

GRIZZLY BEAR JOURNALS

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JOHN J. CRAIGHEAD

June 21, 1960

Spent night of June 20 in Gardiner. Contacted WPA staff personnel at Mammoth. Visited with Garfield and others to lecture on bear project. Discussed possibility of doing some bear management with J. G. Galt, the North District Manager. Galt was very interested in my plan to kill bears away from camp with surplus elk killed in fall. Agreed to let me plan and submit for consideration. Met Edna Harlow, the Chief Ranger, discussed plans for summer work with him, acting Chief Ranger.

GRIZZLY BEAR STUDY

YELLOWSTONE NATIONAL PARK

Grizzly Bear Study
1960

YELLOWSTONE NATIONAL PARK

Journal of

John J. Craighead

Breeding Behavior

Journal

Narrative Notes, Observations and Remarks

for the years

1960, 1961 and 1962

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A sow with 3 yearlings sighted and photographed at Norris Junction, May 7 and 8 (see scientific notes). Came into the Trout Creek Camp. This family group was easily recognized by a conspicuously red yearling. We have seen no other cub or yearling as red in color as this one.

One of the cubs (No. 25 - the 90 lb. cub) was marked 5/21/59 but had lost its marker and it was not until we shot him at Trout Creek July 14, 1960, that we determined his identity for certain.

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Spent night of June 20 in Gardiner. Contacted NPS staff personnel at Mammoth. Visited with Garrison and made arrangements to lecture on bear project. Discussed possibility of doing project. Discussed possibility of doing some bear management with J. Good, the North District Manager. Seemed very interested in my plan to bait bears away from dumps with surplus elk killed in fall. Agreed to **Grizzly Bear Study** plan and submit for consideration. Met Hels Murdock, **Yellowstone National Park** Chief Ranger. Discussed plans for summer work with Bird, acting Chief Ranger.

Drove to Canyon and met Frank and Maurice. Spent most of day housekeeping and sorting and arranging gear and equipment. Should be well organized by tomorrow and can begin trapping.

Breeding Behavior

A large dark bear and a light-colored sow came into Trout Creek from the N.W. and began feeding at the dump. The bear attempted to copulate with sow. She offered no resistance but bear did not appear to be successful. Some 20-25 other bears nearby showed no interest and no other male appeared interested in the female.

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A large dark bear and a light-colored sow came into Trout Creek from the N.W. and began feeding at the dump. The boar attempted to copulate with sow. She offered no resistance but boar did not appear to be successful. Some 20-25 other bears nearby showed no interest and no other male appeared interested in the female.

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June 23. We are using the Old Ranger Station near the upper falls as laboratory, June 22, 1960.

bunkhouse and mess hall. Had the use of this building last year. It is far from ideal but will suffice.

Arrived at Trout Creek about 5 P.M. There were 8 or 10 bears present. More started coming in and both Frank and I took pictures. Bears were restless

There was play between cubs, between yearlings and older age and moved about from dump to creek and from dump to top of hill.

groups. Saw no play between adult males and females.

Ravens dove at young adult bear lying on the hillside. They dove A light-faced cub was separated from his mother for most of the even-

within several feet of his head. Kept this up for 10 or 15 minutes. May have ing. She did not make an effort to find him. He was timid and remained at some distance from the large group of feeding bears.

The dark bear and light-colored sow that exhibited breeding activity

Bears Observed

last evening came in together. Both began feeding. Scarchest, a large bear, trailed where he stopped, but instead of staying on a well-worn trail where he stopped, but instead of staying on a well-worn trail, he

Census

1 sow	2 cubs
1 " "	2 cubs
1 " "	1 cub
1 " "	1 " "
1 " "	3 yearlings
1 " "	3 " "
1 " "	2 " "
1 " "	2 " "
1 " "	2 2-year-olds
5 2-year-olds	
14 adults	

occurred. Both bears left the area together. The dark bear remained at

the dump. (See scientific notes).

June 24, Trout Creek. Earlier in afternoon a medium-sized bear showed interest in a female.

He approached. Marked Bears Observed: No. 28. No. 7. No. 30. No. 15. No. 6. No. 29.

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Unmarked Recognizable Bears: Scarchest after attempting an approach for 10 or 15 minutes. Toed movie. White-collared pair Sow with 3 yearlings, one yearling quite red.

June 22. Trout Creek. Marked bears observed: No. 6 No. 28 Photographed No. 7 No. 30 most of these No. 15 No. 29 with movie.

Unmarked but recognizable bears: Scarchest

and complete our tasks. Get our cameras. (Outlip shot) Sow with 3 yearlings (red)

Get some wire snare for cubs. Clear house trapped there. Some other.

June 23.
June 22, 1960.

Arrived at Trout Creek about 5 P.M. There were 8 or 10 bears present. More started coming in and both Frank and I took pictures. Bears were restless and moved about from dump to creek and from dump to top of hill.

Ravens dove at young adult bear lying on the hillside. They dove within several feet of his head. Kept this up for 8 or 10 minutes. May have been defending a perching and roosting site or perhaps just playing.

The dark bear and light-colored sow that exhibited breeding activity last evening came in together. Both began feeding. Scarchest, a large boar, smelled the female and then mounted her. She was receptive. They attempted to breed with a number of other bears only 8-15 feet away. The boar that came in with the sow ("her running mate") paid no attention and offered no defense of the sow. Scarface and the sow left dump and began copulating. He mounted her three times but did not remain on her over a minute. The fourth time he remained on her 15 minutes and suspect a successful mating occurred. Both bears left the area together. The dark boar remained at the dump. (See scientific notes).

June 24. Trout Creek. Earlier in afternoon a medium-sized male showed interest in a female. He approached her slowly, circling warily. She rushed him when he approached within 50 to 60 feet. He would retreat only to repeat his maneuvering. The sow was definitely not receptive and the boar left after attempting an approach for 10 or 15 minutes. Took movies.

Checked traps. The large one contained one of the "collared" (3 or 4-year-old) bears. A bear had been in the smaller trap but managed to lift the tail gate and escape. Weighed bear on load-o-meter scales - weighed 210 lbs. On the spring scales it weighed 222. Color marked, ear tagged and designated as bear No. 32.

June 22. Trout Creek. Marked bears observed:

No. 6	No. 28	Photographed
No. 7	No. 30	most of these
No. 15	No. 29	with movie.

Unmarked but recognizable bears: Scarchest
Cutlip
Sow with 3 yearlings (red)

Set some wire snares for cubs. Older bears tripped these.

June 23. Set both culvert traps after getting catch put on door of small trap.

