

1966

GRIZZLY BEAR PRE-HIBERNATION BEHAVIOR
AND LOCATION OF DENS

On November ¹⁹⁶⁶ 9, we tracked number 40 closely all day long and at the close of the day concluded that she was not close to her den. We left her, returned to camp, left camp more or less intact, and then returned to base. On November 10, John and I went out to the camp area, took a number of bearings which placed number 40 approximately in the same site where we had left her the day before. On November 11, # 40 I remained at base to monitor number 40 and number 202 with the large antenna. John, Hank, and Ernie followed number 40 throughout the day of November 11 returning after dark at about six pm. They had located her den close to the bearing that I had taken ~~the~~ the week before. Apparently number 40 was at her den all the time, that is the last few days, but not going in often, thus we were not able to detect the usual pattern of the bear going in and out of her den. The den is located about one and three quarter to two miles from the service road bridge across ^{Trout} ~~Red~~ Creek. It is on the East side of the Creek and the den is about one and one quarter to one and one half miles from the den that has been dug by number 101. The den of number 101 is beneath ~~the bark of a huge~~ a huge white bark pine tree and faces due North. Number 40's den also faces North, but is not at the base of a tree.

On November 12 I had arranged for the pipes to be drained at the Laboratory. The snow had been piling up and it was evident that we would soon have to leave the lab and get our cars out if we did not want them to remain at Canyon throughout the winter. We decided ~~on~~ that on November 13, we would make an attempt to move in on the den of number 40 and see if we

could ^{get} some movies of the bear at the den that were desired for the T.V. movie. We felt that if we did not ^eucceed on this attempt, we would have to give it up, quickly pack all of our gear, and pull out for West Yellowstone. On the morning of November 13, John, Hank, and I left the lab about ten am and pulled our ski-doo out to the Trout Creek Road. We then alternated walking and riding until we got opposite the den site of number 40. From here we proceeded on foot. At about noon, we were quite close to the den so rested while eating a cheese and rye sandwich~~s~~. We then moved slowly ^{through} ~~to~~ the deep snow approaching the den cautiously. When about one hundred yards from the den, and still in very heavy timber, we saw number 40 and another very large bear that we suspected must be number 101 and this was later verified. Although we moved very quietly and slowly and tried to take advantage of air movement the bears apparently got our scent from the changing wind and moved off. Although we saw the bears, we were unable to get a movie. The signal indicated to us that the bears had moved off some distance and so we moved into the dens and cautiously approached the entrance. It was impossible to see the den entrance from any angle as the tailings from the excavation rose up on a slant and hid the opening. I was unable to make sure that this was actually a den and not a day bed until I was five feet from the entrance. I approached no closer, but took a few still ~~picut~~ pictures and later a few flashes. The den was about twice as wide as it was high and the entire floor was covered with a thick layer of boughs- spruce and fir. There were two slight rounded indentations in the boughs side by side. This was probably where the mother bear and her two cubs had already been lying down and resting. It

seemed very improbable that we would get a movie of a bear at the den entrance, particularly as it was so difficult to see the entrance. However, we located a spot from which to take movies using one of the large lenses. We settled on a spot to the West of the den and set up our cameras before moving off. We made boughs ~~sets~~ seats under a fir tree and waited over a half hour before the signal told us that number 40 was returning. Soon the bears were less than one hundred yards away not one, not two, but all five of them. Number 40, 101, and their three large cubs. These bears approached the den cautiously sniffing our tracks. After coming to the den they became nervous and moved off. We realized that we could not photograph these bears as close as we had set up our camera. With five bears present, it was just too dangerous to try it. John, and I then cautiously moved in and retrieved the camera. We set it up again a greater distance from the den. Before long the bears made a partial circle, they were investigating the area and returned from the Northwest passing within less than fifty yards of us. We did not try to take movies at this time for fear of alerting the bears. There were no trees that we could readily climb. Besides this, the movies would have shown ~~us~~ nothing that we had not already taken before. I took a few stills. We had the forty-four caliber rifle and a 357 hand gun, but these didn't seem like much protection with five grizzlies only fifty yards from us and these animals alert and actually investigating us. None of these bears showed signs of lethargy like they had last year, and the cubs ran and frisked in the snow. I moved a few feet to get a better view and caught Marian, number 40, looking directly at me. It was evident that she had seen the movement and detected my presence although she ~~made no~~ may not have

known that it was a human. Right after this she and the cubs moved away from the den again. During this whole episode, we caught only ~~fleeing~~ and partial glimpses of the bears ~~feeding~~ in the ~~distance~~ heavy timber.

It is particularly interesting that grizzly number 101 has left her den and come up here to join number 40. Apparently neither are ready to hibernate. It may take another storm or an extended cold period. These bears apparently are not anxious to be separated, ~~yet~~ they each have separate dens (later we found that number 101 had completed her den so that at this time she had either decided not to hibernate in her den or was looking around or perhaps ~~sitting-for~~ ^{for a site for} another den or perhaps even digging it. Number 101 was not instrumented so we could not monitor her activities. This close relationship of these two bears raised ~~and~~ some interesting questions. One: It would be ~~interesting~~ to know whether grizzly number 101 is number 40's mother. Perhaps a blood sample would enable us to tell.

We lost the light at 4 o'clock PM so gave up ~~on~~ taking ~~picut~~ pictures. We left the den area and hiked out to the ski-doo. It had ~~been~~ remained cloudy most of the day, but was clearing by sun~~set~~. The air temperatures were warm all day and the snow was melting off the trees. These are not the conditons under which the bears have hibernated in the past. The barometer was rising. We rode the ski-doo and hiked out to the highway and returned to the lab after dark.

On November 14, we decided that there was little possibility of getting suitable movies at the den of number 40, largely due to the fact that ~~it~~ it was impossible to see the den entrance from ~~the~~ ^a distance. In the last attempt, we decided to move in close to the den of number 101 and wait here with the hope that

the bears would turn up in this area. At 10:00 AM, the signal on our portable receiver told us that number 40 was in or near the large day ^{bed} where we had jumped her on previous occasions. This bed is near the den of number 101. We accordingly moved in with the movie camera and stills and approached close to the den of number 101. We approached to within about twenty-five feet of this den to take a few stills and there was no indication that this den had been used by the bears for the past couple of days. We felt that possibly it had been abandoned or that number 101 just had not left number 40 to return to her own den. We did not attempt to examine the entrance to go close enough to look inside. At 11:45 AM our signal indicated that number 40 was approaching close to this den, that of 101. We waited with a view to the den hoping for pictures, but number 40 moved off. AT 12:30 PM we started tracking her. The signal was irregular. At 1:30 PM, we jumped number 40, and number 101 with their cubs. We had gotten very close to them before they took off. Marian's, number 40, foot is bleeding slightly. All of these bears had visited the Buffalo carcass, not far from the den of number 101 during the night. They had also moved down to the Trout Creek dump and returned to their denning areas. This behavior did not indicate that the bears were ready to hibernate. These five bears plus at least one other large bear were all foraging on the night of November 13.

On November 14, we saw the tracks of quite a few bands of elk. They were still moving through Hadden Valley. Usually the elk are out of the valley by this time. They have been in past years. On the night of November 14, ~~the~~ the temperature dropped to 27° F., the barometer remained steady, and the ski was over-

cast. At 12:30 PM on November 15, it was snowing lightly and the barometer was still steady. The temperature ~~he~~ at this time was about 32°F. In other words the temperature is still above freezing with the snow melting part of the day. On the afternoon of November 15 we closed up the lab and drove out to West Yellowstone. It was warm and raining at West Yellowstone. On November 16, it was also warm and raining in the morning, clearing by afternoon. On November 17-20 the temperature at West Yellowstone was warm with thawing conditions. It is quite unlikely that the bears went into hibernation, that is, into their dens to stay prior to November 19. They probably, could be said, to have gone in ^{to} hibernation somewhere between November 19-21. The pre-hibernation behavior and the pre-hibernation phenology were quite different this year ~~than~~ they had been in past years. The bears moved to their dens with the storms, but they were not lethargic ^{at} this time and though they entered their dens and slept in them they did not remain inside. There is a considerable amount of snow on the ground, twelve to eighteen inches in places, but the air temperatures were warm and thawing occurred during some portions of almost every day. Number 40 and number 101 and a few others at least foraged as long as we were able to remain and observe them. Apparently when food is available the bears will continue to eat, at least to a limited degree up until they are ready to go into their dens. We had observed this on other occasions.

An automatic weather station might provide us with some interesting ~~metere~~ meteorological data that would be helpful in interpreting the movement of grizzlies to their dens and the factors affecting the onset of lethargy ~~and~~ the entrance of the bears into their dens. It might be that the average ~~minimum~~ temperature taken ~~over~~ continuously over a period of

time from the onset of the first cold ~~at~~ spell and snow in fall to the period of hibernation could show a variation from one year to the other. In other words, the bears may enter their dens earlier when the average temperature of the last month and a half has been lower for one year than for an other.

The forgoing notes and comments are those made while in the field and while making out observations. They are not a result of an analysis of the over all data. This will be done as soon as the information can be compiled.

1966

#40

1.

Nov. 9. After a very cold night of -10°F or lower we arose at camp and checked the temp. at 7:30 am. It was then -6°F & rising. The sky was overcast following clear night. It had started warming around 3:00 am. Temp. at lab dropped to -12°F .

At 7:30 am we did not get a signal with dipole and coil receiver. Warmd receiver and obtained a signal at 8:20 am. Signals of short duration then quite no signal with loop.

8:45 am - Good signal - dipole

9:00 am - Temp. up to 0°F sky heavily overcast

9:10 am - Short interrupted signals. The signals seemed to leave no doubt but what #40 was in a den and most likely the one we located (101's). [This did not prove to be the case. The interrupted signal simulating bear going in & out of den proved to be due to malfunctioning of transmitter - perhaps due to cold.]

9:25 am Very brief signal (weak) with dipole

9:50 am Temp $+2^{\circ}\text{F}$

10:00 am Fair signal dipole. Signal varying & interrupted. Left camp to try to locate #40

10:40 am Found no fresh bear tracks at remains of Buffalo carcass. Just prior to this we obtained a loud signal from #40 from crest of hill above camp (T.C. Ridge Hilltop). The null was to left of den of #101 or to south. The bearing from hilltop was 200° . Signal was erratic as though bear were going in & out of a den. We suspected #40 was at her own den & decided to approach close enough to locate it.

10:45 am Signal in timber still erratic & intermittent following

Nov. 9 ^{cont.}

1966

#40

2

The day remained heavily overcast. It made it difficult to keep our direction unless referring to compass. Snow depth 16 to 18".

11:30am. Picked up fresh bear tracks (#40's + cub) while following 200° bearing. Got an occasional bear but no continuous signal. Suspected bear was in den. Decided to follow tracks after reaching area where den might be. We could not get signal after enough to use it. Thought the tracks would lead us to a den. Led to small day bed (photo)

12:05pm Hard, fresh feces in trail (photo). Kept following tracks but slowly & carefully attempting to see den or come on bear at any moment. When we got occasional bear it indicated #40 was quite close. Found spot in snow where sow had sat down facing way she had come (from us). Took photo. Still thought the trail had been made earlier & bear was now in den. This was due to interrupting signal characteristic of bear in a den. Came upon a bed that looked quite fresh. Snow had been raked away & earth was showing. Scattered bunches of Vaccinium in bed. Took photo

12:45pm Came upon loose, black feces in fresh snow (photo) and then large mass that looked more like vomit than feces. This was quite warm & made us finally realize what we had begun to suspect — that we were following close behind the family of grizzlies. Last vomit-like feces appeared to contain mucous & lining of stomach or intestine. Only getting signal now & again

1:15pm. Again got very close to #40. Signal still on air. Earlier I took photos of urine sprays along trail indicating movements of bear & the fact that she had been moving while hunting.

1966

#40

3.

Nov. 9 cont.

1:15 pm. Came across spot where crabs sat down & ~~sat~~ ^{slid} down hill on their rear ends.

1:30 pm. Bear had been heading generally south since we first picked up her tracks. At this time the track broke out from timber & crossed Trout Creek to east side. This was about 2 miles south of camp. We decided not to press further now that we know we were following bear and then crabs were in prospect. Obtained interrupted signal from grizzly across creek. Decided to build a fire & wait to see what she would do — stay out, move toward den of #101 or perhaps head on up Trout Creek to her old (1964-65 den site).

3:10 pm. Ate a few crackers for lunch. #40 still across valley from us & not moving. Getting only an occasional signal at long intervals. Decided to head for camp.

5:15 pm. No further signal from 3:10 pm until 5:15 pm. Got a short loud burst & that was all. Dugged up a fishing pole, leader & fly & caught 2 trout while heading for camp.

5:30 pm. Met John & Ernie at hilltop with ski-doo. Tried for signal at camp with dipole until 6:30 pm & still no signal. Transmitter had sounded as though there was a loose battery connection. Suspect the Transmitter will kick out on us. May have been damaged & hurt like former one — taken by crabs or #101.

