSERVATION SOCIETY
Tigrini Dom
1999-2000
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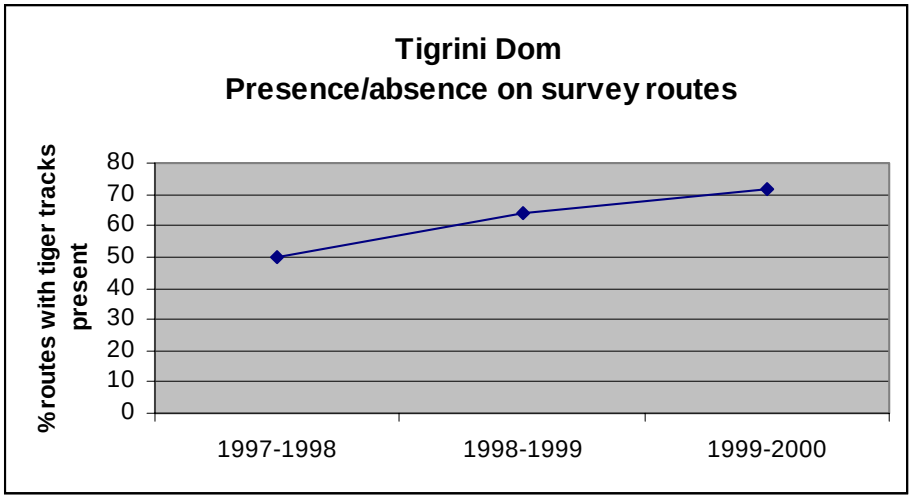
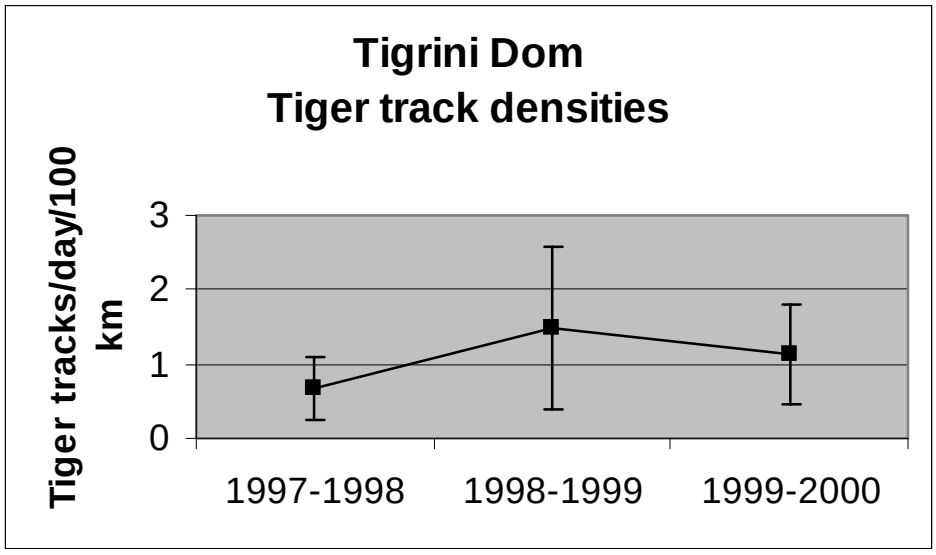
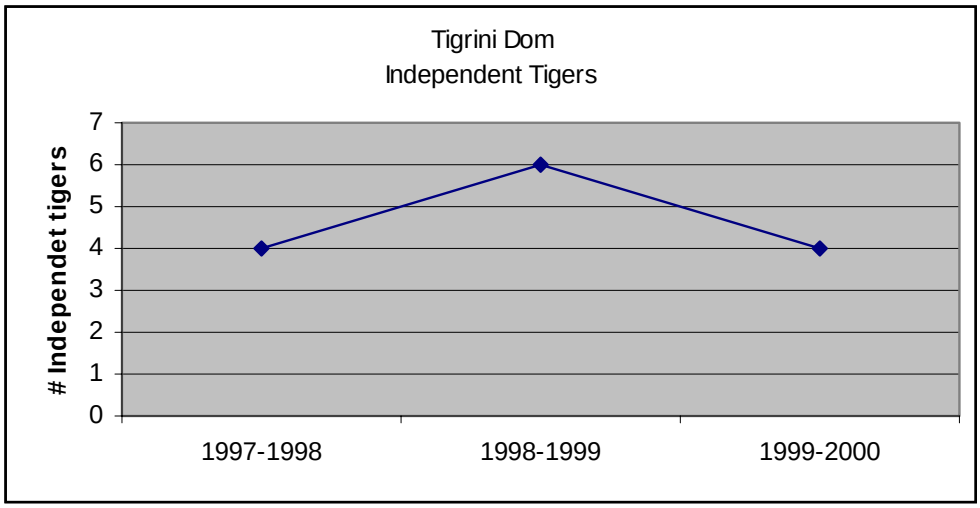
First survey
Second survey
Tracks off routes
1999-2000
Survey routes
Roads
River system
N
W
E
S
30
0
30 Kilometers