Late in afternoon. Got some work done on bear traps. Photographed bears coming in to Trout Creek. Came in early and light was good.

Behavior:

Bob Howe brought Major Brownfield from Africa to see the bears and discuss at. Bears came in on different trails from night before. Observed a large bear loping down trail used by a number of bears that arrived earlier. These bears had turned west at creek and then crossed. The bear by-passed their turn and came to a dead stop on the stream bank. Apparently realized he had lost scent of bears preceding him. He could have crossed stream on a well-worn trail where he stopped, but instead swung around, retraced his path a few steps, swung west and crossed the stream exactly where earlier bears had crossed. A group of 6 or 7 later exhibited similar behavior, stopping short on bank, turning, retracing and crossing where earlier arriving bears crossed. None of these bears appeared to be travelling by scent as they were following well-established trails; but apparently they are well aware of what has gone down the trail before them.

Set both culvert traps at dump baited with bacon rind.

June 24. Trout Creek.

Checked traps. The large one contained one of the "collared" (3 or 4-year-old) bears. A bear had been in the smaller trap but managed to lift the tail gate and escape.

Miscellaneous Data: Weight of large trap - 1,270 lbs.
Weight of small trap - 1,060 lbs.

June 25. Weighed bear on load-o-meter scales - weighed 210 lbs. On the spring scales it weighed 220. Color marked, ear tagged and designated as bear No. 32.

Administered sucostrin 1 mg. to 6.3 lbs. of body weight. Pentothal sodium did not take effect and bear got up and away before we could get data and complete our tasks. Got ear markers. (See data sheet).

Set some wire snares for cubs. Older bears tripped them.

Set both culvert traps after getting catch put on door of small trap. Late in afternoon bears entered part way but would not go in far enough to trigger trap.

Bob Howe brought Major Bromfield from Africa to see the bears and discuss study.

Both Cutlip and Ingemar arrived early in evening. Ingemar now has one marker missing. We left dump at 8 o'clock.

Arranged to give talk to Park personnel on bears Wednesday, 8 o'clock.

Marked Bears Observed: No. 12 - Ingomar. Maurice observed both ear markers earlier in June. Now has lost the right ear marker. Left one is still fully intact.

No. 29

No. 15

No. 6

No. 7

Also Cuplip, Scarchest, Limpy and sow with 3 yearlings (red)

The cream-colored limping bear that ran with a similar colored litter mate and sow in 1959 has appeared alone at the dump for several evenings. It may be this family group has broken up. In 1959 this bear and its litter mate were designated as 2-year-olds. From experience gained this year, I suspect they were 3-year-olds in 1959 and are now 4-year-olds. We should gain further information on this as the summer progresses.

Miscellaneous Data: Weight of large trap - 1,270 lbs.

Weight of small trap - 1,060 lbs.

June 25. Trout Creek.

Both traps were successful. One contained a 425 lb. bear and the other one a 260 pounder.

Grizzly No. 33, a large adult male, was marked in each ear with red loop pink tail. Left ear tag - No. 00-290, right No. 00-281.

Sucostrin dose 1:6. Administered pentothal sodium. See data sheets.

Interested Fritz Bell arrived. Drove to Trout Creek about 5 P.M. and set traps. Some bears were coming in. Left Maurice and Fritz to make census. Sent Mike Stephen to Old Faithful to catch some black bear cubs. The District Ranger, Lee Robinson, reported 3 grizzly cubs in camp ground. These are the cubs of sow Maurice killed with overdose of sucostrin June 19.

June 25. In spite of all our preparations we are not fully equipped to do the job. We lack syringe needles, sucostrin. The syringes we had planned to use on pole for injection have broken. Will have to resort to Cap-chur gun until we can get nylon syringes or disposable ones.

Vegetation is still very green in Hayden Valley and feces of bears contain a large percentage of vegetable matter. Had been banding geese at Turbid Lake. Lonesome No. 5 returned to the dump for the first time with the dark sow and cub she attached herself to last year. One ear marker and the neck marker is still intact. It is probable that No. 5 hibernated with the sow and cub. This appears to be a very clear-cut case of adoption.

June 26. Trout Creek sow we marked June 26, an adult 260 lb. sow - red loop yellow tip. Both traps captured bears. Weighed each on the load-o-meter scales. Large bear weighed 220 lbs., small bear 100. Later checked weight on spring scales. Large bear weighed 260 lbs. and small bear 130. This discrepancy caused us considerable trouble in computing drug dosages. Will probably rely on spring scales entirely in the future.

June 27. Trout Creek and below me. She immediately charged down the steep slope of Took the day off and hiked to 3 mile hole at bottom of Yellowstone Canyon. Fishing was excellent. Salmon flies (red) were beginning to emerge. Cutthroats were taking both wet and dry flies. Captured some salmon fly nymphs under rocks along the shore. Fish took these readily but were not offspring.

interested in the emerging flies. Caught 39 trout and released most of them.

June 27. Trout Creek
Fritz Bell, Mike, Frank C., Maurice, and Mike made the trip and packed 25 trout out of the canyon. Arrived Old Ranger Station about 9:30 P.M. Took us about 1 hour to climb canyon. Fritz, Frank, and Maurice each caught 30 or 40 trout apiece.

June 28.

First shot missed. Second struck him in the rump. He appeared only mildly surprised and did not attempt to either come at me or run away. Drove Fritz Bell and Mike to the Lake Ranger Station and collected bats (*Myotis* sp.). We banded and released nearly 50 and Fritz took 8 or 10 each to lab. Took mouth swabs to test for rabies and tularemia.

Saw Fritz off about noon. Weighed the other bears in trap and found load-o-meter scales were off.

Bob Gustafson dropped in after lunch. Had been banding geese at Turbid Lake. Went out to dump early to photograph. The Chief Ranger, Nels up until after lunch. (See data sheet)

Murdock, and 3 young fellows joined us there. Discussed project with Murdock. Too much confusion to get good pictures or make observations.

Set traps. Observed the sow we marked June 26, an adult 260 lb. sow - red loop yellow tips.

Behavior:

A cub became separated from its mother. Cub climbed up hill to car.

I left car to intercept cub. Wanted to see if the cub's mother would show up if I appeared. A sow with 3 yearlings observed me approaching the cub which

was hidden from view and below me. She immediately charged down the steep slope of the dump and came up the near side directly at me. There was no doubt she was protecting the cub in the absence of its mother. The mother then appeared and she too came on a dead run and joined her cub. By this time

I had retreated to the car. Both sows then moved off with their respective offspring.

all bears including the known-age ones.