6:00 pm. Temp. rose slowly through day and was 18°F at camp. It is evident that #40 is not lethargic & not yet ready to hibernate. However conditions are favorable. #202 is at & in his den & so is #101.

8:00

Left camp & hiked to cave. Drove then out. Were afraid to leave them overnight. No need to stay at camp with no sig. Decided to return (OK).

receiver. Left camp intact but closed tent & hung food in trees,⁴
cannot explain behavior of #40 but it appears that she does
not want to leave #101 & her den. It may be that both bears
dig the same den but #101 will not permit the younger & smaller
bear to share it. Number 40 does not act as though she has
another den in the area and it appears as though she planned
to use this den herself or share it with #101. It seems as though
the close relationship of the bears during summer is difficult to
terminate. At any rate it has affected #40 to the point that
her pre-hibernation behavior is quite different from past years
& not what it should be considering the snow storms & lowering
temperatures. We get the idea that she herself is puzzled & does
not quite know what to do. It may be that once #101
becomes lethargic, #40 will return & share the den. So far
she has made no move to dig a new one. She may also
instinctively wait for another snow to approach the den &
then cover her tracks.

The bears this year are not yet lethargic like they were
last year at the den sites.

One thing that may trigger lethargy may be the relation
between intake of food & depositing of fat & the ^{beginning} of
burning reserve food (fat). When the bears start to use stored
food to meet heat & energy requirements, hypothermia may
be triggered. So far both #40 & #101 have been getting enough
food to meet their daily energy output requirements. This
will not be the case from now on. #202 ran out
of food sources earlier than the other two & this may
account for the fact that he is less active. He is staying in
his den & moving to entrance toward noon.

In pm we decided to leave her alone. All returned to lab. Had to
break road out from gravel pit to highway. Decided that John & Eric
go on to West 4. to get a ski-doo, chains etc. Henry, Hank & I
drove to gravel pit, left car & hiked back to camp in dark. We were
prepared to monitor #40 during night & follow her next day
if she started to move.

^{Nov. 9, arriving at camp}
5:00 pm - Lab. Hr. sig. from #40

6:30 pm - Weak sig. from #40 from camp just as we arrived.
Night clear. Temp 0° at camp at 6:30 pm. & dropping.

7:00 pm Hr. signal with beep - periodically clicking - Temp. -2° F

7:45 pm No signal with dipole from camp - Went to bed & temp.
kept dropping until early morning. It was -6° F at
camp at 7:30 am but day was cloudy & warming trends
had started around 3:00 am. Temp must have dropped
to at least -10° F. It registered a min. of -12° F at
lab on porch. Winter heater got -20° for min.

Thought that the lack of signal might mean #40 was
in a den but subsequent observation & monitoring revealed
indicated that very low temp probably affected her transmitter.
She was probably in a bed with large tree between her & us.
(located during day). Later behavior made it seem
doubtful that she had shared den with #101 or been
in another one close by.

On Nov. 9th at 7:30 am, - Temp -6° F No signal on
dipole. However receiver was very cold & not operating
efficiently.

Believe Buffalo carcass (food supply) affected
activity & movement to den of #40 & #101

1966

Buzzly # 40

(Family Group - # 40 & 2 cubs and # 101 & one cub)

Nov. 4/66

We picked up # 40's signal from lab (continuous pulsed signal 106-108/min. This had replaced the extended-life transmitter - 18/10 sec interval.

At 10:00 am Henry Macintosh & Henry Tomingas and I drove to Trout Creek Bridge and picked up signal. The direction indicated was up Trout Creek. About 1 mile up the creek signal came in at right angle to former direction. We climbed slope to west and immediately obtained a very strong signal. Signal came in with sensitivity clear down & volume very low. We followed null cautiously with rifle ready. Within a few hundred yards we jumped # 40 and # 101 all together with their 3 cubs. Beds of these families were about 20' apart, in downed timber & standing lodgepole. Jumped at 125'.

These families had been feeding on a buffalo kill near bridge. There were dark, loose feces present. The bears were located in a dry bed about 1 to 1½ miles from carcass & were just resting between feedings. We jumped the bears at 10:30 am and they were reluctant to leave. They moved off slowly and stopped after 100 yds. We approached slowly to observe and they moved on - again slowly. I believe this slow retreat may be

indicative of the onset of lethargy. These bears took off much ~~earlier~~ faster earlier in the season. It will be interesting to see if lethargy increases if snow doesn't soon drive animals into hibernation.

The loose, black watery stools observed at the buffalo kill were also observed near day bed. This type of loose movement is typical of bears just prior to hibernation. It apparently permits them to continue to feed right up to last storm and still clean out digestive system in a hurry.

Moved in again on this group and got close but did not see them due to dense timber. We decided not to bother them further and quit at 11:45 am.

Continued to get signal from #40 after returning to lab. This is a good transmitter. It is the same one we used to track #202 to den in 1965.

Grizzly #40 Locating Data

1966

Dates Instrumented	Days Instrumented	Days Located	Remarks
9/1 - 10/29	59	42	Removed 1965 collar and instrumented. Signal failed. Reinstrumented, tracked to den with cubs. Transmitter still functioning after 11/15.
10/30-11/15	17	29	
	<u>76</u>	37	

Number of Bearings	82
Times no signal obtained	18
Number of fixes	20
Number of Sightings	87
Days no attempt made to Locate	27 37

Bear # 40

RADIO TRACKING

1965

ON 10 - OFF - 20

Location _____ No. _____

Pulse Rate 78
Transmitter No. ELC # 43

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9/1/66					#40 instruments at Trout Creek & released
9/2/66	11:50 3:00 pm 4:00 pm	150°	Gravel Pit Timber line east of gravel pit	3 element loop.	Signal weak Jumped #40 & 101 with 3 cubs. These two families have traveled together all summer inhabit the same range.
9/6	7:45 AM	175°	Ich.	5 el.	weak signal
9-7-66	11:55	194° corrected	Gravel Pit	3 el.	Signal strong
9-7-66	1:25 p	184° corrected	Base	5 el.	signal weak
9/8	7:00 pm		Trout Creek Bridge	loop.	Fix on buffalo carcass at Fish Sta.
9/9	6:00 pm		Trout Creek Bridge	loop	"
9/12	9:00	166°	Gravel Pit	3 element	Signal weak
9/13	9:00	—	Base	5 el.	no signal
9/15	3:10	130°	Gravel Pit	3 element	Good Signal
9/18	1930	—	Dump.	—	#40 in at dump.
9/23	0830	188	Lab	5 element	Signal very weak
9/28	4:00 PM	196	alum Creek	3 element	Signal weak
9/29	Did not try		for signal		
9/30	0800	204°	Top of M.	quad.	Signal weak
9/30	1000	180°	Workman	loop	" strong

Pulse Rate 78
 Transmitter No. 43

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
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9/14	10:00	100°	1 pit	Good	Signal strong
9/14	10:15	100°	"	Good	"
9/14	10:30	100°	100°	Good	Signal weak
9/14	10:45	100°	100°	Good	Signal 2 strong
9/14	11:00	100°	100°	Good	Signal 18/100
9/14	11:15	100°	100°	Good	was at T.C. Dump
9/14	11:30	100°	100°	Good	at 101-3
9/14	11:45	100°	100°	Good	18/100
9/14	12:00	100°	100°	Good	no signal
9/14	12:15	100°	100°	Good	101
9/14	12:30	100°	100°	Good	101
9/14	12:45	100°	100°	Good	101
9/14	13:00	100°	100°	Good	101
9/14	13:15	100°	100°	Good	101
9/14	13:30	100°	100°	Good	101
9/14	13:45	100°	100°	Good	101
9/14	14:00	100°	100°	Good	101
9/14	14:15	100°	100°	Good	101
9/14	14:30	100°	100°	Good	101
9/14	14:45	100°	100°	Good	101
9/14	15:00	100°	100°	Good	101
9/14	15:15	100°	100°	Good	101
9/14	15:30	100°	100°	Good	101
9/14	15:45	100°	100°	Good	101
9/14	16:00	100°	100°	Good	101
9/14	16:15	100°	100°	Good	101
9/14	16:30	100°	100°	Good	101
9/14	16:45	100°	100°	Good	101
9/14	17:00	100°	100°	Good	101
9/14	17:15	100°	100°	Good	101
9/14	17:30	100°	100°	Good	101
9/14	17:45	100°	100°	Good	101
9/14	18:00	100°	100°	Good	101
9/14	18:15	100°	100°	Good	101
9/14	18:30	100°	100°	Good	101
9/14	18:45	100°	100°	Good	101
9/14	19:00	100°	100°	Good	101
9/14	19:15	100°	100°	Good	101
9/14	19:30	100°	100°	Good	101
9/14	19:45	100°	100°	Good	101
9/14	20:00	100°	100°	Good	101
9/14	20:15	100°	100°	Good	101
9/14	20:30	100°	100°	Good	101
9/14	20:45	100°	100°	Good	101
9/14	21:00	100°	100°	Good	101
9/14	21:15	100°	100°	Good	101
9/14	21:30	100°	100°	Good	101
9/14	21:45	100°	100°	Good	101
9/14	22:00	100°	100°	Good	101
9/14	22:15	100°	100°	Good	101
9/14	22:30	100°	100°	Good	101
9/14	22:45	100°	100°	Good	101
9/14	23:00	100°	100°	Good	101
9/14	23:15	100°	100°	Good	101
9/14	23:30	100°	100°	Good	101
9/14	23:45	100°	100°	Good	101
9/14	24:00	100°	100°	Good	101

27" collar

Grizzly

RADIO TRACKING
1966

ON 10 off - 20

No.

40

Location

Pulse Rate

28

Transmitter No.

E.L. #43

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/14 10/14	10 AM		Trout Creek gravel pit.	Quad	Signal strong - bear south end on top of 1st ridge
10/14	10:30 AM	148°	Gravel Pit	Quad	Signal strong
10/15	9:00 AM	"	" "	loop	"
10/17	5:00 PM		Trout Creek Gravel Pit,	loop	Signal weak
10/18	8:00 AM		"	loop	Signal strong 18/min interval
* 10/19	5:00 PM		Trout Creek Dump	loop <u>visual</u>	was at T.C. Dump with #101 - 3 cubs 18/min interval
10/20					
10/21			Gravel Pit	quad	no signal
10/22	6:30 PM		Trout Creek Dump		18/min. Was with 101
10/23	9:30 am	150°	Gravel pit	quad	Good sig. & fair signal with portable. Bear apparently just south of gravel pit in timber.
10/23	2:00 am	170°	old road to Washburn	quad	Signal strong 17/min.
10/25	12 noon	160°	Gravel pit	loop	Signal weak.
10/27	11-12 am		Hilltop T.C. Dump	quad	No signal or possibly signal from S.W. (fair)
10/28	9:00 AM		"	"	
"	12:00		Top. Washburn	"	No signal
10/28	6 PM		T.C. Dump	loop	No signal very weak signal
10/29	—		Signal Dead		
			Saw both 100 & 101 at Dump. Captured cub of either 101 or 100		

Reinstrumented 10/30/66

Grizzly

RADIO TRACKING
1966

continuous pulse

No. 40
Location _____Pulse Rate 106-108
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/30	8:30 PM		Shot with	Drug at night	Transmitter # 43 Removed and continuous pulse transmitter put on. Was at T.C. Dump. with #101 & her cub. We had captured one of #40's 2 cubs on 10/29 and released it on 10/30. a few hours before we captured #40. 40's 2 cubs (1 unmarked & 1 marked #216) retreated with 101 while we instrumented #40 in the dark.
10/31	0700	170°	Lab.	sel.	Signal strong
10/31	10:30	SW	Lab	Lab ant.	signal strong
10/31	9 PM	SW	Lab		SIGNAL
11/1	8:30 AM	SE	Lab	Lab ant	signal strong
11/1	2:30 PM		Lab S. of T.C.	loop	- up in direction of old den
11/2	7:30 AM		Lab	sel.	signal strong
11/3	8:30 AM	SW	Lab	sel.	weak signal
11/3	9:30	SW	Lab		good signal
11/4	7:05 am	S.W.	Lab	sel.	Weak signal - Bear moving
	10:30 am		Left car at T.C.		Signal changing
	12:00		Briggs		Moved in on #40 and jumped her, #101 and 3 cubs at 125.
	3:00 PM	SW	Lab	5el.	Sig. at Lab - good
	8:00 PM		Lab	5el	No sig. no 40 may be at dump.

see
Note

Grizzly

RADIO TRACKING
1966

continuous pulse

No. 40
Location _____Pulse Rate 106-108 rpm
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
11/5	8:30	S	Lab	5 el.	Fair signal
	1:02 pm	S	Lab	5 el.	Faint signal
	3:00 pm		Gravel pit	portable	No sig.
	11:20 pm		Lab	5 el.	No sig.
11/6	7:45 am	195-200°	Lab	5 el.	Fair signal - bearing
	8:05	190°	Lab	5 el.	Good signal - Fair bearing
			Gravel Pit	portable	Signals from both stations
			T.C. Bridge		
	4:00 pm	190°	Lab	5 el.	Good signal
	7-10:15 pm		Lab	5 el.	No signal
11/7	7:30 am		Lab	5 el.	No signal - snowed all night & still snowing - 11 to 12 in. of snow on ground
	8:35 am	190-195°	Lab	5 el.	Faint interrupted signal
					Air temp. at Lab 26°F
					Snowing lightly
11/8	12:00 noon	190-195°	Lab	5 el.	Fair signal
11/8	5:00 am				Left Lab. to go after #40 - Backpacker continued on own trail
11/10	7:30 am	190°	Lab	5 el.	Good signal. Transmitter working again. Min. night temp. 14°F.
		175-180°			Pulse rate still 108/min. & steady
		best bearing			Very good, steady signal
	8:30 am	175-180°	Lab	has been steady here	Good sig. steady
	9:00	"	"		
	11:25 am	188°	Lab	all A.M.	Good signal
	12:30	190°	Lab		
		125°	1 mi. up r.c.	Loop	Got a bearing on what we believe is #40's den site at last day bed. This is area where he lived on 9th (can't see)
	4:00 p.m.	130°	2 1/2 miles up Trout Creek from 1st bridge		

cont.