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



Comparison of track densities in monitoring site across years



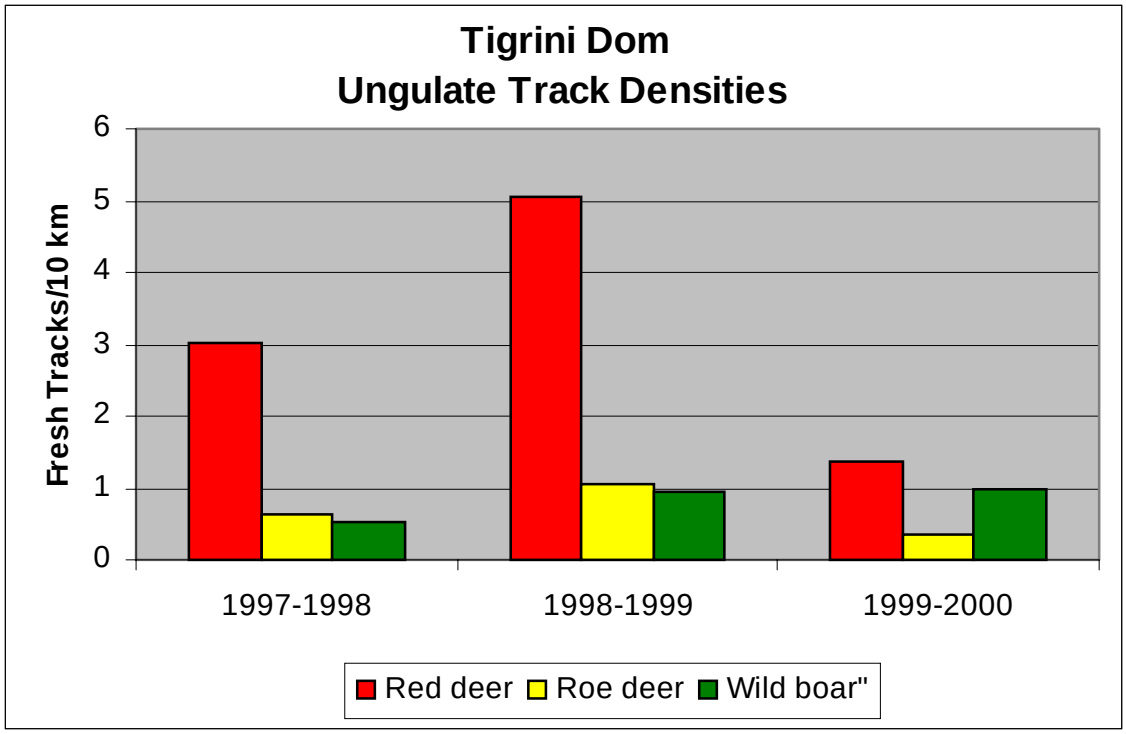
Number of Independent tigers (adults, subadults, unknown) on monitoring sites, 1999-2000