June 29. Trout Creek

The large trap contained a light sow and one of her two-year-olds. The litter mate was resting outside beside trap. Small trap had caught the first cub we captured and marked in 1959 - Bear No. 6, now a yearling.

Prepared two syringe darts and I sneaked within 35 feet of the 2-year-old. First shot missed. Second struck him in the rump. He appeared only mildly surprised and did not attempt to either come at me or run away. Sucostrin soon took effect and we dragged the bear to pickup where we weighed, marked and released him after taking data. (See form sheets).

Weighed the other bears in trap and found load-o-meter scales were off.

Tried to immobilize the yearling but underdosed her and had to give up until after lunch. (See data sheet)

Returned after noon and immobilized the yearling No. 6. See data sheet. Obtained a nice dental impression. Corda has been working on brown bears in Norway for about 8 or 9 years.

Placed the two traps end to end and opened both gates in an attempt to drive sow into one and retain 2-year-old in other. After several failures the sow moved into the empty trap and the door was dropped separating sow and 2-year-old. We immobilized the 2-year-old and made dental impression.

The sow proved too heavy to weigh but we estimated her weight at 350 to 375 lbs. She pulled indicator off scale at 300 lbs.

In attempting to move the sow from one trap to other we pushed a fire brand through the gate. It did not disturb her and she slapped it down and sat on the flaming paper. It singed her buttocks but did not sense when the sow had been gone too long, would then stop feeding and move without hesitation toward the "offending" bear.

I plan to take dental casts of all bears this year using geltrate and dental stone. This will give us permanent records of the dentition of all bears including the known-age ones.

She would resist his attempt to herd her back but slowly and methodically he would move her back and away from the other bears. In each instance he

June 30.

attempted to position himself for mating but the sow would turn and sit and

A pair of ravens are nesting across the road from our station. send him off. He did not in any instance press his attentions but ambled off. Asked Mike to get one. I judge it to be between 3 and 4 weeks old. It is clearing a wide path before him and again resumed feeding. feathering but tail is only 2-3 inches long. Quite bold and sassy.

None of the large boars that attempted to copulate were successful.

See Maurice's Notes on Breeding Behavior of Ingomar and his sow.

Cutlip on his second attempt mounted the sow and remained on her for 5 to 6

July 1, 1960. Trout Creek

minutes before Inge drove him off.

Only one trap was sprung and it contained a 3- or 4-year-old bear weighing 175 lbs. We immobilized her with 40 mg. of sucostrin as an initial dose followed by additional doses of 5, 5, 7 and 5 mg. administered 3 to 4 minutes apart (see Shooting Data). Used some new expendible 2 cc. syringes from his forearm was enough to scatter all other bears. (cost 12 cents) on pole. Worked nicely. Will experiment some with multiple doses. There is little doubt that sows in estrus are receptive to several

or more males. The male running with the sow (running mate) may share the

Dr. Kari (Corda) Elgmork, Dept. of Limnology, Univ. of Oslo, Blindern, Norway, arrived about noon with Tom Choate. Corda has been working on brown bear shares the sow may depend on the length of time she has been in estrus. bears in Norway for about 8 or 9 years - 500 sq.mile study area.

No sexual play preliminary to mating has been observed. Play among

Behavior:

non-breeding bears is, however, common and observed every evening.

Ingomar was at Trout Creek when we arrived (about 26:30 P.M.) and Scarface was present but showed no interest in "the sow". Inge attentive to the same light-colored sow he had with him last night. As on kept all the bears on the move and restless and it was not possible to get the previous night (see notes) he chased all bears out of the dump and main- an accurate count.

tained constant vigil over his sow. During the course of the evening 3 dif-

July 2. ferent boars attempted to mate with this sow. One of these boars was Cutlip

Drove to Lake Station en route to Moose, Wyoming. Met Jim Cole. and he twice led the sow off 100 to 200 yards and attempted to copulate. The We discussed plans for his recreation survey with Harry Reynolds, District sow was receptive to all the boars except Ingomar. Inge seemed able to sense Ranger. Jim will be surveying the back country taking interviews for the when the sow had been gone too long, would then stop feeding and move without Wildland Research Center, University of California, Berkeley, California, hesitation toward the "offending" pair. At the first sight of Inge the boar under Frank's supervision.

that was with the sow would release the sow and leave on the run. In each Arrived Moose, Wyoming, about 3 P.M. Met Dr. Elgmork and T. Choate. of four occasions Inge then joined the sow. Inge appeared to have her cowed.

Directed them to Olaus Murie's. They spent the night with us. She would resist his attempt to herd her back but slowly and methodically he would move her back and away from the other bears. In each instance he

attempted to position himself for mating but the sow would turn and sit and fend him off. He did not in any instance press his attentions but ambled off, clearing a wide path before him and again resumed feeding.

None of the large boars that attempted to copulate were successful. Cutlip on his second attempt mounted the sow and remained on her for 5 to 6 minutes before Inge drove him off.

There were approximately 45 to 50 bears present and only the sow with the ripped nose and 2 cubs defied Inge. She would not give ground and Inge did not press her as he did the other boars. A snap, a snarl or a swat from his forepaw was enough to scatter all other bears.

There is little doubt that sows in estrus are receptive to several or more males. The male running with the sow (running mate) may share the sow or he may attempt to keep her from other males as Inge did. Whether the boar shares the sow may depend on the length of time she has been in estrus.

Behavior No sexual play preliminary to mating has been observed. Play among non-breeding bears is, however, common and observed every evening.

Scarface was present but showed no interest in "the sow". Inge kept all the boars on the move and restless and it was not possible to get an accurate count.

July 2.

Drove to Lake Station en route to Moose, Wyoming. Met Jim Cole. We discussed plans for his recreation survey with Harry Reynolds, District Ranger. Jim will be surveying the back country taking interviews for the Wildland Research Center, University of California, Berkeley, California, under Frank's supervision.

Arrived Moose, Wyoming, about 3 P.M. Met Dr. Elgmark and T. Choate. Directed them to Olaus Murie's. They spent the night with us. July 3 Challenging Inge. As we prepared to back the trailer and trap to the pickup, the bear fought the trap, pulling at the heavy grill on the drop gate. He

July 3 from end to end of the 8' culvert rocking it violently. When we peered in, he hit Met Henry Tormingas in Jackson and went out east of Elk Refuge to a prairie falcon nest. Birds were feathering and we took a falcon and a tiercel.

July 4 When we stopped to weigh the bears on the load-o-meter scales, we visited with the Laubins, Mr. Chandler, an authority on Indian lore, and Dr. Rudd. Chandler has a number of grizzly bear necklaces. He thought that the base of the claw might be worth measuring as a criterion of age. Some of the claws he has are six inches long, the larger claws coming from the larger bears. Returned to Park evening of the 4th.