Radiotracking

continuous pulse

Nov. 1966

pulse rate 106-108/min

NO. Grizzly # 40

Date	Time	Bearing	Location from which bearing was taken	Tracking Unit	Remarks
NIV. 9	7:30 am 12:30 pm		Lab	5 st.	No signals obtained signal from hilltop at T.C. bridge. Walked to this point from gravel pit with tracks marked for 3 to 4 days. Went down to buffalo carcass & saw tracks of #40 & #101 & cub. They apparently had been at carcass the night before or in early morning.
	6:30 pm	in general direction of carcass	Camp	portable	Made camp in lee of hill on north side in small stand of lodgepole. Temp at camp 24° F, still snowing lightly but wind dying down
	8:10 pm	"	"	"	air temp. 24° F. Stopped snowing
	9:00 pm	Signal null slightly to right of	camp	portable (low)	#40 apparently on a near buffalo hill about 1/2 mi. from our camp
	11:30 pm	carcass point of night	"	"	Temp. 24° F
NIV. 9	3:30 am		"	"	Temp 23° F - snowing & blowing
	7:45 am		"	"	Temp 20° F - snowing lightly (skiff)
	9:00 am		"	"	Temp 13° F
	9:30 am		Tracking	portable	Temp 8° F
	10:30 am				left camp following signal at about 220° past carcass. Located den of #101 & day bed of #40 (see note)
	1:30 pm				Located den of grizzly #101, #40 nearby & led us to den.
					air temp at camp 16° F in shade 18° F in sun. Thermos 16° to 18° of snow on level.
					Snowy, Hunk & Robert night at camp
					By 1:00 pm #40 had moved back to den site. He & #101 moved to south side

over

cont.

Grizzly Radiotracking continuous pulse
 No. 40 ~~135~~ 1966. pulse rate 106-108/min

Date	Time	Bearing	Location from which bearing was taken	Tracking Unit	Remarks
11/11	8:00	190°	Lab	5 el	Most steady signal. Dark overcast day.
	9:15	190°	"	"	note: Signals coming in loud and clear all night of the 10th.
	10:20 am	190°	Lab	5 el	Loud signals with some variation indicating movement.
	12:05 pm	190°	Lab	5 el	Very good steady signal
	1:10 pm	190°	Lab	5 el.	" " " "
	2:15 pm	190°	Lab	5 el	Good signal - Air Temp at Lab 28° F
	3:15 pm	190°	Lab	5 el.	No sig. Cloudy snowing. Several dropping
	3:30 pm	190°	Lab	5 el.	No sig. Same as above
	4:15 pm	190°	Lab	5 el.	Very faint sig. Temp 30° F snowing lightly
	5:50 pm	190°	Lab	5 el.	Signal clearing
	7:15 pm	190°	Lab	5 el.	Good, loud, steady signal
					Loud, steady signal - John & party located den in afternoon about 1 3/4 to 2 mi up Trout Creek from Bridge & 1/2 mi inside timber on east side. This is 1 1/4 to 1 1/2 mi from den of #101.
					Apparently #40 still is not going in den like #202
	9:30 pm	190°	Lab		Good signal from den area
11/12	4:30 am	190°	Lab	5 el	9 1/2 mi airline from Lab,
staying	6:30 am	190°	Lab	5 el	Faint sig
snowing	8:15 am	190°	Lab	5 el.	No sig. - Last sig.
all day	9:40 am	190°	Lab	5 el.	Good steady signal
	10:25 am	190°	Lab	5 el.	No signal
	11:00 am	190°	Lab	5 el.	Faint sig.
	11:45 am	190°	Lab	5 el.	Good sig.
	12:30 am	190°	Lab	5 el.	Good steady signal
	2:40 am	190°	Lab	5 el.	Good steady signal - Temp 31° F
	4:45 pm	190°	Lab	5 el.	Permit steady 28.7
	6:00 pm	190°	Lab	5 el	- Signal
	9:00 pm	190°	Lab	5 el	Good sig.
	10:00 pm	190°	Lab	5 el	Very good signal
11/13	2:00 AM	190°	Lab	5 el	No signal
	2:05 AM	"	"	"	Good signal - Temp 30° F

Grizzly 40Radio tracking
1966continuous pulse
pulse rate 106-108/min.

Date	Time	Bearing	Location from which bearing was taken	Tracking Unit	Remarks
11/13	2:30 am	190°	Lab	5 el.	No sig.
	6:00 am	190°	Lab	5 el.	Good sig.
	7:45 am	190°	"	5 el.	Good sig.
	7:45-7:30 pm	190°	Lab	5 el.	Sigs off on all day. John, Henry
	9:15 pm	190°	Lab	5 el.	& I made in on #40 & #101 at #40
11/14	1:55 am	190°	Lab	5 el.	den Good sig. 9:45 pm
	5:00 am	190°	Lab	5 el.	no sig
	7:00 am	190°	Lab	5 el.	Good sig.
	7:55 am	190°	Lab	5 el.	No sig. Temp. 26°f
11/15	7:30-12:30 pm	190°	Lab	5 el.	Good signal - clear sunny
	12:35 pm	190°	Lab	5 el.	No sig. Sunny at 12:30 pm Very good sig.

Pre-Hibernation Behavior 1966

#202

10/10 & 10/11 - ^{Don digging} Snowstorm. 1st time that #202 went to den site. He left Canyon area, no signal from Lab but we got one from Warm Springs Overlook. It is possible that den was dry at this time.

10/22 Storm moved #202 to den area. We obtained his signal at 6:30 am but not later in day.

10/23 In vicinity of den all day

10/24 Signals from Lab & Washburn Overlook. Humble 202 returned to Canyon area & Lab.

11/1 9am Washburn Overlook - Weak signal, then no signal. Bear may have been in den. Drop in temperature to 6°F may have initiated move back to den area.

11/2 Rim of Canyon West of 7 mile Hole - strong signal.

11/3 Clear, warm Indian summer weather

Drizzly # 202
1966
Nov. 6/66 final movement
to den

Snowed lightly during night of 5th and lightly all day of the sixth. A 70° bearing from the lab indicated that #202 might be in the vicinity of his old den. At 12:30 pm with it still snowing John, Ernie, Henry Tomingas, Henry MacIntosh started down the seven mile trail carrying packs, knives & a raft & oars. On Friday (4th) #202 was further down the canyon than den site and probably on far side of river. We carried raft & food so we could cache it if need be & cross river later.

We took a number of bearings as we followed along Canyon river. At point directly across from old den the mill indicated #202 was right at or very close to his 1965 den. We located him at 2:15 pm, took some pictures of the tracking group & pictures of tracking. It continued snowing but slowed down some making pictures possible. Bearing from this point was 105°. The air temp was 32°F.

We returned with raft & food, having decided we could do better by going down other side of canyon. We got back to car at about 4:00 pm. Number 202 dropped down into the canyon just downstream from our station & then moved on up to his old den site. Last year he approached the site from the opposite direction and did not cross river.

As far as we know #202 has not been back to his den to repair it. He will probably do this over the next few days. This may be typical of male pre-hibernation behavior. On the other hand the females with offspring & pregnant sow start den preparation in Sept. The dens are all ready for instant use.

Signals from the lab & elsewhere revealed that #40 and her cubs were not at their den in the morning and still not back there by 4:30 pm. Though she may have been back during the night she has apparently not been in a hurry to leave. Snowing all day & barometer down. Canyon area got between 3 and 4 inches of snow. Snow fall was deeper around Lewis Lake and over by Horns Jet.

1966

Notes - Pre-hibernation Behavior
#40

11/2 Radio signal indicated that #40 moved back to the vicinity of her ^{old} denning area. The same temperature drop (6°F) that moved #202 also moved #40. Day was clear & cold.

11/3 #40 returned to her old Summering area near 1st bridge on Trout Creek. A buffalo carcass has been there for several days. She nor her running mate #01 have not yet fed on the kill.

11/6 Number 40 is still in the vicinity of the 1st bridge on T. Creek. We have 4 to 5 inches of snow & it is still coming down. Signal from #40 is coming in loud & clear at base.

1966 data



Environmental Research Institute

February 26, 1967

Dr. Melvin M. Payne
Executive Vice President and Secretary
National Geographic Society
Washington, D.C. 20036

Dear Mel:

I was all prepared to leave today for another winter trip into Yellowstone. This time, to again monitor the body temperature of a hibernating black bear. However, I was unable to rent an additional snowmobile needed for the trip so am taking this opportunity to try to bring you up to date on my activities over the last few months.

During the summer and fall of 1966, we instrumented four different grizzlies, and made ~~six~~ instrumentings as both 40 and 202 were instrumented twice. In addition to these, we instrumented and tracked one black bear, and a number of elk. Two of the elk were instrumented with body temperature transmitters. This brought the number of elk instrumented with radios to 16. We have obtained some significant information and are compiling it now.

We were able to track two families of grizzlies, and a two year old male, to their dens in the fall of the year. This number, three, is the maximum number that we have tracked to dens in any one year. We also located the den site but not the den of a single sow number 120. The two instrumented grizzlies that we followed to their dens were number 40 with her cubs, and the young male number 202. By following number 40 we were also able to locate the den of her summer companion, sow number 101.

Of special interest to us was the fact that the onset of lethargy in the grizzlies did not come prior to the bears moving to their dens as had appeared to be the case in the fall of 1965. This year the snow storms had moved the grizzlies back to their dens, as in former years, but the bears did not immediately enter their dens and they were not in a lethargic

condition. The snow storms were big ones, snow depth was deep, and temperatures dropped below zero; still, the bears did not go into their dens to stay even though these conditions existed for a few days. It will be a while before we get around to analyzing the meteorological data and other factors that influence both the movement to dens and the onset of lethargy. However, it does appear as though our conclusion that an early cold spell with low temperatures and snow may have triggered or initiated the beginning of lethargy in 1965 is valid and further supported by data obtained this fall.

We have now located the den of grizzly number 40 for three consecutive years. The first year she hibernated with a cub, and built a bough bed. The next year she prepared a new den with a bed of finely shredded grass and moss. She was pregnant at this time, as suspected, and gave birth to cubs during the period of winter dormancy or hibernation. This fall, she again dug a different den, lined it with boughs and hibernated with her two cubs.

Number 40 exhibited some interesting behavior traits throughout the summer and fall of 1966. We had, to some extent, observed these with other grizzlies, but had a much better opportunity to make observations this year because number 40 was instrumented with a radio. This grizzly with her cubs established a close relationship with grizzly sow number 101 and cub. Throughout the summer months they traveled together, slept together, foraged together, and were apparently inseparable, one always being seen when we saw the other. This close relationship of the two sows with their cubs continued right up to the time that they entered their dens. Apparently the relationship affected the selection of a den site by number 40. Instead of returning to her distant hibernating area in the upper reaches of Alum Creek, she dug her den quite a ways down Trout Creek, many miles from her former site. Number 101 also dug her den here, and the distance between the bears dens was only a matter of several miles. Even when snow was on the ground and conditions seemed right for the bears to enter, they traveled back and forth from one den site to the other. We even suspected that they might den together; however, this was not the case. Both families finally hibernated separately.

In December, John and I returned to these grizzly bear dens by helicopter. We flew from Moose, Wyoming, to Hayden Valley in Yellowstone Park and then webbed into the dens. Number 101 had deserted her den at the last minute and had apparently dug another one. Number 40 and her cubs were in

the den and growled and moved about at our approach. Although we were anxious to get some T.V. movies, it did not seem feasible to immobilize this animal and to instrument her under the existing conditions. Even when five feet away, we could not see her well enough to hit her properly with an immobilizing dart, nor could we later observe the effects of the drug on the sleeping animal. We felt that there would be too great a risk--too much danger to the T.V. crew, to ourselves, and to the bear if we attempted to immobilize these animals. I think that this was probably a wise decision. Later, when we immobilized a black bear, he was sufficiently active to come quickly out of his den and confront us on the ledge of a cliff where we had assembled gear for instrumenting him. Had this been a grizzly, we would have been in real trouble. We would have had no alternative but to shoot the bear.