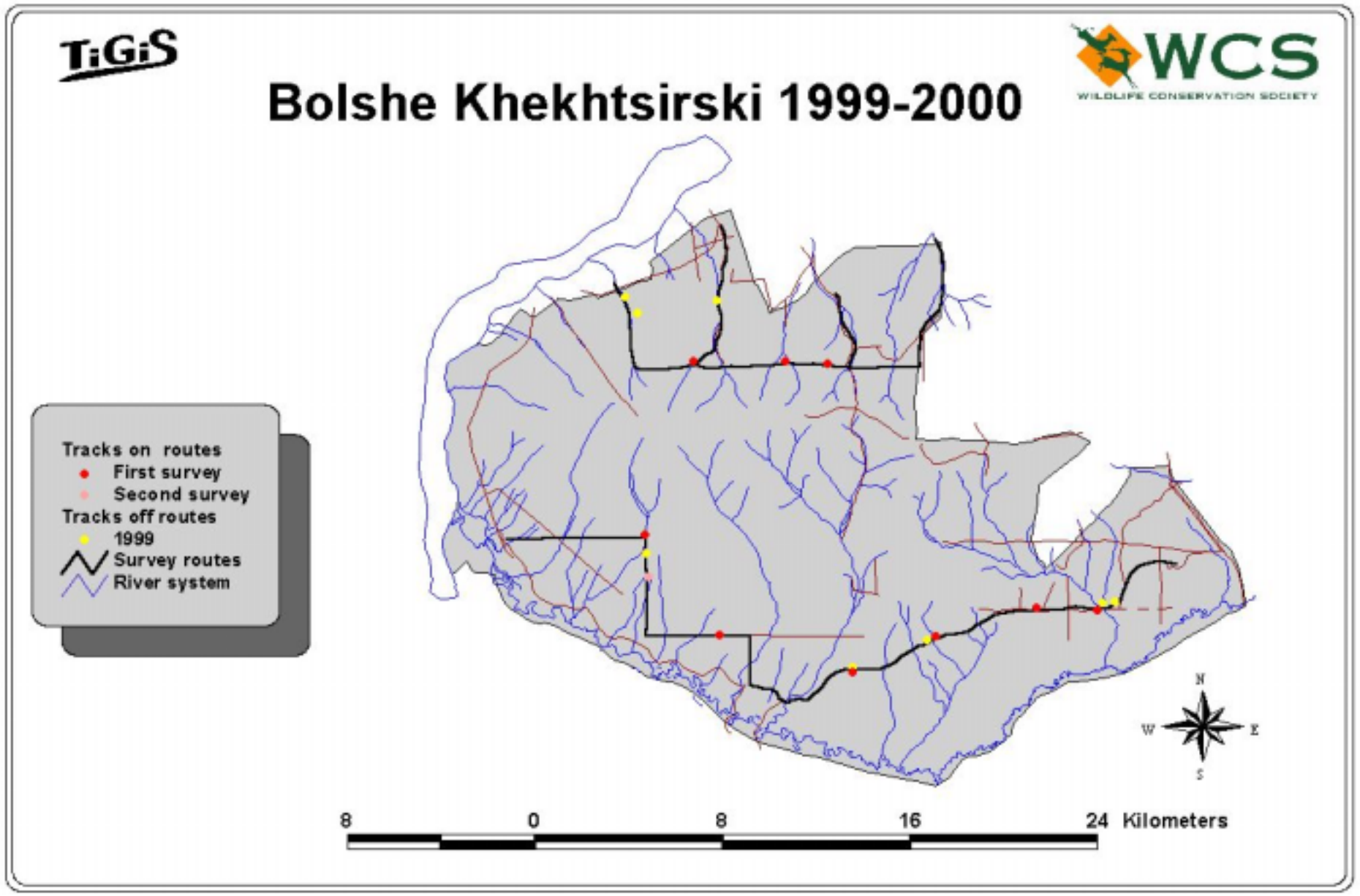
Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