July 5. Trout Creek. Arrived at Trout Creek about 10 A.M. Both traps contained bear, one a large boar, the other an adult sow. Behavior: when he pulled on it with his foreclaws. The boar appeared to be completely broken off. The 2 two-year-old cubs that we captured and marked on 6/29 have of been spending the daylight hours at the dump. Earlier in the season they frequented the dump with the light sow that we also captured and marked on 6/29. The sow is no longer with her 2-year-olds and Maurice observed her make a pass at one of them a night or two ago. The offspring appeared to be wary and afraid of the sow. We suspect she has cast them off. The literature indicates that this normally occurs after hibernation when the young emerge as 3-year-olds. It is possible that the trapping experience hastened the separation, but we already have evidence that this may occur when offspring are yearlings or 2-year-olds. The large boar we captured was the shy dark boar that has been challenging Ingomar. As we prepared to back the trailer and trap to the pickup, the boar fought the trap, pulling at the heavy grill on the drop gate. Her

raced from end to end of the 8' culvert rocking it violently. When we peered in, he lunged at us violently and his huge forepaws and claws struck the gate with such force that we wondered whether he might snap the 1/2 inch cross-grilled gate. the face and neck and had a raw, inflamed bruise on the right buttock. When we stopped to weigh the bears on the load-o-meter scales, the huge bear was in a "towering" rage. In a matter of seconds he thrust his lower jaw through the 3" square grill, exerted the power in his huge neck (36 inch) and jaws and snapped off his canines and lower incisors. Pieces of teeth flew in all directions as he gnashed and twisted at the steel feeding grating. It was a fearful sight to see, particularly since we were helpless to prevent him from inflicting such injury on himself. In considerably less than a minute he had snapped all four of his canines off at the gums and broken off all of his lower incisors. His mouth frothed with saliva and blood. He continued to wrench at the door and actually "twanged" the massive steel door when he pulled on it with his foreclaws. The bear appeared to be completely immune to pain and so great was his anger and single-mindedness of purpose that he hardly ceased his attacks until we immobilized him with sucostrin. I expected the bear to fall on his muzzle before covering the 90 to 100. It was a depressing sight to see this bear in his prime destroy the weapons that would enable him to challenge other bears during the mating season. Among 40 other grizzlies that we have captured, none has shown such aggressiveness, such naked rage and such complete indifference to injury. No others have fought the trap in this manner. Even Ingomar remained docile and relatively quiet in the trap though he is the "boss" bear among all the bears at Trout Creek. I raced around the trap and slid into the driver's seat only to find the sucostrin quickly quieted the raging bear, we opened the gate, reached 3 feet into the culvert, grabbed him by the ears and slowly dragged him out. We had difficulty getting him into the net for weighing. He tipped the scale at 550 lbs. which is a good sized bear at this season of the year.

I administered 25 cc's of nembutal (250 mg. per cc) inter-pleurally and it put the boar asleep in a few minutes (see data sheets). This sedation gave us ample time to take all the measurements and data we required. He was scarred about the face and neck and had a raw, inflamed bruise on the right buttock. This could have been caused by fighting or it is possible the drop gate of the trap caught him as it descended.

While the boar was sleeping off the effect of the nembutal, we prepared a dose of sucostrin to administer to the sow in the other trap. I noticed the boar breathing rapidly and suspected the intense sun was affecting him. Maurice and I grabbed him by the hind legs and attempted to pull him into a small patch of shade beneath the trap. This accomplished we turned our backs and walked about 100 feet to the other trap where Mike was preparing equipment to immobilize the sow. I glanced back, saw the boar raise his head then get to his feet. We realized he might charge if the temperament he had shown earlier was any indication of his personality. There was no warning. Before we realized it, he was coming. Maurice got to the Ford with Mike behind him. I got behind the trap containing the sow which was still hooked up to the Ford. I expected the boar to fall on his muzzle before covering the 90 to 100 feet that separated us. He came on rearing to his full height, his forelimbs held high and then crashing to all fours only to lurch up again, with the sow so we could take off faster should the boar charge again. I set the movie camera up and waited. He appeared to have had a release and the tremendous power and effort he could muster and no doubt stimulated by was sleeping off the drug. After 10 or 15 minutes he raised his head. I started the camera. The next instant he was coming at us. I hauled camera and tried to get into the car as Maurice gunned it and we raced off with the boar in pursuit. This time he gained on us and was nearly opposite my door before we took the lead. He raced madly after us for nearly a quarter mile, standing up. I stepped out of the car, pulled the keys from my pocket,

It was evident he was in command of his musculature and his purpose was to destroy us. I raced around the trap and slid into the driver's seat only to find I could not get the car keys out of my tight Levi's without standing up. I stepped out of the car, pulled the keys from my pocket,

looked back and saw the bear standing on his hind legs at the back end of the trap less than 20 feet away.

My first thought was to race around the front of the car and attempt to enter from the other side. I realized Maurice and Mike were vulnerable as the bear could easily reach through the open door and rake them out like sardines in a can. I slid back into the driver's seat, inserted the key, started the car, slammed the door as we took off. The bear lunged forward, following only a few steps behind the car as we raced across the sagebrush for the road. Mike crawled to the back of the car and closed the rear door. For a few split seconds it appeared that the bear would close with us, but gradually we gained, finally pulling away after a close race of 200 to 300 yards. The bear looked like a giant berserk Frankenstein as he alternately reared to his full height and then dropped to all fours. Mass and inertia carried him forward in a grotesque swaying, lumbering motion that was frighteningly fast. There was once again no doubt of his intent. When we slowed down, he lowered his head and came on once more. Finally he turned and raced back to the pickup and traps. He raced around these but did not strike them. Suddenly his legs crumpled under him and his entire 550 lbs. fell directly on top of our gear.

We drove back to the scene and parked 150 feet from the now deeply breathing bear. I shot some movies and then Mike and I unhitched the trap with the sow so we could take off faster should the bear charge again. I set the movie camera up and waited. He appeared to have had a relapse and was sleeping off the drug. After 10 or 15 minutes he raised his head. I started the camera. The next instant he was coming at us. I hauled camera and tripod into the car as Maurice gunned it and we raced off with the bear in pursuit. This time he gained on us and was nearly opposite my door before we took the lead. He raced madly after us for nearly a quarter mile.