We were disappointed not to be able to immobilize the grizzlies and take movies, and we were particularly disappointed that we were not able to put a body temperature transmitter on one of these animals and monitor the sleeping bears temperature during hibernation. Our alternative was to work with a black bear. Last fall we had located the den of a black bear on a cliff above the Gibbon River, about six or seven miles from Madison Junction. We decided to return to this den in February and see if we could get some movies of immobilizing and instrumenting. We also felt that it would be much easier to put a body temperature transmitter on the black bear, insert a temperature probe and monitor it. In February, John, I and collaborators returned to this den and successfully immobilized the black bear. We instrumented him with a body temperature transmitter and were able to monitor not only his body temperature but the den temperature and the air temperature. We monitored these simultaneously from our camp along the Gibbon River below the den. We had hoped and planned to record this information automatically on a chart recorder. Unfortunately this equipment was not ready so we had to manually record the information every half hour. We were able to get a 24-hour body temperature rhythm on the black bear. We obtained this several days after the bear had been instrumented. The body temperature ranged from a high of 96.5 degrees F. in early afternoon to a low of 94.0 degrees F. during the night. Just before instrumenting the bear, a rectal thermometer indicated his body temperature was 96.0 degrees F. By the time we had instrumented him and moved him back into the den his body temperature had dropped to a low of 83 degrees F. It then gradually rose throughout the late afternoon and night to a high of 97 degrees F. at two o'clock the next afternoon. During this same period, the den temperature ranged between 24-33 degrees F. It remained fairly constant most of the time at 26-28 degrees F.

Dr. Melvin M. Payne
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We were apprehensive that the bear might either get the collar-transmitter off or pull out the body temperature probe soon after we had instrumented him. This did not occur and on the second day we took some flash pictures. The bear again came out of his den, this time instrumented and climbed up in the deep snow blanketing the rocks above it. After we departed, he returned of his own accord. Several days later the body temperature transmitter was still giving off informative "beeps". This exploratory experiment has encouraged us in believing that we can successfully instrument hibernating bears with body temperature probes and pulse rate or EKG probes, and possibly monitor these physiological parameters over rather extended periods of time.

We obtained some very interesting, and I think quite significant, information from the black bear in his den. I returned to get another 24 hour temperature rhythm leaving on Sunday February 19. Unfortunately the bear had removed the temperature probe but I obtained interesting data on the microclimatic conditions of the bear's den and bed.

As far as I know, this is the first time that a hibernating wild black bear has been instrumented in his den, and his body temperature, the den temperature, and the outside air temperature telemetered simultaneously.

When John and I left the black bear den, we met with Mr. Irwin Rosten in West Yellowstone, and went over the T.V. script with him. We worked out changes that were satisfactory to all concerned.

I have been spending the winter here in my cabin at Moose. The family has been enjoying the winter weather. Charlie and Jana are attending school in Jackson, and both of them are finding ample opportunity to become proficient skiers. This winter I am combining additional field work in biotelemetry research with the compiling and writing of scientific papers covering the results of our findings over the last seven to eight years.

I have not done anything further on the Wild Rivers T.V. show, but have given considerable thought to it. I have located some rafts, and have tentatively planned to float the middle fork of the Salmon in April. We may or may not take movies of this particular float. As soon as I catch up with other work, I will write you some of my thoughts on this subject.

Sincerely,

Frank C. Craighead, Jr.

FCC,Jr/p

NOTES ON WINTER TRIP TO GRIZZLY BEAR DENS
Grizzlies number 40 and 101

December 28, 1966. John and I made arrangements with the National Geographic Society to hire a helicopter and fly into the dens of two of the grizzlies that we had tracked to their hibernation sites last fall, number 40 and 101. On the morning of December 28, we loaded our gear and equipment on the helicopter and flew from Moose, Wyoming to Hayden Valley in Yellowstone National Park. The flight was about one hour and ten minutes. When we left Moose around ten o'clock ~~AM~~, the temperature was still about fifteen degrees below zero. When we arrived in Hayden Valley, the temperature at the den site of 101 was zero degrees F. Our pilot for this trip was Mr. Frank Dickson from Provo, Utah. We left the helicopter and proceeded on snow-shoes and approached the den of 101 cautiously. When we looked in the den entrance, we realized that this den had been deserted by 101 and her cub. The den had apparently not been used, nor had it been worked on since we visited it in November. The digging of the den had not been completed, and no bough bed had been made. Apparently, when we ~~had~~ jumped this bear at her den site, ~~and~~ while she was digging it, it ^{had} disturbed her enough that she never completed it. John took some movies of this den, both the exterior and interior, and I took some still flash pictures.

After completing our work at ^{the} ~~den~~ ^{of} number 101, we took off in the helicopter, and put down in Hayden Valley / up along Trout Creek, closer to the den of number 40. From the copter, we webbed ^{through} the timber for a distance of about three-quarters of a mile. This was all up-hill. Again, we approached the den very carefully. We were pretty sure that number 40 with her two cubs was within the den. This den was on a north facing

December 28, 1966
Grizzlies number 40 and 101

slope, and John approached it from below with the 44 carbine and movie camera, and I approached it from above with the 357, and my still camera. We took turns looking into the den and taking pictures. Both of us approached ~~to~~ the entrance and *lay down to look in.*
We were ~~within~~ *from* about five feet ~~of~~ the bears inside. They were sleeping, or at least lethargic, but nevertheless apparently had detected our presence for number 40 growled, moved about, and shifted her position. I took several ~~flash~~ pictures of the den entrance and several shots of John at the entrance taking movies. We were apprehensive as the snow was deep ~~and~~ *making it* impossible to move quickly. In addition to this, we had only a single shot for the 44 carbine as we had lost the clip. The opening to the den sloped down and *the chamber floor slightly* ~~then rose to a level with the bed.~~ The bough bed was actually higher than the bottom of the entrance-way. This created a heat trap within the bed chamber similar to other heat traps that we had observed in some of the other dens. This particular den was not dug at the base of a large tree, as seems to be the custom. Consequently, there was no den tree. There were no signs outside ~~of~~ the den to indicate that the bears had moved out of the den since they entered it soon after the middle of November.

We were unable to see into the den without poking our head part way in the entrance *with our feet higher than our heads*. In doing this, we were only a few feet from the sleeping grizzlies. It was apparent that it would be quite difficult to immobilize any one of these bears under the existing circumstances. It was difficult to see just where to hit them with the dart or jab stick, and then, it was almost impossible to determine what the effect of the drug might be. We decided that it was too dangerous to try to come back later, particularly with a T.V. crew to photograph the

December 28, 1966
Grizzlies number 40 and 101

immobilization and instrumenting of these grizzlies. We were concerned for the safety of ourselves and crew, as well as the safety of the bears. We have instrumented number 40 for six consecutive years, and we did not want to take a chance on having to shoot her, should she charge or attack ^{when} ~~if~~ we tried to immobilize her.

The decision that we made not to attempt to immobilize number 40, in retrospect, appeared to be the right thing to do. We immobilized, later, a black bear along the Gibbon River in Yellowstone, and this bear, though somewhat lethargic when we approached, became active as we worked around the outside of the den. When we did hit him with a dart loaded with sernylan, he came out of the den and confronted us on the ledge of the cliff. Had this happened with the grizzly, we would have been in real trouble.

The following are measurements taken of the den of grizzly number 101. It was at the base of a large white bark pine tree and on a northern exposure. The den entrance faced due north. The length of the den ^{from} ~~at~~ its entrance to the back end of the bed chamber was five feet, six inches; width four feet; height of den from floor to roof was two feet, six inches. The entrance opening was three feet high by fourteen inches wide, and was between the large ~~sloping~~ outward sloping roots of the tree. Additional smaller roots dropped down from the roof and the grizzly had chewed some of these, thus enlarging the opening. The soil was quite sandy and was, in fact, loose enough that it is quite probable that the ^{roof} ~~roots~~ inside would ^{sluff off} ~~sluff off~~ and perhaps cave in ~~slightly~~ over a period of time.

J.B.C.

Grizzly #202 Locating Data 1966

Dates Instrumented	Days Instrumented	No. Days Located	Remarks
6/24-7/16	22	77	collar slipped off checked collar ? still working
8/13-9/10	28	(85)	
9/10-11/15	<u>56</u>		
	106		

Number of Bearings	172
Times no signal obtained	55
Number of fixes	20
No of Sightings	20
Days no attempt made to locate	287

RADIO TRACKING
1966

Continuous Pulse

Grizzly No. 202
Location _____

Pulse Rate 62
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
6/24/66	9:00 AM	Released	at Trout Creek		Captured in Canyon Campground. Released at Trout Creek. Took off 23 1/4" collar & put on a 24" collar. Collar was loose.
6/24	6:30 PM	175°	Lab.	Selement	
6/26	0930	28°	Lab.	"	Back in campground.
6/27	0800	64°	Lab.	"	
6/27	11:15 AM	64°	Lab	"	Near Inspiration Point- between ^{the} Canyon and the loop road.
6/27	4:30 PM	260° W	glacial Rock	loop	" "
6/27	6:00 PM	62°	Lab	5 element	
6/27	9:00 PM	62°	Lab	"	
6/28	7:00 AM	62°	Lab	"	
6/28	9:00 AM	110°	glacial rock	loop	moved in on #202 - she was about 1/4 mile from the glacial rock in the thick lodge pole.
6/28	10:30 A.M.	62°	Lab.	Selement	Resting
"	11:30 A.M.	62°	"	"	"
"	12:30	"	"	"	"
"	1:30	"	"	"	"
"	1:45	"	"	"	"

RADIO TRACKING
1966

continuous pulse

Grizzly No. 202
Location _____

Pulse Rate 62
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
6/28/66	2:45 PM	62°	Lab	5 element	Bedding
"	3:45 PM	"	"	"	"
"	4:45 PM	62°	"	"	"
"	5:00 PM	62°	Lab	"	Traveling
"	6:00 PM	62°	"	"	Bedding
"	6:15 PM	"	"	"	Moving
"	12:00 PM	62°	"	"	?
6/29/66	7:00 AM	62°	"	"	Bedding
	7:00 PM	62°			
	10:00 PM	62°	"		
6/30/66	8:00 AM	80°	"	"	Moving + ?
"	11:30 AM	"	"	"	Bedding
"	2:30 PM	88	"	"	"
	6:00 PM	"	"	"	"
"	10:30 PM	"	"	"	"
7/1/66	8:00 AM	"	"	"	Moving ?
7/1/66	9:45 AM	294°	Inspiration Point	loop	Bedding
"	11:00	85°	Lab	5 element	"
"	2:00	85°	"	"	"
"	3:08	85°	"	5 element	"
"	4:30	85°	"	5 element	Moved in on him - he was located in lodgepole timber about 1/2 mile NW. of inspiration point and about 1/4 of a mile from the road towards the canyon.
"	4:45	294°	Inspiration Point	loop	
7/2/66	7:00 A.M.	85°	Lab.	5 element	
	12:00 AM	"	"	"	
	3:00 PM	"	"	"	

Grizzly #202

RADIO TRACKING
1966

No. 202
Location _____

continuous

Pulse Rate 62
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
7/5	9:00 AM	54°	Lab	5 element	Resting
7/5	2:00 PM	135°	Washburn Hot Springs lookout	loop	Moving In meadow just on other side of 7 mile hole.
7/5	5:30 PM	135°	" "	loop	Resting
7/6	9:00 AM	50°	Lab	5 element	Resting
7/6	9:45 AM	50°	Lab	"	Resting
7/6	10:30 AM	50°	Lab	"	"
"	11:00 AM	50°	Lab	"	"
"	11:45	40°	"	"	"
"	12:15 PM	40°	"	loop	Moving
"	12:30 PM	40°	"	5 element	Resting
"	1:10 PM	40°	"	"	Resting
"	2:50 PM	40°	"	"	Resting
"	3:00 PM	40°	"	loop	Resting
"	4:00 PM	40°	"	loop	Resting
7/6	10:00 PM	40°	"	loop	In campground feeding
7/7	5:00 PM	45°	"	5 element	Resting
7/8	9:00 AM	45°	"	5 element	Resting
7/8	10:00 AM	45°	"	"	"
7/8	11:00 AM	45°	"	"	"
7/8	12:00 PM	45°	"	"	"
7/8	1:00 PM	40°	"	"	"
7/8	4:00 PM	42°	"	"	"
7/8	5:00 PM	40°	"	"	"
7/10	10:00 AM	78°	Lab	5 element	
7/10	6:00 PM	64°	Lab	5 element	
7/11	9:00 AM	60°	Lab	5 element	Moving
7/11	3:00 PM	60°	Lab	5 element	
7/12	6:30	60°	Lab	"	?