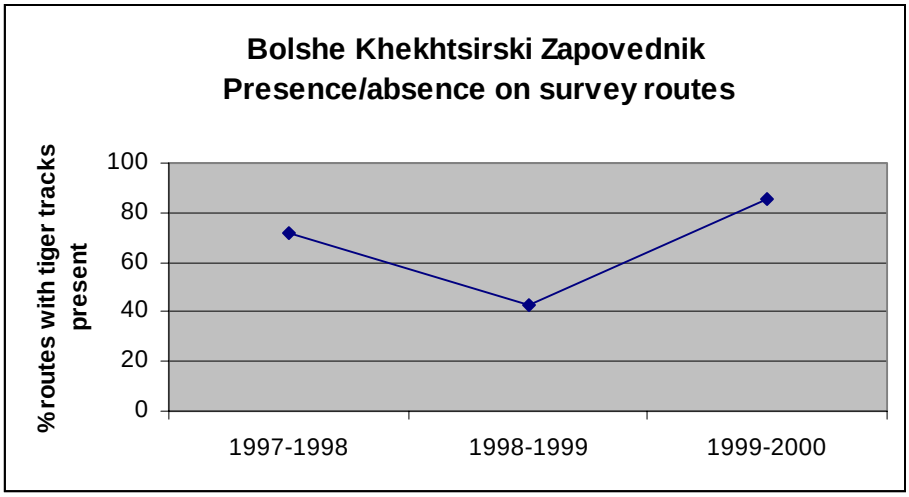
			Age						Totals		
			Adults								
#	Site	Year	Males	Females	Un-known	Sub-adults	Cubs	Age unknown	Total adults	Total independents*	Total (all tigers)
11	Tigrini Dom	1997-1998	2	0	1	1	0	0	3	4	4
11	Tigrini Dom	1998-1999	2	0	2	2	0	0	4	6	6
11	Tigrini Dom	1999-2000	3	1	0	0	1	0	4	4	5
11	Tigrini Dom	2000-2001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

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 3 years.

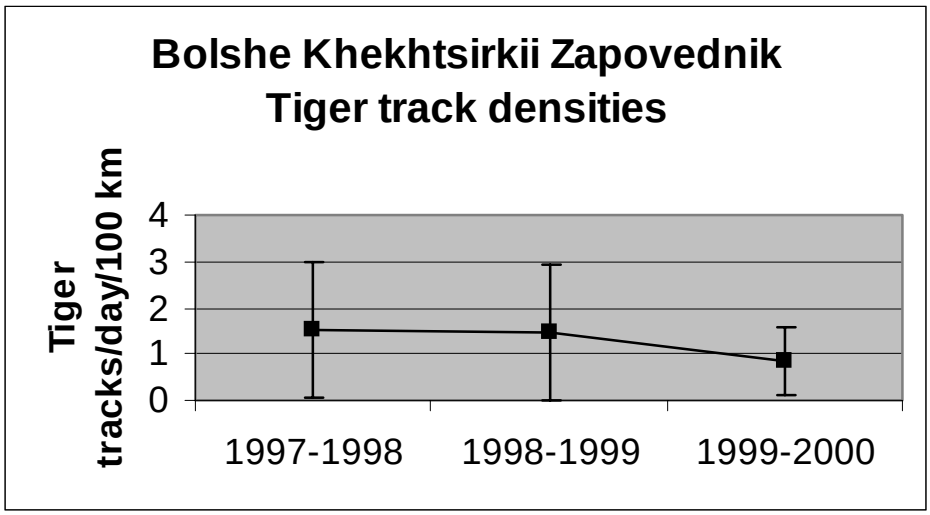
#	Monitoring Site		n	1997		1998		1999		Total
				mean	std	mean	std	mean	std	mean
11	Tigrini Dom	Red deer	14	3.003	3.916	5.060	3.404	1.377	1.386	2.760
11	Tigrini Dom	Roe deer	14	0.647	0.817	1.044	2.602	0.362	0.739	0.593
11	Tigrini Dom	Wild boar	14	0.537	1.203	0.935	1.572	0.997	0.896	0.749