We slowed down and he came on. As before he turned and raced back to the trap and gear. Fearing he might do the equipment further injury we closed to within 150 yards of him and fired a cracker shell just over his head, hoping this would frighten him off. He whirled at the report and charged. Maurice ~~at this~~ gunned the Ford and several hundred yards down the road I fired a second shot. This only appeared to infuriate him; he charged the puff of smoke created by the cracker shell and then came on. We left him far behind and he turned and as we hoped headed for the hills not stopping until he reached the crest of the ridge and the timber. He lay down and remained there while we worked on the sow, his huge head resting on his forepaws and facing the truck and traps which were below his view. ~~it is certain he will always be at a great~~

~~disadvantage~~ The complete lack of fear and singleness of purpose of this bear ~~amazed us.~~ ~~dominant position by this mishap. It probably will affect his feed-~~

~~ing habits~~ There is no doubt that the bears come out of the nembutal nearly fully coordinated and as such are extremely dangerous. When coming out of the effect of the succinylcholine chloride, nerve transmission is still not reaching all the skeletal muscles and as a result they are incapable of co-ordinated or sustained movement. We cannot take the liberties we have taken in the past when using nembutal or any other anesthesia.

Maurice was ever ready with a 12-gauge sawed-off shotgun with a slug. I carried a 357 Smith and Wesson. Both of us realized we would have had little or no opportunity to use these effectively except in a last ditch stand. Our first thoughts are to escape, not to shoot, and thus like a ~~plans~~ policeman up against a hardened criminal we are at a disadvantage. Both the criminal and the bear know what they intend to do. We must shape our strategy after we see what the bear intends and after giving him every benefit of doubt. ~~clamped to~~ We went to work on the sow and put her out with sucostrin then administered 12½ cc's of nembutal inter-pleurally. The dose was heavy and ~~cation.~~

she developed light cyanosis. Breathing was depressed. Took dental impression and other data. All evidence was that the sow was in estrus and probably the running mate of the boar.

The boar we named "Ivan the Terrible" and there is little doubt this name will stick.

There is little chance that we will trap another bear that will behave in this manner, but we will weld a metal sheet over the rear gate of the trap to prevent any other bear from breaking its teeth as Ivan did.

Ivan was a young dominant bear that conceivably could have replaced Inge in time as the dominant boar of the area. What effect the broken teeth will have is difficult to say, but it is certain he will always be at a great disadvantage in challenging other large males and probably has been delegated to a sub-dominant position by this mishap. It probably will affect his feeding habits, but should not prevent him from getting ample food.

The sight of Ivan snapping his teeth like popcorn in a skillet will I am sure be always deeply impressed on my memory. It was a tragic thing to happen, but it forcefully illustrates the power and savageness of the grizzly - the "blind uncontrollable rage" that makes this great carnivore completely unpredictable.

For measurements and other data - see Form Sheet Bear No. 41.

Took dental impressions both upper and lower.

July 6. Trout Creek

Spent the morning writing notes, sorting equipment and making plans for future work. Arranged to give another talk on the bear work at Old Faithful on Friday evening.

Took the traps to the YP garage to have metal sheets welded or clamped to the back gate to prevent bears from breaking teeth. Received a call from the Unit concerning color marking paper I had submitted for publication.

Behavior: On the 25th of June this group returned to the Trout Creek dump for the first time. Arrived at Trout Creek about 7 P.M. The two-year-old dump bears were squatting as usual, along the fringes of the dump, seemingly bewildered since their mother cast them off. She stood over it until it recovered and then led it. A large brown boar was attempting to copulate with Inge's sow. He mounted her for about 4 minutes before Inge appeared and drove him away. The sow had been receptive to the brown boar but was not noticeably receptive to Inge, or else Inge was not sufficiently interested to press his suit. Inge trailed the sow around but did not attempt to mate. Both lay down side by side in the sage and grass for 10-15 minutes, then returned to dump. Inge proceeded to clear the dump of bears, leaving "his sow" to feed. He did not appear to be challenging the larger boars and sows. The sow tied the flipped nose and 2 cubs stood her ground as on previous occasions. Most of the bears gave him a wide berth but a few held their ground until he was quite close. Inge would then close the distance slowly and then gradually back the bear away. Sometimes this was as far as he went but he would bite and slap others after backing them down and some he would put to full chase. On 3 occasions during the evening he drove large boars into the water and fought them until they retreated. "Shirley", a large boar we marked with red loops and white tail in 1959 stood his ground. Inge finally put him to flight with a large gash in his buttocks. as of Bear No. 31 - 1960.

A large number of bears came in and Inge kept all of them in a state of tension and unrest. For list of bears see notes.

Lonesome, a yearling in 1959 took up with a large dark sow and single cub and ran with them during the summer and fall and we suspect hibernated with the sow and cub also. Lonesome was an orphan when we first observed her.

On the 25th of June this group returned to the Trout Creek dump for the first time. They have been coming in regularly ever since. This sow defended her cub so vigorously last summer after we shot it with sucostrin. We were unable to retrieve the cub. She stood over it until it recovered and then led it off in the darkness.

The collared 3-4-year-old came in alone. We have not seen the litter mate (half collar) that we marked June 24. Previous to catching and marking one of these; we never saw them separated.

The collared bear was timid and wary. A two-year-old chased him and he left the dump on the run and never returned while we were present.

Observations to date indicate that the offspring of aggressive sows tend to be aggressive. This may be due partly to heredity, but the behavior pattern set by the sow apparently has a direct influence.

Examples:

1. Sucostrin kid and sister and mother (all very aggressive).
2. Sow with the raked nose and her two cubs. This sow defies Inge and her two cubs are aggressive.
3. Orphan cubs become very timid and wary and this experience early in life may well affect their personalities throughout life.

Trout Creek orphans of bear No. 23 - 1959

Old Faithful orphans of Bear No. 31 - 1960.

Temporarily Recognizable Bears
(Family grouping, pelage, place, temporary injury, etc.)

Mac West (2 dark cubs) and hit in dump third shot.
Orange Stripe of
Ripped-nose Sow (2 light cubs) in. Seen recovered
Sow with white-faced cub
Black sow with black cub
Grizzled sow with grizzled cubs

Trout Creek Census - July 6, 1960

July 7, 1960

1 sow 2 cubs
 1 " 2 " and made further arrangements for work on trap. Arrived
 1 " 2 " at Trout Creek about 1 cub. The two 2-year-old dump bears were present.
 1 " 1 " Liked across the flat and over the ridge to the north. The
 1 " 3 yearlings did other things for lying over the ridge. All nearby
 1 " 3 " bear trails in all directions. Noted many places where the grizzlies
 1 " 1 yearling had been. 1 " , 1 2-yr-old
 4 2-year-olds
 4 3-4-year-olds
 1 sow, 2 3-4-year-olds.