RADIO TRACKING
1966

Continuous

No. 202
Location _____

Pulse Rate 62
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
7/13	4:00 PM	40°	Lab	5-element	
7/14	11:00 AM	35°	Glacial Boulder	loop	} Fix
7/14	11:00 AM	100°	K-loop Canyon Camp Ground	loop	
7/14	6:30 PM	25°	Lab	5-element	
7/14	1:30 AM	11			
7/14	8:00 PM	35°?	Glacial Boulder	loop	
7/14	1:30 AM	25°	Web.	5-element	
7/15	7:00 AM	N	Signal		
7/15	9:00 AM	50°	Lab	5-element	- Moved in on 202; he was bedded in thick lodge pole 1 1/2 mile N of Glacial Boulder.
7/15	4:00	20° →	Lab →	5-element	
7/15	7:30 PM	40°	Lab	5-element	} In Boulder Area
7/15	12:00 PM	11	"	"	
7/16	8:00 AM	40°	"	"	
7/16	10:30 AM	40°	"	"	Collar Found in meadow behind Campers cabins. Jay & Jerry
7/16	2:00 PM	45°	"	"	

Grizzly

RADIO TRACKING

1965
1966

On 10 off 20

Grizzly

No. 202

Location

240 lbs

Weight

E.H. Lef

Pulse Rate

18 every 10 sec.

Transmitter No.

42

Marked on Botley Cove

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
8/13/66					Captured at Canyon by N.P.S. Re-inducted & released at Trout Creek. #202 has been in Canyon since it lost its radio collar 7/6/66. Has been observed by rangers on mountain nearby every evening. Has caused no damage or threatened animals.
					Notes: Transmitter Assembly Assembly made up last fall 12/1965 - Batteries are encased in paraffin & have been encased in airtight, since that time. Coated in filter-glass cloth & resin. Inside of collar 29" before coating with glue and wrapping with tape. color code of collar Red & green.
	1:30pm				Been released T.C. Grand Pit
8/13	2:45pm		Lab.		Good signal
8/14	1:30pm	182°	Lab	5 element	Signal rather weak
8/14	5:45pm	182°	Lab	"	Signal quite weak.
8/15	9:00am	-	Lab	"	Unable to pick up signal
8/15	12:00pm	-	Lab	"	Unable to pick up signal
	10:55pm		Lab	"	" " " " "
8/16	0800	-	+	"	Unable to pick up signal
8/19	12:00	-	LAKE BUTTE	5 element	Unable to pick up signal
8/19	12:30	-	POLIPAN BRACK	"	" " " " "
8/19	1:50pm	-	West Thumb	"	" " " " "

Grizzly RADIO TRACKING
1965 1966

0110 0420

Grizzly No. 202
Location 2400
Weight

Pulse Rate 18-20 10500
Transmitter No. EXT
EXT Int. mounted on Battery

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
8/19	3:00	—	RABBIT PASS	3 element	unable to pick up signal
8/19	3:30	—	LOUCHER GENSEN BASIN	"	" " " " JCS
8/26/66	10:30 AM	22°	Fishing Bridge CPB	Loop	Signal loud - 202 was about 200-300 yd from road
8-30	11:30	11°	F. Bridge	loop	signal strong - no signal
8-30	12:30	346°	Fishing Bridge	loop	with loop
9-2			F.B. area	3 element	Poor signal - loop
9-5	4:40	132°	1/2 mi. N. of F.B. Junction	loop	no signal
9-5	4:45	36°	F. Bridge	loop	Signal strong
9-6	11:30	—	1/2 mi. N. of F.B. Junction	loop	Signal fair
9-6	11:45	—	Fishing Bridge	loop	no signal
9-6	12:00	—	F.B. Trailer Park	quad.	no signal
9-6	12:30	—	Cake Butte	quad	No signal
9-6	1:00	—	Pekin Hill	loop	No signal
9-6	2:00	—	1/2 mile past Lake	quad	No signal

Grizzly RADIO TRACKING
1966

Grizzly No. 202
~~Location~~ 201
weight

ON 10 OFF 20
Pulse Rate 18 even 10 sec
Transmitter No. _____
Ext. Life Manted on battery

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9-6	2:30	—	1 1/2 mi. N of F.B. Junc	quad	no signal
9-7	11:05	132°	1/2 mi N of F.B. Junc	loop	JPS.
9-7	11:15	(corrected) 53°	75 yds E of Fishing Bridge	loop	Strong signal
9-					Fair "
9-8			sighted at Fishing bridge		
9/9			"		
9/10			captured at Fishing Bridge in Campground		
9/10			checked collar & radio of 202. Took off radio & replaced with acrylic.		Released 202 at 1st bridge Trout Creek Took photos
9/11	1500	184°	Lab.	5-element.	Signal on weak side
9/11	2200	184°	"	"	" " " "
9/12	1000	184°	"	"	" " " "
9/13	11:30a	340° 328°	Employees trailer at Howard Eaton Trail	loop	Strong signal
9/14	8:00 AM	330°	Lab	5 element	Signal rather weak
9/14	9:00 AM	344° 290°	Howard Eaton Trail Employees Trailer at	loop "	Signal weak Signal strong

Grizzly RADIO TRACKING
1966

ON 10 OFF 20

Grizzly No. #202
Location _____
wt = 240

Pulse Rate 18 every 10 s
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9/14	9:00AM	290°	Employee's trailer court	loop	Signal strong
9/15			Enroute to Norris Jct.		NO SIGNAL (seen at Norris)
9/16	8:00AM	25°	Lab	loop	Signal strong
9/17	7:30AM	25°	Lab	5-element	
9/18					
9/19	10:30	0°	Norris Jct.	loop	Good signal
9/20	Probably at		Norris		
9/21	0800	17°N	Lab	5-el.	Canyon loop Signal strong
9/22	0730	270°	Lab		Strong signal seen near in Canyon Valley the night before Near in Norris Canyon valley
9/22	2100		Lab		
9/23	7:30AM	100°	Lab	5-el.	Good signal - Benches to Lab
9/24	6:30AM	105°	Lab	5-element	Good signal
9/26	8:30AM	100°	Lab	loop	Good signal
9/27	8:00AM	258°	Lab	5-element	Signal strong (202 was near lab) on evening of 9/26)
9/28	8:15AM	54°	Lab	loop	Signal strong
9/29	8:00AM		Lab	5-element	near campground
9/30	7:00AM		Lab	5 element	
9/31	7:00AM		Lab.	7r	near Campground

on 10 off 20

Grizzly RADIO TRACKING
1966

No. #202
Location _____

Pulse Rate 18 every 10 sec.
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/3	7 P.M.	54°	Lab.	Loop	Near Camp ground. Signal very strong
10/4	7:00 AM	40°	"	"	Very strong
10/4	5:00 P.M.		located him in loops		Signal strong
10/5	7:00 AM	40°	Lab.	Silent.	in loop.
10/6	5:00 AM		Lab.	Silent & loop.	in loops at C.C.
10/7	7:30	220°	"	loop.	
10/8	9:00 AM	82°	Lab	100p	Signal strong (16-17 pulses)
10/9	8:00 AM	48°	Lab	100p	Signal strong
10/9	8:00 P.M.	0°	"	100p	" " air temp (14/min.) 30°F may be block area Did not hear 2 signals 9:00 P.M. - 13/min.
10/10	7:30 AM	20°	Lab	5 el.	13 to 14 loops per min
	6:30 PM		Lab	No	Signal (probably under mt. Washburn)
10/11	7:30 AM	—	NO signal from Base		
	11:00 AM	45°	signal from Wash. Springs overlook	100p.	signal strong strong (14-15 loops/min)
10/14	8:00 P.M.		Lab.	Back	Door of lab. 13 pulses/min. Temp. - 22°
10/15	"		"	Back	Door
10/16	"		Lab.	"	"

ON 10 off 20

Grizzly RADIO TRACKING

1966

No. 202
Location _____

Pulse Rate 18
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/17			Lab.		AT Back Door
10/18			Lab.	5-elment portable mobile	within $\frac{1}{2}$ mi. of Lab. all day. Came into Lab window at night took flash
10/21	9:00 AM 9-9:00 PM 8:00 PM	96°	Lab Lab	loop	signal strong snow around area all day. Came into Lab area (window) took flash still.
10/22	6:30 am 9:50 1:00 PM 1:25 PM	(storm)	Lab Lab Hot Springs Overlook Lab	5-el 5-el quad 5-el.	202 still nearby no signal no signal no sig.
10/23	7:30 AM		Lab	5 de.	no signal
10/23	6:30 PM		"	"	strong signal (N.E.)
storm probably sent 202 to his Den. or to North side of Washburn					
10/24	7:00 AM		Lab.	5 el.	No signal
10/24	12:00 12:00 7:30-9:30 PM		Mt Washburn OVERLOOK Lab	loop 3 el port	signal at over-look follow signal to hot springs strong signal at hot springs
10/25	0700 AM 10:00 AM 8:00 PM		Lab	5 el. Jumped bear AT Lab	Bear approaching good signal
10/26	7:00 AM		Lab	5 el.	good signal Came into Lab at night & tried to get in box in pickup. almost came in front door

Muzzy

RADIO TRACKING

1966

No. 202
Location _____

Pulse Rate 15
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/27	5:30 PM		Lab. Washburn overlook	5-slem.	checked off on all day In area all day Weak signal from #202 when getting a good one at Lab.
10/28	0700		Lab.	5el	signal good. In Canyon vicinity all day
10/29	10:30 12:30				Flew in helicopter, picked up #202 over Mary Lake & over Lake Hotel also just north of Beech Lake 19 mi 13 mi & 13 mi respectively Good signals.
9/30	—	at Lab			
9/31	0200	—90°			Signal loud.
10/31	10:30	E.	Lab		medium signal
10/31	9 PM	E	Lab		Fair signal
11/1	9 AM	SE	Washburn overlook near Lab mt Washburn	look	Weak signal then no signal
11/1	2:30 PM			look	no signal
11/2	9:30 AM		Lab	Lab	no signal
11/2	9:01 AM	SE	Washburn overlook ORIN OF RIVE SW 1/4 mile hole	LOOP	Weak signal
11/2	11:00	NE		LOOK	very strong
11/3	9:00 AM	—	Lab	5el.	no signal
11/3	9:15		Washburn overlook	LOOP	no signal
11/4	3:15 PM	50°	Lab	5-el.	Good signal - intermittent
11/5	8:30 AM		Lab	5-el.	no signal
	1:15 PM	50-70°	Lab	5el	Fair signal
	11:00 PM	70°	Lab	5el	Good signal. Got a good bearing
11/6	7:45 AM	70°	Lab	5el	Fair signal
11/6	10:00 AM	68°	3 mile hole	loop	good signal
	2:15 PM	105°	pt. opposite Lab near den along Canyon rim	look	Good signal. Bear at a close to last years den

Grizzly

RADIO TRACKING
1966

No. 202
Location _____

Pulse Rate 18
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
11/6/66	4:15 PM	70°	Lab.	5 el.	Good signal
	7:15 PM	70°	Lab.	5 el.	Good signal
11/7	7:30 AM	70°	Lab.	5 el.	No signal - snowed all night & still snowing 11 to 12" snow on ground
	9:30 AM	70°	Lab.	5 el.	Fair signal - Temp. 26° F
11/8	AM		Lab.	5 el.	Snowing lightly No signal from #202
11/9	PM		Lab.	5 el.	No sig.
11/10	7:45 AM		Lab.	5 el.	No sig.
11/10	12:10 PM	70°	Lab.	5 el.	Good signal & good bearing Apparently #202 is out of den & is in same den used last year or another closely. Bearing from Lab in 1965 was also 70°
11/11	8:10	70°	Lab.	5 el.	Air Temp. 24° F at Lab
	10:20	70°	Lab.	1C (March counter receiver) 2nd best	No sig. - Cloudy - Night Min. Temp 4° F
	11:40	70°	Lab.		No sig.
	12:05	70°	Lab.		Very faint signal
	1:10 PM	70°	Lab.		Fair signal
	2:00 PM	70°	Lab.		Fair signal
	2:15 PM	70°	Lab.		Good signal - Air temp at Lab. 28° F
	3:15 PM	70°	Lab.		No sig.
	3:35 PM	70°	Lab.		No sig. Cloudy - snowing
	4:15 PM	70°	Lab.		Barometer dropping
	5:00 PM	70°	Lab.		No sig. - same
	5:55 PM	70°	Lab.		No sig. Temp. 30° F - snowing lightly
	7:15 PM	70°	Lab.		No sig.
			Lab.		No sig.
			Lab.		No sig.