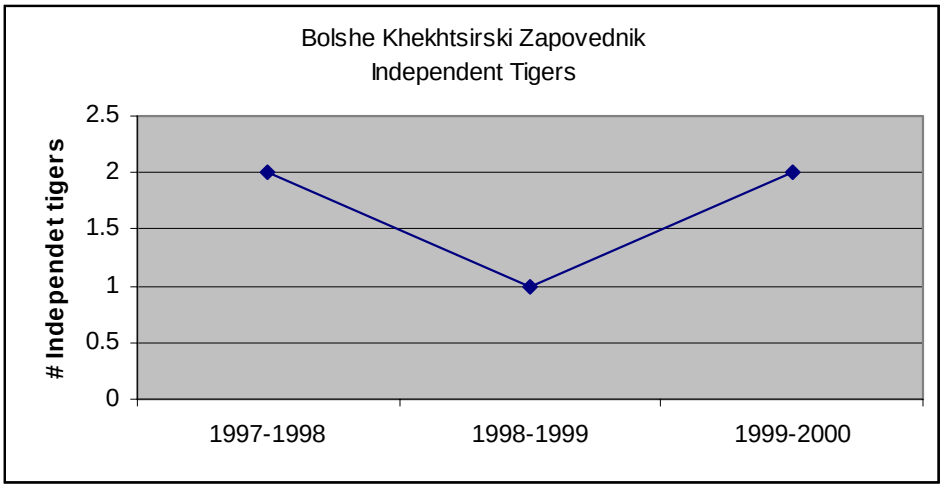

TiGiS
WCS
WILDLIFE CONSERVATION SOCIETY
Bolshe Khekhtsirski 1999-2000
Tracks on routes
First survey
Second survey
Tracks off routes
1999
Survey routes
River system
N
W
E
S
8
0
8
16
24 Kilometers



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



Comparison of track densities in monitoring site across years



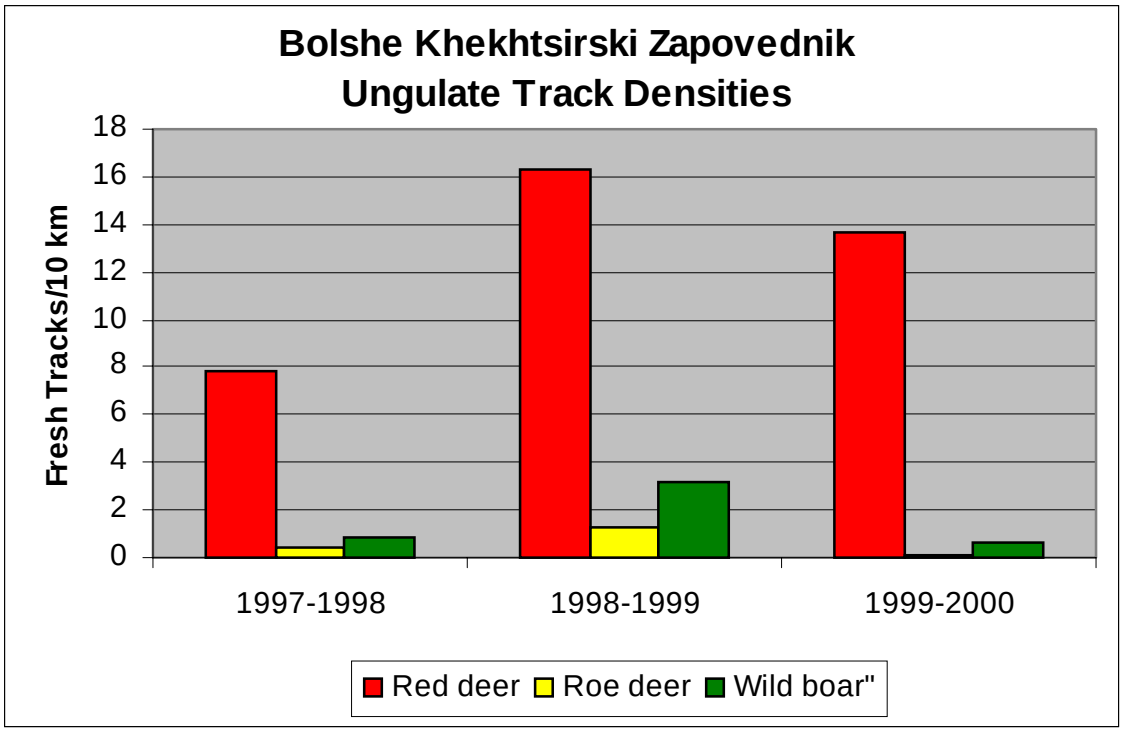
Number of Independent tigers (adults, subadults, unknown) on monitoring sites, 1999-2000