32 Adults of species. In some places large areas were dug up while
 in other Total of 69 bears: 8 cubs plants with one scoop of the forepaw.
 8 yearlings
 It is evident that the bears 5 2-year-olds Lomatium spp. probably by scent.
 6 3-4-year-olds
 Digging was not haphazard but 42 Adults one or several Lomatium plants were
 present.

Marked Bears Observed

In addition to Lomatium the grizzlies were eating the growing
 tip from the Evert's thistle (Cirsium). Many of these were nipped
 off. Occasionally the flower buds were eaten.
 We hiked about 2 miles and were in case we came suddenly upon
 several grizzlies lying in the sage. The country is open for many
 miles. Small springs and streams flow through the channels in
 the valleys.
 Shot at a cub at the dump. Biggest Boar (59) hit him in the foot.

Shot at 30 feet unmarked but Recognizable Bears. Used 15 mg. on second

shot at same distance. Hit Scarface but it had no effect. Sow took cub
 and litter mate away. Lost Cutlip.
 Peg-leg
 Sow with 3 yearlings Collared one (unmarked) in 1959, but had lost
 its ear markers and retained its ear tags.
 Old Mose (White-Claw)

Temporarily Recognizable Bears

(Family grouping, pelage, place, temporary injury, etc.) Missed with

first shot, glanced off side Mae West (2 dark cubs) and hit in rump third shot.
 Orange Stripe ♂
 Ripped-nose Sow (2 light cubs) hit. Soon recovered
 Sow with white-faced cub
 Black sow with black cub
 Grizzled sow with grizzled cubs

and went off with sow and litter mates. Retrieved only one dart. Shot yearling
July 7, 1960

Wrote notes and made further arrangements for work on trap. Arrived
July 8, 1960
at Trout Creek about noon. The two 2-year-old dump bears were present.

Hiked across the sage flats and over the ridge to the north. The
bear trails finger out in all directions. Noted many places where the grizzlies
had been digging for roots and tubers.

The plants most frequently dug were the Lomatium. Collected some
for determination of species. In some places large areas were dug up while
in other places the bears dug single plants with one scoop of the forepaw.
It is evident that the bears can detect the Lomatium spp. probably by scent.
Digging was not haphazard but only where one or several Lomatium plants were
present.

In addition to the Lomatium the grizzlies were eating the growing
tip from the Evert's thistle (Cirsium foliosum). Many of these were nipped
off. Occasionally the flower buds were also consumed.

We hiked about 2 miles and were armed in case we came suddenly upon
several grizzlies lying in the sage. Saw none. The country is open for many
miles. Small springs and streams flow thru sedge and moss-lined channels in
the valleys.

Shot at a cub at the dump. Dart went low and hit him in the foot.
Shot at 30 feet using 10 mg. of sucostrin. No effect. Used 15 mg. on second
shot at same distance. Hit cub in rump but it had no effect. Sow took cub
and litter mate away. Lost both darts.

Sow with 3 yearlings arrived, one we marked in 1959, but had lost
its ear markers and retained its ear tags.

Shot at it 3 times using 30-30 and 32 mg. of sucostrin. Missed with
first shot, glanced off side of face on second shot and hit in rump third shot.
Knocked the yearling down but not out and we could not get him. Soon recovered

and went off with sow and litter mates. Retrieved only one dart. Shot yearling drug took effect and the cub crumpled and slid down the steep face of the dump, at 30 to 40 feet.

The sow was reluctant to leave and did so only after I fired two cracker shells, July 8, 1960

Left early for West Yellowstone. Purchased materials for traps and did other shopping. Made arrangements for flying over the Park. All Newby from Bozeman will fly us at \$24.00 per hour in a Cessna 175, picking us up at the West Yellowstone field.

Gave bear lecture at Old Faithful. There were 400 or 500 people present and lecture was well received. Many stayed to ask questions.

Drove through the Campground and located 2 of the 3 grizzly cubs that were orphaned when Maurice killed the sow - Bear No. 31. We followed the 2 cubs around with a flashlight and approached within 10 feet. Believe we will be able to shoot them with the Cap-chur gun.

While I was lecturing, Maurice made a count at Rabbit Creek. Tallied 27 bears, two marked from last year. One of these was Old Geraldine, No. 16, and the other was a sow that had a cub. This marked bear was sighted April

29, 1960, by a man from West Yellowstone. She had one cub. We questioned him when we were here in May and believe his observation to be accurate.

Made a count of 14 bears at West Yellowstone dump - all adults. Several of these were very large animals.

Slept along the road and returned to Station morning of July 9. July 9, 1960

Repaired traps by placing galvanized sheeting on the drop gates.

Behavior: Believe this will solve the problem of bear breaking teeth on iron grating.

Dr. Blomgren and son arrived just as we were preparing to leave for Trout Creek. Arrived at dump about 4:30 P.M. The sow with 2 cubs was just arriving. We had attempted unsuccessfully to take one of her cubs on July 7.

We positioned the car at the dump and waited for the sow. Maurice shot at about 40 feet, using 12 mg. of sucostrin. After 4 or 5 minutes the

drug took effect and the cub crumpled and slid down the steep face of the dump. The sow was reluctant to leave and did so only after I fired two cracker shells, one of which struck the bear. It took 2 more shots from the 357 to move her far enough that Maurice and I could dash down the slope and haul the cub to the car. As the cub struggled and bawled, the sow rose on her hind legs and twice we thought she was coming back on the run. Mike brought the pickup down the road and we placed the cub in the holding cage and drove off.

Cub was fully recovered in 5 to 6 minutes. Waited 40 minutes then shot cub with another 12 mg. of sucostrin. Followed this immediately with 2 cc. of nembutal injected inter-pleurally and then when cub appeared recovering from sucostrin administered successive doses of 1 cc. of nembutal in 2 doses.

Cub weighed 70 lbs. - ♂. Took measurements and dental impressions (see date sheet). Cub was under the effect of the nembutal approximately 4 hours and 15 minutes. Held in cage overnight for release following evening.
July 10, 1960.

Took Paul Blomgren, Sr., to 3 mile hole for some fishing. The large red salmon flies and the smaller yellow bodied ones were out by hundreds. The fishing was terrific. Used natural and artificial salmon flies. Seemed to strike either equally well. I caught 64 trout releasing all but five. Hiked downstream along the river until the canyon closed in and I could go no farther. Water is very rough. Paul Sr. had difficulty in hiking out of the canyon.