#202
small den

1966

Date	Time	Bearing	Location from which bearing was taken	Flighting Unit	Remarks
11/12/66	4:30 am	70°	Lab	5 el	No sig. Cloudy - snow
	8:20 am	70°	"	"	No sig. Humid off on all day
Ascant	9:40 am	70°	Lab	5 el	No sig. #202 still in
+	11:40 am	70°	Lab	5 el	No sig. den
Snowing	11:45 am	70°	Lab	5 el	No sig.
all	12:25 pm	70°	Lab	5 el	Fair signal - Emission blank on
day	1:30 pm	70°	Lab	5 el	way to try to spot #202
	2:40 pm to 3:10	70°	Lab	5 el	Good signal - Air temp. 31°F Lab
	4:45 PM	70°	Lab	5 el	Barometer steady 28.7
	6:00 PM	70°	Lab	5 el	Sig.
	9:00 P.M.	70°	Lab	5 el	No sig. Barometer rising slightly
	10:00 P.M.	70°	Lab	5 el	No signal
11/13/66					No signal
11/13/66	7:45 AM	70°	Lab	5 el	Good signal (Barometer rising)
11/13/66	11:00 AM	70	Lab	5 el	No signal } BFO turned a
11/13/66	1:00 PM	70	Lab	5 el	No signal } little to far
	7:35 PM	70	Lab	5 el	Fair signal #202
	9:10 PM	70	Lab	5 el	Good signal
11/14	1:55 am	70	Lab	5 el	Good sig
	5:00 am	70	Lab	5 el	Good sig.
	7:10 am	70	Lab	5 el	No sig.
	8:00 am	70	Lab	5 el	Good sig. Sky, clear sunny Temp. 26°F
11/15	12:25 pm	70	Lab	5 el	Fair signal - Snowing. Temp. at Lab. Barometer steady 28.8
					Elc. ant from 14pm on 14th to 12:25 pm of 15th.

GRIZZLY RADIO TRACKING
1966

GRIZZLY No. 40
Location CANYON

Pulse Rate 104/MIN.
Transmitter No. #5

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9/24	8:30 A	SSW	LAB	5 ELEMENT	NO SIGNAL
9/24	2:00P	SSW	LAB	"	"
9/24	6:00P	ALL	GRAVEL PIT, H.V.	3 ELEMENT	"
9/24	8:00P	SSW	LAB	5 ELEMENT	"
9/25	9PM	170°	Hill by Enclosure	Quad	Weak Signal
9/26	8 AM	200°	Lab	5 element	Weak Signal
9/26	11 AM	250° approx	Elephant Back	Quad	Weak Signal
9/27	4 PM	No Signal	Lab	5 element	No Signal
9/28	8 AM	No Signal	Lab	5 element	No Signal
9/29	1-4 PM	No Signal	Hayden Valley	Quad	No Signal
9/30	11 AM	No Signal	Hill by enclosure	Quad	No Signal
10/1	11 AM	No Signal	Head of Trout Creek	Quad	No Signal
10/1	1-3 PM	No Signal	Along Trout Creek	Loop	No Signal
10/2	1-4 PM	No Signal	Elephant Back	Quad	No Signal
10/4	11 AM	—	Trout Creek - Along	Quad	No Signal
10/4	1 PM	—	Creek Divide	Quad	No Signal
10/4	4 PM	—	Head of Trout Creek	Quad	No Signal
10/4	4 PM	—	Mid-slope Mt. Washburn	Quad	No Signal
10/5	11 AM	—	Field Station	Quad	No Signal
10/5	1 PM	—	H.V. by enclosure	Quad	No Signal
10/7	8 PM	—	Rabbit Creek	Quad	No Signal
10/8	1 PM	—	Ridge N. of Bear Lake	Quad	No Signal
10/9	12-1 PM	—	Mt Washburn	Quad	No Signal
10/9	12-1 PM	—		5 element	No Signal
10/13	10-12 hrs	—	Airworth flown by Frontier Hayden Valley, Pelican Valley - Canyon, Mtn, etc.	Loop	No Signal

Grizzly RADIO TRACKING
1966 67

Grizzly No. 40
Location Trout Creek Dump

Pulse Rate 104/min
Transmitter No. 125

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9/11					Instrumented at T.C. Dump. 9 PM with continuous pulse trans. Her #5 at 104 beats/min. Blue Collar, Yellow battery pack.
9/12	10 AM	Fix 170° 200°	Gravel Pit Dump - Road Junction	3 element	strong signal
9/13	10 AM	Bearing 220°	Exlosure	Quad	Strong signal
9/13	3 PM	Bearing 200°	approx Lab	3 element	Medium signal
9/13	10 PM	Bearing-fix	Dump	Portable	Near Dump - strong signal Moving Around
9/14	10 AM	Fix 170° 210°	Lab Gravel Pit	3 element	Medium signal Weak signal
9/14	9 PM	No signal	Dump	Portable	
9/15	10 AM	Bearing approx 270°	Middle Hayden Valley	Quad	strong signal
9/16	9 AM	Bearing 200°	Lab	3 element	Medium signal
9/16	10 PM	Fix 50° 0°	Gravel Pit Dump Road	3 element 3 element	Very strong - Animal in Dump.
9/17	9 AM	180°	Lab	3 element	Good signal
9/17	9 PM	240°	Dump	loop	Good signal - not too near dump from the sound.
9/17	8 AM	No signal	Lab	3 element	No signal
9/17	3 PM	Bearing 215°	H. 11 by exlosure	Quad	Weak signal - west of Trout Creek
9/17	9 PM	Fix 220°	Gravel Pit	loop	Strong signal - Not in dump -
9/17	9 PM	220°	Dump	loop	In valley
9/20	11 AM	195°	H. 11 by exlosure	Quad	
9/21	11 AM	Fix 230° 215°	H. 11 by exlosure Hill W. of Trout Creek	Quad Loop	Medium signal "
9/23	10 A.M.	Fix-JUMP 215°	WOODED HILL SW OF H.V. EXCLOSURE	QUAD - LOOP	MOVED IN - JUMPED WITHOUT SIGHTING

Grizzly RADIO TRACKING
1966

Grizzly No. 101
Location Hayden Valley

Pulse Rate 70/min
Transmitter No. 40-1965

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/4	11 AM	—	Trout Creek - Alum Creek Divide	Quad	No Signal
10/4	1 PM	—	Head Alum Creek	Quad	No Signal
10/4	4 PM	—	Mid-slope Mt. Washburn	Quad	No Signal
10/5	11 AM	—	Field station	Quad	No Signal
10/5	1 PM	—	Hill by enclosure	Quad	No Signal
10/7	8 PM	—	Rabbit Creek	Quad	No Signal
10/8	1 PM	—	Ridge N. Beach Lake	Quad	No Signal
10/9	12-1 PM	—	Mt Washburn	Quad +	No Signal
11/13	10-12 PM	Aircraft	Aircraft Hayden Valley	3 Element	No Signal
10/14	About 4 PM		Helicopter	Loop	No Signal
A Grizzly with a red battery pack was seen with two other grizzlies at old contractors camp (gravel pit area) by Glen Cole					
10/18	8 PM	Sighted 101 and 3 yearlings at Dump. They pulled up the Horsemeat bait and drag it to top of hill. Feared for 1 1/2 hours until we drove out. Checked for signal with loop but no signal.			
at 9:00 PM On 10/18 101 Reinstrumented at Trout Creek Dump with Continuous pulse transmitter at 76 pulses per minute. Red battery pack, blue left side green right side for transmitter color.					
27" neck					
10/20	9 AM	Fix 200°	Dump Junction	3 element	Strong Signal
	10 AM	185°	Gravel Pit	3 element	Strong Signal
	10 AM	105°	Hill by Enclosure	Loop	Strong Signal
10/21	10 AM	Fix 0°	Hill by Enclosure	Loop	Signal weak + strong - bear may be moving
	11 AM	215°	Alum Ch Xing	Loop	Strong Signal -

Grizzley RADIO TRACKING 1966

Grizzley No. 101
Location Hayden Valley

Pulse Rate 70/min
Transmitter No. 40-1965

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
9/16	10 PM	Fix 50° 0°	Gravel Pit Dump Road	3 element 3 element	Very strong - animal in Dump
9/17	9 AM	Bearing 180°	Lab	5 element	Good signal
9/17	9 PM	0°	Dump	Loop	Weak signal - bearing may be off
9/18	8 AM	Fix 190°	Lab	5 element	Weak signal - indicates that not in dump, but maybe moving in
9/19	10 AM	Fix 160°	Gravel Pit	3 element	Strong signal
9/19	3 PM	110°	Hill 67 enclosure	Quad	Strong signal
9/19	9 PM	Fix	Gravel Pit	Loop	Strong - In Dump
9/19	9 PM	50° 0°	Dump Road	Loop	"
9/20	11 AM	230°	Hill 67 enclosure	Quad	Strong signal - appears to be around old dens site
9/21	11 AM	Fix 205° 180	Hill 67 enclosure Hill W Trout Creek	Quad Loop	Moved in - didn't sight - bear may be moving
9/23	10 AM	Fix - Jump 215°	Hill 67 enclosure	Quad - Loop	Moved in - jumped no sightings
9/24	8:30 A	SSW	LAB	5 ELEMENT	No SIGNAL
9/24	2:00 P	SSW	LAB	5 ELEMENT	No SIGNAL
9/24	6:00 P	ALL	GRAVEL P.T., H.V.	3 ELEMENT	No SIGNAL
9/24	8:00 P	SSW	LAB	5 ELEMENT	VERY WEAK SIGNAL - ?
9/25	Fix 11 AM 9 PM	Fix 335° 275°	Hill 67 Enclosure Alum Creek	Quad 3 element	Weak signal Medium-weak signal
9/26	8 AM	230°	Lab	5 element	Medium signal
9/27	4 PM	210°	Lab	5 element	Medium signal
9/28	8 AM	210°	Lab	5 element	Medium signal
9/29	1-4 PM	No signal	Hayden Valley	Quad	No signal
9/30	11 AM	No signal	Hill 67 enclosure	Quad	"
10/1	11 AM	No signal	Heed Trout Creek	Quad	No signal
10/1	1-3 PM	No signal	Along Trout Creek	Loop	No signal
10/2	1-4 PM	No signal	Elephant Bank	Quad	No signal

GRIZZLY RADIO TRACKING

1966-67

GRIZZLY No. 101
Location HAYDEN VALLEY

Pulse Rate 28/Min
Transmitter No. #40-1465

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/22/67	9:00 A.	190°	LAB	5 ELEMENT	MED SIGNAL
FIX	11:00 A.	250°	So. of ALUM CK	3 ELEMENT	MED SIGNAL
	5:15 P.	10°	OLD FIELD STA	QUAD	STRONG SIGNAL
	3-9 P.	VISUAL	OBSERVATION		AT HAYDEN VALLEY DUMP
10/23/67	1:30 P.	350°	USGSTROUT CK. MONUMENT	QUAD	MEDIUM STRONG
10/23	2:45 P.	240°	2ND PARKING AREA	3 ELEMENT	MEDIUM STRONG
10/23	3-4 P.	VARIOUS	So. of ALUM CK TRAIL	LOOP	CUT OFF AT 4 P.; STRONG SIGNAL UNTIL THEN.
NOTE: BASED ON ABOVE READINGS, INCLUDING MANY WITH LOOP, ALL ALONG NORTH SIDE OF TIMBERED ISLAND FROM USWAS TRAIL, IT IS CONCLUDED BEAR WAS ON SW PORTION OF TIMBER.					
10/23	8 PM	- Sighting	In Dump		
10/24	1 PM	175°	Ridge N. Large Timbered Loop		Signal indicates the bear in Large timbered island in NE corner Hayden Valley
10/24	8 PM	Sighting	T.C. Dump		With 3 Yearlings
10/25	9 AM	Fix 295°	T. C. Dump	Loop	Strong Signal - Bear out in valley in open. Saw several other bears 1/2 mi N. of Dump, but not 101.
	9 AM	325°	Gravel Pit	Loop	
	9 AM	15°	H. 11 by Exclosure	Loop	Signal indicates bear is probably S. of dump.
10/25	9 PM	210° approx	Trout Creek Road	Loop	
10/26	1 PM	Fix 225°	Alum Creek Xing	3 Element	Medium signal - bear in timbered island
	1 PM	260	Big Game Overlook	3 Element	Medium signal
10/27	11 AM	Fix - Mon	Signal indicated bear in Large timbered island in NE corner of Hayden valley. - probably in deep, deep bed - saw tracks		
10/27	9 PM	10° Approx	Trout Creek Dump	Loop	Medium signal - rough bearing
10/27	10 PM	265°	Lab	Loop	Strong signal
10/27	10:30 PM	295°	Lab	Loop	Strong signal
10/27	10:45 PM	270°	Canyon Junction	Loop	
10/27	10:47 PM	Fix - sighting	Tracks of bear along Howard Eaton Trail crossed road 1/2 mi west Canyon Junction - spotted eyes with spotlight in timber to North.		
10/27	11:00 PM	285°	Canyon Junction	Loop	No signal
10/28	No signal		Lab	5 Element	Bear up Tower Creek Drainage
10/29	11 AM	255°-270°	First switchback up on old Hayden Road up Mt. Washburn	Quad	near head or Near head of Carmelion Ch. drainage.