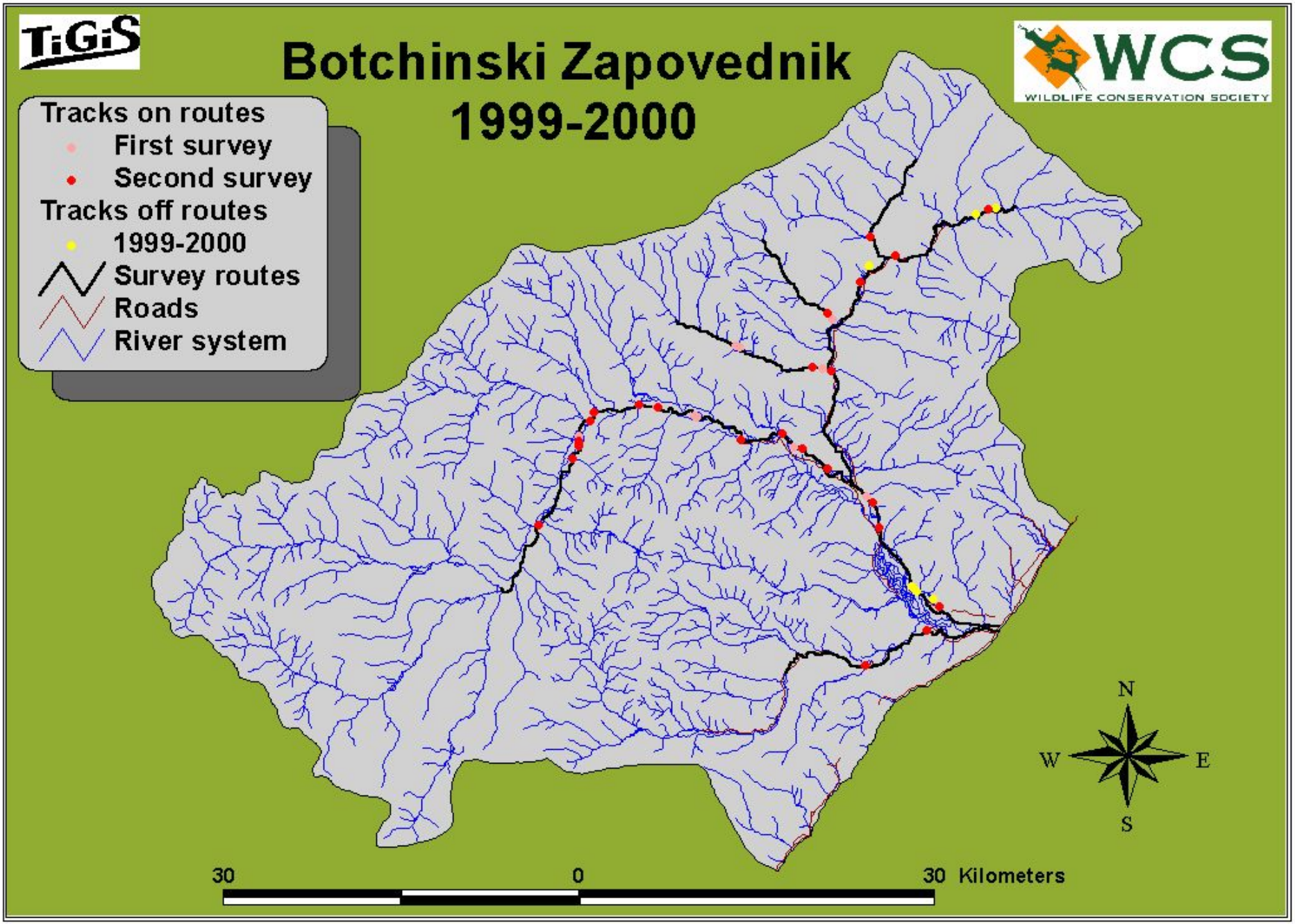
Number of tigers, by age class, and sex (for adults only) on Amur tiger monitoring sites in winter