Behavior:

Maurice took the cub to Trout Creek about 6 or 7 P.M. and released it. The cub took off on a dead run, passed its mother and litter mate which were nearby. The sow recognized her cub and took off after it, but it kept running and she gave up the chase. The cub appeared to be too disturbed and frightened to recognize its mother.

for nearly. When we captured the cub on the evening of June 9, the sow and litter mate wandered around the dump area looking for him. Twice we observed the sow return to the dump where the cub had fallen when sucostrin took effect and smell all around the spot. Sow wandered around sniffing the air and ground for nearly 2 hours. Finally she began eating, but left the area early and started downstream. About 1/4 mile out she turned back toward dump and walked several hundred yards in that direction. She then switched directions and went out again. Appeared restless and uncertain and reluctant to leave without her cub. Ingomar bred his sow. Maurice observed this and recorded notes.

July 11, 1960 by different from the past several weeks. Inge apparently arrived

without. Bears in both traps at Trout Creek - one a large boar weighing 415 lbs. and the other a sow weighing 300 pounds. Did not weigh these bears on the load-o-meter scales so had to guess the sucostrin dosage. Administered 70 mg. to the boar. This immobilized him long enough to weigh and inject 15 cc. of nembutal. It was apparent the nembutal was not having the desired effect so a second dose of 3 cc's was administered intra-pleurally 4 minutes later. Bear got to its feet and staggered off. Six minutes later it was running and appeared little affected by the drug. We had to move the car and managed to get part of our equipment under cover. Fortunately the bear did not charge - we were in a precarious situation for a few minutes. Were unable to mark this boar or get a single measurement. Administered 50 mg. of sucostrin to the sow. It failed to immobilize her. Forty-two minutes later we gave her a 60 mg. dose. This was effective and after weighing was followed with a 15 cc dose of nembutal followed 14 minutes later with 5 cc's. Took data and dental impressions. Bear tore the galvanized sheeting we put on the drop gate. Managed to break her upper and lower left incisors on the grid grating. Remained under effect of nembutal

1 Adult

1 large sow (given our numbers) with one (1) very large cub.

for nearly 4 hours. Recovery time 3 hours and 50 minutes. This is Bear No. 44.

Arrived at Trout Creek about 6 P.M. Took Stanley Hage, an engineer from Belgium to view the bears.

Behavior: The cub had a white collar half encircling its neck and

The two dump 2-year-old bears were present as well as Inge and a few other bears. The cub we released yesterday evening was back with its mother and litter mate.

Inge was feeding, digging deep into the dump and all evening appeared interested only in food. He did not threaten or chase the other bears, a behavior markedly different from the past several weeks. Inge apparently arrived without his sow and when she appeared he did not show any interest in her but continued feeding. He did, however, leave with his sow. Maurice observed him breed the sow last night.

As bears came into the dump they shied wide of Inge, showing him the respect he had formerly demanded but when he did not stir them up during the course of the evening, they gradually encroached on him and ate side by side.

So far during the summer, as far as we have been able to observe, Inge has mated with only one sow. Other large boars such as Cutlip and Searchest attempted to mate with "his sow". He defended her but did not seek out other sows. Neither Cutlip, Searchest, or some of the other large boars appeared to have a "steady sow" that they were running with. On the other hand, at least two other large boars appeared to be strongly paired with sows and were frequently seen with them. A large black boar that was attached to a sow was never observed to attempt to copulate with other sows at the dump.

It seems probable that the large unattached boars (probably the older ones) have not managed to get sows and they are the ones the breed or attempt to breed promiscuously while at the dump.

1 Adult

1 large sow (green ear markers) with one (1) very large cub.

1 Sow (Geraldine - green ear markers)
2 Adults
A ew sow appeared with a white-collared cub only half as large as most of the other cubs. The white collar encircled his neck.

1 Large brownish male ("Barbers") both seen alone
The white-faced sow with the 2 white-faced cubs arrived with another white-collared cub in tow. This cub had a white collar half encircling its neck and was only half the size of her cubs. It seems probable that this small cub got separated from his mother and litter, etc. He probably belongs with the other white-collared cub. It was too dark to determine whether the 2 white-collared cubs got together with their mother as a single family group.

Believe the breeding season will soon be over.

July 12, 1960

Wrote notes, worked on traps and re-weighed both culvert traps. Set up a weighing station at Trout Creek where we could level the scales and obtain more accurate weights.

Made arrangements to go to Old Faithful to try and capture the 3 orphan grizzlies and to make a count at Rabbit Creek.

Dr. Jess Lowe and two sons, Eugene and Richard, stopped by and will go out to Trout Creek with us tomorrow morning.

Old "Notchear" was the dominant bear at Rabbit Creek in 1959. We

Rabbit Creek Count

observed no fighting or mating among the Rabbit Creek bears. The mating

Maurice and John

1 Sow, 3 cubs (sow with green ear marker and red neck marker)

3 Adults

There are 4 huge bears among the 31 bears we observed at Rabbit Creek.

1 Large black bear, big scar on left side and notched left ear. Scar on both sides of face (Notchear).

2 Adults - grizzled bears, yellowish brown tint - one with orange stripe.

1 Sow - 3 cubs. 2 cubs dark with necktie, 1 lighter cub.

1 Adult - shedding heavily

1 Giant bear - dark - torn upper lip, dark, scar over left eye

1 Adult

1 Large sow (green ear markers) with one (1) very large cub.

1 Sow (Geraldine - green ear markers)

2 Adults

1 Large brownish male ("Earless") both ears almost gone.

Behavior:

The largest black boar (giant boar) at Rabbit Creek appeared quite timid.

All the bears are in general more timid than those at Trout Creek. This is partly due to the fact that we don't visit them regularly and they seem more alert in the wooded area around Rabbit Creek than in the open country.

All three bears that we marked at Trout Creek in 1959 were accounted for - the markers either fully or partially intact. They are:

The large sow - 435 pounds

Geraldine - dump bear

Sow - now has 3 cubs.

The 435 pound sow had apparently not had cubs prior to 1959 when we examined her and weighed her. (She probably was in excess of 5 years old when she had her first cub). This was the largest cub we have seen this spring.

Old "Notchear" was the dominant bear at Rabbit Creek in 1959. We observed no fighting or mating among the Rabbit Creek bears. The mating season may well be over.

There are 4 huge boars among the 31 bears we observed at Rabbit Creek. These same boars were present in 1959. They are:

Notchear - perhaps a 1,000-lb. bear in fall

Giant Boar - a tremendous dark bear with very large head and prominent ears, 1,000-1,200 lbs.