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/30	10 AM	Fix 240° 245°	2 1/2 mi N. Dunraven Pass 2 mi N. Dunraven Pass	Quadrant Loop Quadrant	Strong signal with quad very weak with loop Strong signal - No signal with Loop Signal indicator bear about 1 mi. N.W. of Hedges Peak in head of Carnelian Creek Drainage
10/31	1-4 PM	Fix - Moved in	1/2 mi. NE Dunraven Peak	Loop	Good signal - Moved in on bear believe it to be 1/2 mi. N. of Dunraven Peak
11/2	12 Noon	Fix - Jumped - Moved in	on bear from saddle between Dunraven & Hedges peaks. Found den. Deliberately made noise & built fire about 100 yards to the Northeast. She & one or more yearlings moved out of the den & headed east. The Den was 305° from the saddle and about 1/3 mile down.		
11/7	3 PM	Fix - Moved in to den - bears not there. Signals indicated that bear about 1/2 mile to east in next drainage. Tracks indicate that bear has not been back to den since 11/2. Took several bearings from Dunraven Road & bear Den.			
11/8	11:15-11:35 AM - 11:45	No Signal Fix 200° 240°	1 mi. N. Dunraven Pass 2 1/4 mi. N. Dunraven Pass 1 1/2 mi. N. Dunraven Pass	Loop Loop Loop	Intermittent Signal. Bearing between Dunraven Peak & Dunraven Pass. Fixed bear at bottom of first drainage (Carnelian) to west of road about 1 1/2 mi. N. of Dunraven Pass Sounded like bear digging a den. No signal
	12:35 PM		Bend in road right at saddle		
11/9	2 PM	230° approx	2 mi N. Dunraven	Loop	Bear still in same area - signal suddenly came on like in den or deep den hole.
11/13	12 Noon	Fix - sighting	Moved in - found new den. Heard bear in den. Den down first ridge to West of Dunraven Pass & Tower-Canyon Road		

RADIO TRACKING
1966

60-61 pulses/min.

No. 120
Location Trout Creek

Pulse Rate Continuous
Transmitter No.

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/25/66	11:00		Instrumented at wt. 325 lbs.		Trout Creek Very Old Bear Signal Poor Took Blood Sample & Extracted Tooth.
10/26			Checked at, moved with cam loop		No sig.
10/27			Waltz at T.C. Bridge		No sig. Lat. No sig.
10/29			checked with helicopter - loop		Located #120 between Upper T. Creek & Upper Alum Creek drainages in very heavy timber. Signal fair.
10/31			S	loop	NW side of Hayden Valley ? (Saw bear)
11/1			trout creek	loop	no signal
11/1	9 AM 2:30 PM	S	trout creek	loop	no signal
11/2	9-2:30 pm		trout creek	quad	no signal
11/3	10 AM-4:00 pm		trout creek, Hayden valley	quad	no signal

1966

19" Neck

RADIO TRACKING
1966

Throat Geck No. 216 Male - wt. 133 lb.

Location _____

CONTINUOUS

Pulse Rate 106-108
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/30	11:40 AM				Instrumented at Throat Geck Captured 10/29 in culvert trap Transmitter has very strong signal Got transmitter off the first day. Transmitter recovered. Put on #40 on same day 10/30/66 and extended life transmitter removed. Still operating but very weak.

Grizzly #158 Locating Data- 1966

<u>Dates</u> <u>Instrumented</u>	<u>Days</u> <u>Instrumented</u>	<u>Days</u> <u>Located</u>	<u>Remarks</u>
8/20-9/8	20	20	9/8 last signal

Number of Bearings	135
Times no signal obtained	4
Number of Fixes	11
Number of Sightings	2
Days no attempt made to locate	0

Transmitter- C.P. 88-90

Grizzly RADIO TRACKING
1966

continuous

No. 158
Location _____

Pulse Rate 88-90
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
10/21			Tested at Exchew on Trout Creek	2nd	No signal
10/23			Used car loop from Canyon to Bridge Bay, at Shumb & at South Fork		No signal
10/24			Used loop off car to Lewis Lake & from Shumb to Rabbit Creek		No signal
10/27			Antenna at T.C. Bridge	2nd loop	No signal
10/28	1:00-3:00pm		Washburn		No signal

WT = 315 lbs

Grizzly

RADIO TRACKING
1966

No. 158

Location

Pulse Rate 88-90
Transmitter No.

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
8-26	4:00 PM	168°	Lab	5 element	Signal strong on
"	"	164°	Big game ant	quad	the loop ant. at the
"	"	140°	Gravel Pit	Loop	Gravel Pit.
8-27	7:30 AM	168°	Lab.	5 el.	Signal strong
8-28	8:00 AM	168°	"	"	"
8-29	8:30 AM	168°	Lab	"	Signal very weak
8/30	8:30	168°	"	"	"
8-30	10:00 AM	138°	Gravel Pit	loop	Signal fair
8-30	10:40 AM	144°	T. Creek Dump	loop	Signal intermittent
8-31	8:00 AM	168°	Lab	5 el.	Signal strong
9-1	"	"	No signal	"	No signal
9-2	8:00 AM	165°	"	5 el	Signal strong
9-2	11:00 AM	150°	Trout Creek Dump	loop	Signal strong
9-3	9:00 AM	170°	Lab.	5 element	Signal weak
9-4	11:00 AM	"	"	"	Signal strong
9-5	8:00 AM	175°	"	"	Signal strong
9-5	4:15 PM	175°	Trout Cr. Turnoff	3 element	Signal strong
9-6	7:45	175°	Gravel Pit	5 element	" "
9-7	10:35 A	179°	Trout Cr. Turnoff	3 element	" "
9-8	9:00	168°	Base	5 element	Good sig.
9-8	10:00	220° (corrected)	Gravel Pit	3 el	Poor Signal
	7:00 PM	"	Trout Creek Bridge (1)	loop	On buffalo corner at Field Sta.
9-9	7:00 PM	"	"	"	"
9-12	4:00	No signal	Gravel Pit	3 element	No signal
9-13	4:30	"	"	loop	Start in quad

6 T. of beam at Instrumenting 315 lbs.

Grizzly

RADIO TRACKING
1966

Standard Transmitter.
Previously used on an elk
Battery pack & cardboard encased
in paraffin.

No. 158
Location _____

Pulse Rate 88-90
Transmitter No. _____

Date.	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
8/20	3:00 pm		Gravel pit		Placed on grizzly # 158. Collar battery pack yellow & rest of collar red with a little green. Collar a snug fit Took blood sample & took Took T.V. movies Collar & beam in water following instrumenting Signal fair Fair sig. Good sig.
8/20	7:30 pm	5°	Base		
	10:30 pm	180°	Base		
8/21	1:00 am	180°	Base		
8/21	9:00 am	156°	Base		Very good sig. Electronic beeping
	9:40 am	162°	Base		Good sig. Beam moving
	10:00	162°	Base		Signal strong
	10:30	—	Base		Unable to pick up signal
8/22	10:00	180°	Base		Signal loud & clear.
	10:30	182°	Base		Signal fairly strong but not as loud as this morning.
	12:15	—	Base		Unable to pick up signal
8/23	0930	168°	Base		Signal fairly weak, but clear.
	0930	168°	Base		Signal weak.
8/24	4:30 pm	170°	Base		Signal weak
	12:00	—	Base		Unable to pick up signal.
8/25	10:00 am	168°	Base		Signal Strong
	1630	168°	Base		Signal strong
8/26	2:00 pm	168°	"	"	"

October 4, 1966

202

1966

Game birds & birds seen the

with him of the canyon nothing 202.

We passed by the bridge about 3 miles

Along the canyon then down the grade, Nevada

He agreed indicated that 202 was across

in the mill out of the canyon. He agreed

was interrupted over a fence of 4 or 5 ft

indicating that 202 was moving in & out

if he did or more probably changing.

We climbed half-way down the canyon in

with the electronic device. He agreed we

coming directly from across the valley

"Pine" if we were getting it on a

"fence" off the canyon with 202

was in the north slope. He was not of

no matter than to the north across the

canyon. After traversing the north slope &

reaching 202, we moved from above point

in the canyon now, we concluded that

202 was in the first & was going in &

out of the canyon ^{making a day out.} These appear to be no

Oct. 4, 1966

way to descend the Canyon on the other side
except upstream 2 miles where we descended
to get to 202's den of last winter on
several miles downstream from the point
where we believe 202 to be. This would be a
long difficult hike along the north rim.

Plan to pack a rubber raft down to the
north bank of the Yellowstone ^{then} cross the river
& then attempt to "zero in" on 202 and
locate the den. The bear did not move
far from the den vicinity during the course
of the day.

Oct 6, 1952

Part 205 back at the 1952 site.
The station of last night's today the

Let some likely run that water

#205 moved down his camp on
on 10/10, 10/5 + 11/1 that is
along the north side of the canyon, & below
down about 2 miles from the last in it
over where we located him on 10/10. It was
that from to that time he had not come
the river.

Oct 1952. He traveled to the old site
Part 205 of the canyon. The reason he
have kept strictly to the north side
Now that 205 is on the south side of the
Yellowstone river, we can pick up his signal
at the old site. He has been a
before then it was a

Oct. 6, 1966

The storm of last night & today has put 202 back at his 1965 den site.

It seems likely now that when #202 moved toward his denning area on 10/10, 10/22 & 11/1 that he traveled along the north rim of the Canyon, & bedded down about 5 miles from the Lab in the area where we located him on ~~11~~ Nov. 4 and that prior to that time he had not crossed the river.

In 1965 he traveled to his den ^{along} the South rim of the Canyon. This season he has kept strictly to the north rim. Now that 202 is on the South side of the Yellowstone river, we can pick up his signal at the Lab. When he was on the north side, he bedded down below the canyon rim & the signal was effectually shielded.

1966

Prehibernation Behavior of 202

- 10/22 - Storm sent 202 to the vicinity
10/23 of his denning area. (We lost signal)
- 10/24 - In vicinity of den^{area} all day - Returns
to Lab evening of 10/24.
- 11/1 - Weak signal at Washburn Overlook
then no signal. Temp dropped
to 6° cold & clear - Sent 202 to
vicinity of den. from vicinity of Lab.
- 11/2 - Loud signal S.W. of 47 mile hole
Bear near den site - Opposite Old den site.
Came & thank him - Along N rim of canyon.
- 11/3 - No signal from Lab. Bear in
vicinity of denning area.
- 11/4 - Hoped down canyon. Signal indicated 202 was on
South side of Yellowstone River.

{ 10/10 storm - 1st time 202 went to
10/11 den site. No signal from Lab.
but got one from Warm Spring Overlook.
Possible that den was dug at
this time but may have occurred
much earlier in the summer.

11/5 - Getting signal from direction of
1965 den site.

11/6 Frank, E. Guild, Henry T. & Henry
MacCutcheon & I picked along N rim of
Canyon. We have 4 inches of snow & it
was snowing steadily. #202 was at
the old den site of 1965. This is the
first time we have gotten the signal
directly from the old den. During the past
4 or 5 days #202 has been $\frac{1}{2}$ to 1 mile from
his old den site. The storm moved him to
his den. The signal of #80 is coming in strong
at the lab. She has not yet moved back to her old
denning area.

6.22.66
INSTRUMENTED ~~ELK~~ ACTIVITY PATTERNS

Yellowstone National Park - 1965-66

Grizzly

Elk No. 202

Sex Male

Date July 6, 1966

Location Canyon Village

Transmitter No. _____

Activity

Feeding

Bedding

Traveling

Standing

Time (hours)