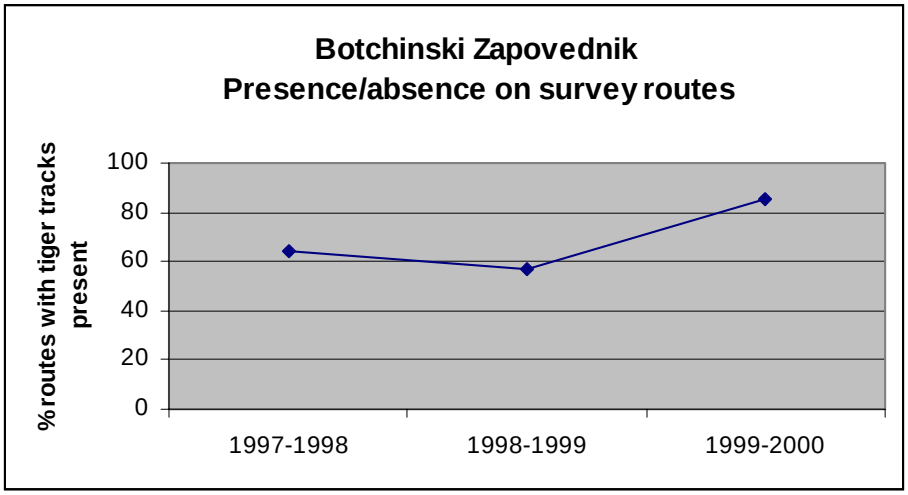
			Age						Totals		
			Adults								
#	Site	Year	Males	Females	Un-known	Sub-adults	Cubs	Age unknown	Total adults	Total independents*	Total (all tigers)
10	BolsheKhekhtsir Zap.	1997-1998	1	1	0	0	0	0	2	2	2
10	BolsheKhekhtsir Zap.	1998-1999	0	1	0	0	1	0	1	1	2
10	BolsheKhekhtsir Zap.	1999-2000	1	1	0	0	0	0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

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 3 years.

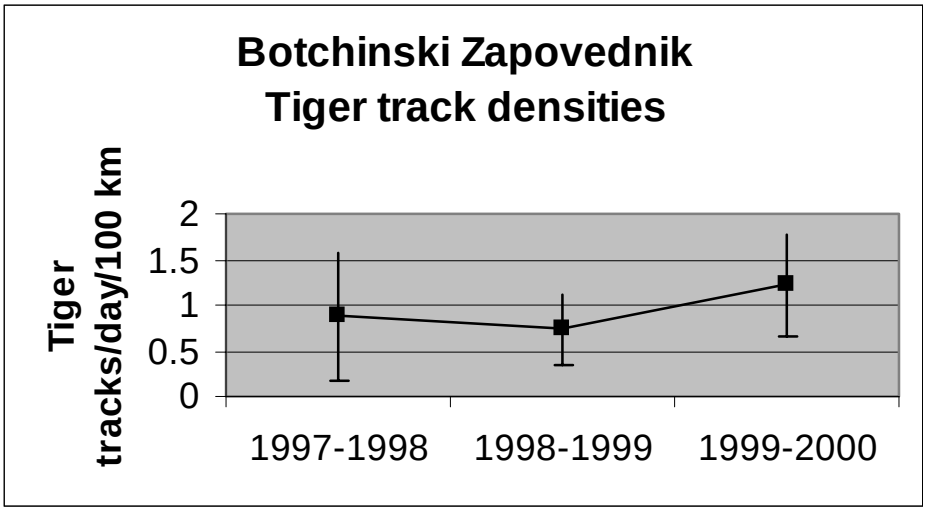
#	Monitoring Site		n	1997		1998		1999		Total
				mean	std	mean	std	mean	std	mean
10	BolsheKhekhtsir Zapovednik	Red deer	7	7.801	7.713	16.294	14.121	13.652	12.746	19.680
10	BolsheKhekhtsir Zapovednik	Roe deer	7	0.452	0.370	1.272	1.546	0.157	0.416	0.699
10	BolsheKhekhtsir Zapovednik	Wild boar	7	0.800	1.049	3.160	3.450	0.611	1.095	2.022



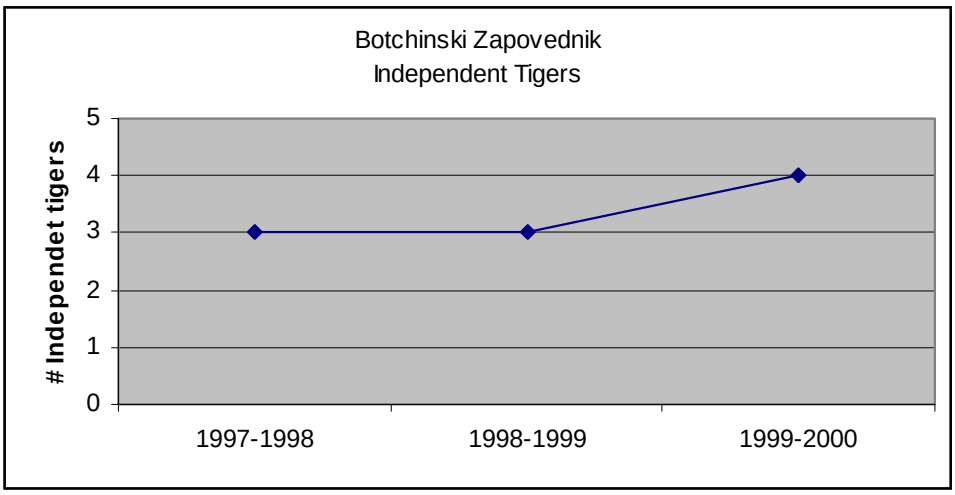

TiGiS
Botchinski Zapovednik
1999-2000
WCS
WILDLIFE CONSERVATION SOCIETY
Tracks on routes
First survey
Second survey
Tracks off routes
1999-2000
Survey routes
Roads
River system
N
W
E
S
30
0
30 Kilometers



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



Comparison of track densities in monitoring site across years



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

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

Mean track density (tracks less than 24 hours) of ungulates in Amur tiger monitoring sites for first 3 years.

#	Monitoring Site		n	1997		1998		1999		Total
				mean	std	mean	std	mean	std	mean
9	Botchinski Zapovednik	Red deer	14	1.753	1.192	6.866	5.062	4.328	2.501	3.968
9	Botchinski Zapovednik	Roe deer	14	0.421	0.628	2.995	3.158	2.688	2.846	2.585
9	Botchinski Zapovednik	Wild boar	14	0.027	0.102	0.000	0.000	0.000	0.000	0.007