%

11.5

48

9

37

3.5

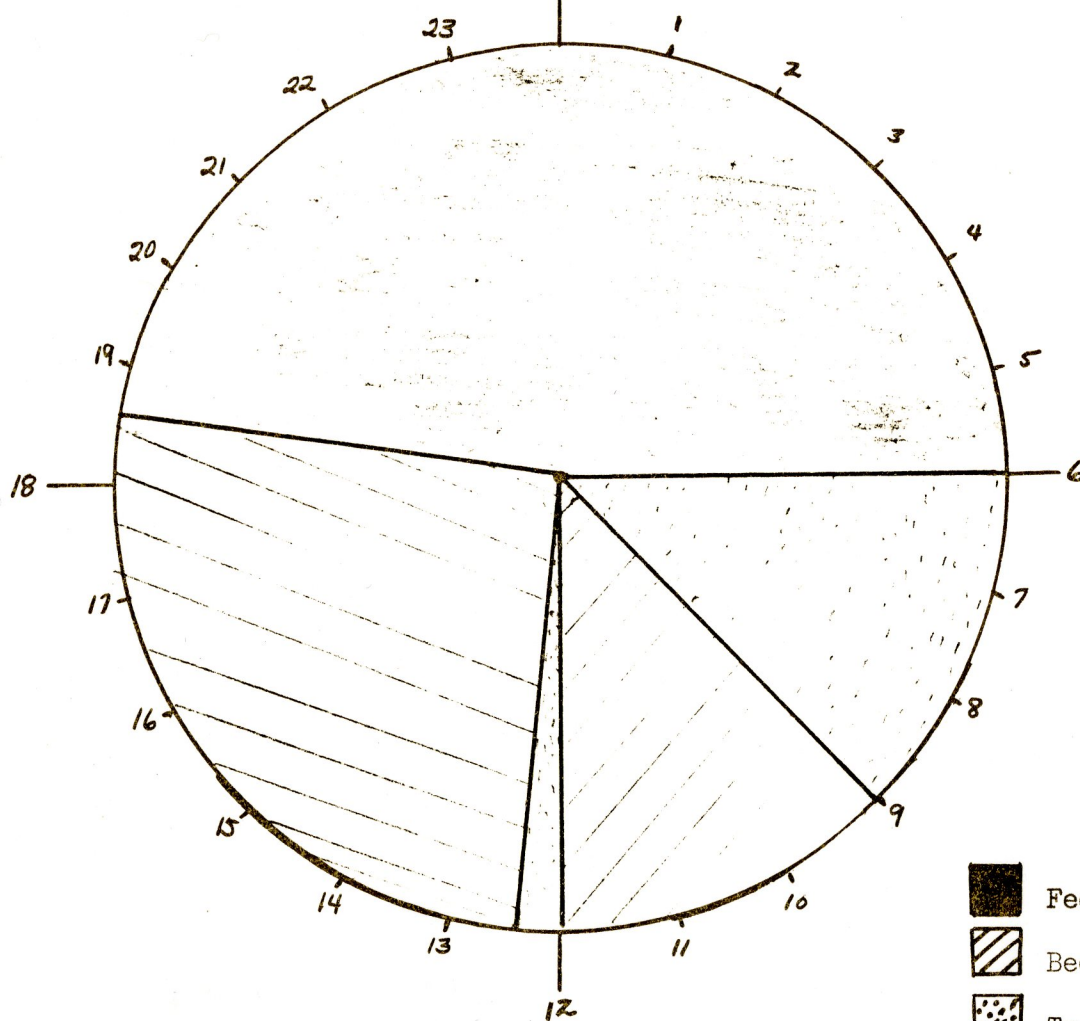
15

24 hrs

100

Totals

24



- Feeding in Campground
- Bedding
- Traveling
- Standing

7/6 RADIO TRACKING
1966

Grizzly No. 202
Location Canyon

Pulse Rate 62
Transmitter No. _____

Date	Time	Bearing	Location From Which Bearing Was Taken	Tracking Unit	Remarks
7/6	2:30 AM	10°	Lab	loop	Feeding in campground
7/6	3:00 AM	-	-	-	Moving and feeding in campground
7/6	4:00 AM	100°	Lab	loop	" "
7/6	6:00 AM	10°	Lab	loop	Ranger spotted him in the campground near F loop
7/6	9:00 AM	330°	Artistic Point	loop	} Fix } Seemed to be bedded down
7/6	9:00 AM	500°	Lab	5-element	
7/6	9:45 AM	500°	Lab	"	"
7/6	10:30 AM	500°	Lab	"	"
7/6	11:00 AM	500°	Lab	"	"
7/6	11:45 AM	400°	Lab	"	"
7/6	12:15 PM	400°	Lab	loop	Moving
7/6	12:30 PM	400°	Lab	5 element	Bedded down
7/6	1:10 PM	410°	Lab	"	"
7/6	2:45 PM	400°	Lab	"	"
7/6	3:00 PM	400°	Lab	loop	"
7/6	4:00 PM	400°	Lab	loop	"
7/6	5:00 PM	400°	Lab	loop	"
7/6	5:30 PM	410°	Lab	loop	"
7/6	6:00 PM	400°	Lab	loop	"
7/6	6:30 PM	200°	Lab	loop	moving
7/6	7:30 PM	100°	Lab	loop	
7/6	8:30 PM	100°	Lab	loop	In campground, moving
7/6	9:30 PM	100°	"	"	"
"	10:30 PM	100°	"	"	"
"	11:30 PM	100°	"	"	"
7/7	12:30 AM	100°	"	"	"
7/7	1:30 AM	100°	"	"	"
7/7	2:30 AM	100°	"	"	"

#202

10/10 & 10/11 - Snowstorm. 1st time that #202 went to den site. We left Canyon area, no signal from Lab but we got one from Warm Springs Overlook. It is possible that den was dry at this time.

10/22 Storm moved #202 to den area. We obtained his signal at 6:30 am but not later in day.

10/23 In vicinity of den all day

10/24 Signals from Lab & Washburn Overlook. Hummer 202 returned to Canyon area & Lab.

11/1 9am Washburn Overlook - Lab signal then no signal. Bear may have been in den. Drop in temperature to 6° F may have initiated move back to den area.

11/2 Rim of Canyon West of Humble Hole - strong signal.

11/3 Clear, warm Indian summer weather

Grizzly # 202
1966

Nov. 6/66

Snowed lightly during night of 5th and lightly all day of the sixth. A 70° bearing from the lab indicated that # 202 might be in the vicinity of his old den. At 12:30 pm with it still snowing John, Ernie, Henry Tomingas, Henry MacIntosh started down the seven mile trail carrying packs, knives & a raft & oars. On Friday (4th) # 202 was farther down the canyon than den site and probably on far side of river. We carried raft & food so we could cache it if need be & cross river later.

We took a number of bearings as we followed along Canyon river. At point directly across from old den the mill indicated # 202 was right at or very close to his 1965 den. We located him at 2:15 pm, took some pictures of the tracking group & pictures of tracking. It continued snowing but slowed down some making pictures possible. Bearing from this point was 105°. The air temp was 32°F.

We returned with raft & food, having decided we could do better by going down the side of canyon. We got back to car at about 4:00 pm. Number 202 dropped down into the canyon just downstream from our station & then moved on up to his old den site. Last year he approached the site from the opposite direction and did not cross river.

As far as we know #202 has not been back to his den to repair it. He will probably do this over the next few days. This may be typical of male pre-intention behavior. On the other hand the females with offspring & pregnant soon start den preparation in Sept. The dens are all ready for instant use.

Signals from the lab & elsewhere revealed that #40 and her cubs were not at their ^{former} den in the morning and still not back there by 4:30 pm. Though she may have been back during the night she has apparently not been in a hurry to leave. Snowing all day & barometer down. Canyon area got between 3 and 4 inches of snow. Snowfall was deeper around Lewis Lake and over by Horns Jet.

Oct. 29/66

Helicopter Flight

10:30 am

Took off from Canyon and flew for $1\frac{1}{2}$ hours. With Joel flew over small lake just north of Canyon Village. Picked up signal of #202. Flew over Cascade, Wolf & Dube Lake trying to get signal from #158.

John & I then flew up Otter Creek, past Lynnet Lake and over Mary Mt. & Mary Lake. Number 202 was east of Canyon Village but we got his signal loud & clear throughout our flight - over Mary Lake (13 mi) just north of Beach Lake ^(14 mi) and back of Lake Hotel (13 mi). We picked up the signal of #120 south of Hilltop Station and got a weak & occasional signal from Marian (^{#40}). We thought we picked up signal from black bear over eastern slope of Elephant Back Mt. If we did bear was in den. We did get #202 from here & this is possibly what we at first took for the black bear. A change in pitch may have confused us.

Used loop antenna on outside, bottom of bubble with coax cord to new receiver inside. Used earphones. This is by far the best we have done from a helicopter.

Had trouble getting direction on extended-life transmitter as we had to wait for signal to come on. Obtained good results on both #202 and #120.

If funds are available we could do a lot tracking from a helicopter

Notes On Winter Trip to Dens
of Duffies # 40 & 101

Frank Dixon
Provo, Utah

Dec. 28/66

Flew in helicopter from Moos to Hayden Valley
Flight 1 hour 10 min. Temp. about 15° below zero - O² at den
site

Den of 101 was deserted & had not been used
digging not completed

No lounge bed made

Probably deserted due to disturbances in fall
Took stills & movies

Put down near den # 40 & webbed in about $\frac{3}{4}$ mile.

Approached den carefully - looked in, movie, flash stills

Been growled & moved

Bough bed higher than bottom of entrance - heat trap

No den tree

Unable to see in den without poking head part-way in entrance

No signs bear had moved out of den since entering

Stills & movies

Difficulty of immobilizing

Den of # 101 - Base of W. B. Pine tree - slope

Length of den (entrance to back end) 5' 6"

Width 4'

Height 2' 6"

Entrance opening 3' high by 14" wide

Sandy soil

N exposure

Dens

July 1, 1966

Karen, Bob and I hiked back to Marion No. 40's winter den. We hiked up Trout Creek, crossed to the head of Alum Creek and then moved through lodgepole generally southwest for $2\frac{1}{2}$ to 3 miles to the vicinity of Beech Lake.

Arrived at the den at about 2:00 P.M. It was located on the north face of a draw among heavy timber. The den had not been dug at the base of a tree and already had begun to cave in. Den was dug with a heavy matt of dwarf huckleberry *Vaccinium scoparium*. It differed from all other dens we have located by being heavily lined with grasses, moss, boughs and rootlets. This may be typical of dens where sows give birth to cubs. The den opened due north and was surrounded by light downfall.

A daybed heavily lined with *Vaccinium*, pine boughs, grass, etc., was constructed on top of the tilings at the mouth of the den. Lining was 4 to 5 inches thick and heavily packed. It was evident that the sows and cubs had used it for a considerable period of time. There were no feces in the vicinity and one other little used day bed located 20 feet to the east of the den entrance. There were no stripped trees in vicinity as observed in spring of 1965 at No. 40's den.

At least several bushel baskets of bedding material.

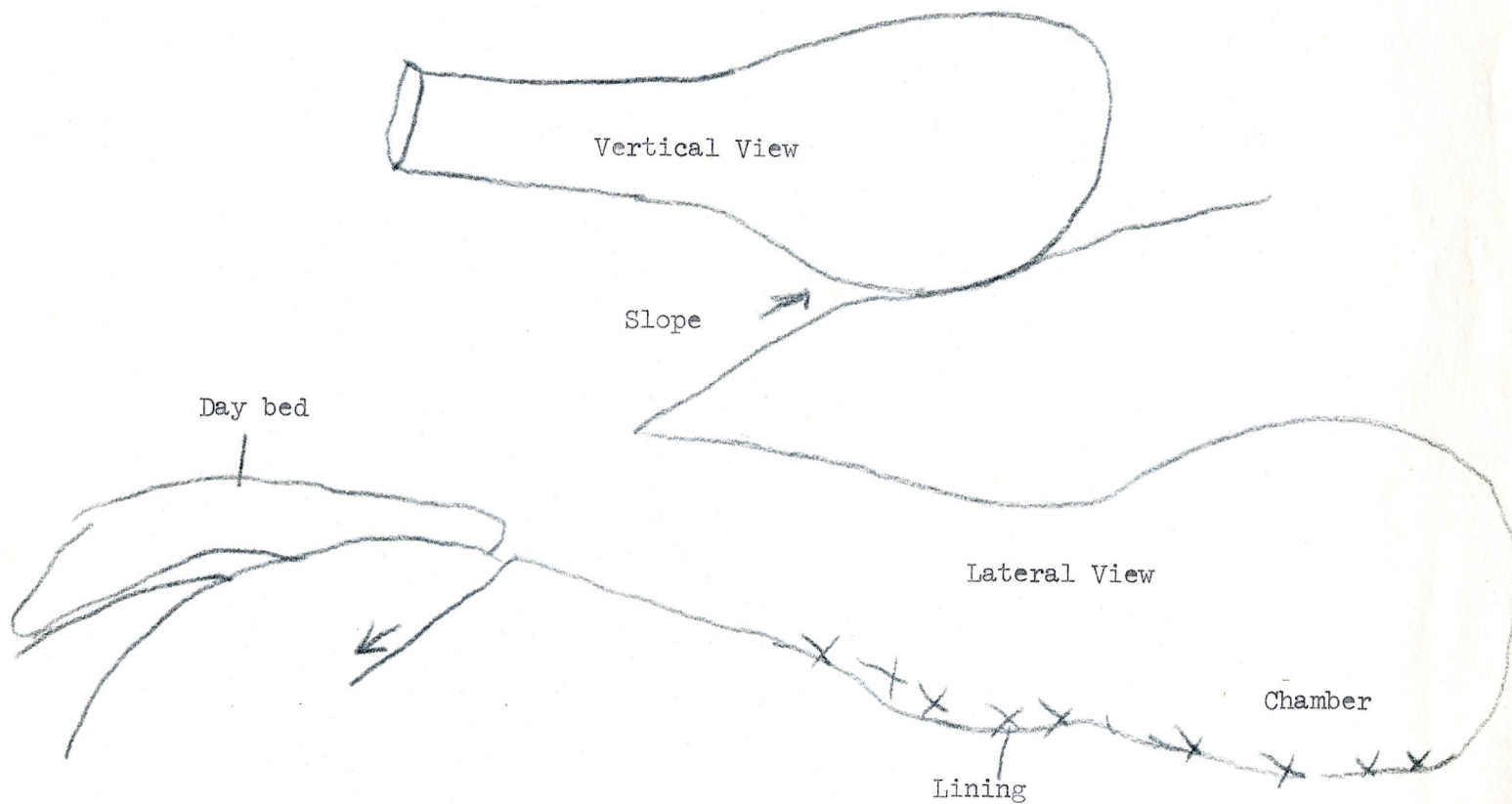
Den measurements were:

Length - 10'

Width of entrance - 33"

Height of entrance - 21"

The chamber width - 54"
" depth - 36"
length - 54"



Oct. 29/66

Helicopter Flight

10:30 am

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