Earless

Black sow with 1 black cub

Scarneck and 2 cubs

Ripped-nose sow and 2 cubs

Gutlip

Sow with 2 collared cubs

1 Adult

Old Blue No. 30

July 13. Trout Creek

Jess Lowe, his two sons, and Ross Bulkley accompanied us to Trout Creek.

Had captured a 185 pound sow. The first dose, 34 mg. of succstrin, 1 Adult bear had little or no effect. Waited 10-12 minutes and administered 40 mg. This No. 35 immobilized the sow sufficiently to inject 10 cc's of nembutal. Got sow in net and weighed her. She began fighting and chewing net. Lowered bear to

ground. Maurice and I had difficulty holding her until we could inject another 5 cc's of nembutal. This finally took effect. Had the bear been large we could not have held her and would have probably lost her. The nembutal has precipitated and I suspect has lost strength. She received 1 cc. for every 10 lbs. of body weight - the heaviest dose we have yet administered. This knocked her out for $3\frac{1}{2}$ to 4 hours. See data sheet.

Trout Creek Census

Inge
Ivan's sow
Grizzled sow with 2 grizzled cubs (No. 43, Paul marked)
4 - 3 to 4-year-olds
1 White-faced sow with white-faced cub
1 Adult
1 Sow - 2 yearlings (1 marked)
2 2-year-old dump bears
1 Sow No. 34
1 2-year-old
1 2-year-old (yellow ear marker)
1 Black sow with 1 black yearling with "Lonesome" (2-year-old)
1 Sow with Sucostrin Kid's sister (yearling)
1 Pegleg
Scarchest
1 Adult
Bear No. 33, large brown boar
1 Adult - large black boar
1 " " " "
1 Sow - 2-three-year-olds, 1 No. 39
Scarface
Highpockets
Old Mose
Shirley
Inge's sow
Black sow with 1 black cub
Mae West and 2 cubs
Ripped-nose sow and 2 cubs
Cutlip
Sow with 2 collared cubs
1 Adult
Old Blue No. 30

Behavior:

1 Adult - large boar

1 " was in "the Stout Creek dump with 7 or 8 other bears when we

2 Adults

1 Green sow and 3 yearlings as not present. Ivan's sow came in but

1 Adult boar

Inge showed interest. She appeared to be in estrus the day we captured

No. 35

her (July 5) No. 10. Apparently she is not now in estrus as neither Searchest or

other large boars showed any interest. Not Present.

Big Foot No. 27

Sucostrin Kid No. 36: two weeks, chased Searchest frequently and

Collared Bear

several times "backed" marked No. 32. Tonight he paid no attention to

No. 39 Sow of dump bear

Searchest No. 40, Ivan and his attention to eating.

Old Yellow - not seen in 1960

Andy - not seen in 1960

Purple Thumb sow (never seen)

other bear Bruno - not seen in 1960 for 55 minutes, occasionally lifting his head

to scent the air for a few seconds. Census

1 sow 2 cubs

up and showed no interest 2 " her. Searchest who had earlier tried to mate with

1 " 2 "

this sow 1 " showed no interest. Inge mated with her July 10, the only mating

1 " 1 cub

by Inge that we observed. 1 " appears that this sow is no longer in estrus. The

1 " 3 yearlings

time during which she has 3 " receptive to males as observed at the dump was at

1 " 1 yearling, 1 2-year-old

least 11 4 2-year-olds

1 sow 2 3-4-year-olds

5 3 to 4 year-olds in those of previous night that breeding season is

26 Adults

about over. Total of 67 bears: 10 cubs

Two small cubs approached too closely. Their mother and

another sow attempted to chase 5 2-year-olds

7 3 or 4-year-olds past us. This they

37 adults

succeeded in doing and the cubs took off at a run.

Marked bears observed:

No. 43 38 28

35 15 30 into dump and 3 sows

10 5

34 29 using their pursuit only when

12 33

42 39 this behavior last year

26 6

37 7 as dangerous to their cubs and will

The action of the sows is spontaneous. It is quite

in excellent condition and took off on the run. know and recognize other bears and it is probable

Creek are well known to each other.

Unmarked but recognizable:

Scarface immediately started

Old Mose

Highpockets was 3 or 4 hundred

3 White ones

Mae West usually the sows recog-

Rip Nose

Sow with collared cubs

Pegleg

Searchest that the bears

Grizzled sow with grizzled cubs

Black sow with black cub

Sow with white-faced cub

Behavior:

The bears so chased go into full flight with the sows in pursuit. Inge was in the Trout Creek dump with 7 or 8 other bears when we arrived about 6:45 P.M. Inge's sow was not present. Ivan's sow came in but

July 14, Trout Creek
Inge showed no interest. She appeared to be in estrus the day we captured her (July 5). Apparently she is not now in estrus as neither Scarchest or ing 355 lbs. Administered 75 mg. of succostrin and 32 cc. of nembutal. Bear other large bears showed any interest in her. was out for 3 3/4 hours (see data sheet).

Inge, during the past two weeks, chased Scarchest frequently and Shot the "90 pound cub" No. 26 at the side of his mother. First several times backed him out of the dump. Tonight he paid no attention to dart contained 35 mg. of succostrin and was ineffective. Shot litter mate with Scarchest, but directed his attention to eating. will parallel the movement a similar dosage and it too was ineffective. Bear became wary and left dump.

Early in the evening Inge lay down alone about 100 yards from the Returned and Maurice hit No. 26 in neck with 43 mg. of succostrin. This took other bears and slept and rested for 55 minutes, occasionally lifting his head effect in 2 minutes. We frightened the sow and other 2 yearlings and then to scent the air for a few seconds. When Inge's sow came in, Inge did not get seized the downed yearling and hurriedly put him in the culvert trap. He up and showed no interest in her. Scarchest who had earlier tried to mate with was much heavier than we had estimated - weighed 145 lbs. this sow also showed no interest. Inge mated with her July 10, the only mating

Waited 40 minutes then shot cub again with 40 mg. of succostrin. This by Inge that we observed. Appears that this sow is no longer in estrus. The put him out and we injected 13 cc's of nembutal. time during which she has receptive to males as observed at the dump was at

This cub had broken four inside upper incisors last year in the least 11 or 12 days. were visible to all of us. Recognized Inge by his size holding cage. They had not yet been replaced; however tooth replacement was

and color. Observations confirm those of previous night that breeding season is advanced in comparison to other yearlings we have worked with (see dental impressions). about over.

Two small cubs approached our car too closely. Their mother and Dental formula another sow attempted to chase them away by running past us. This they

Nembutal dose was heavy and slight cyanosis developed. succeeded in doing and the cubs took off at a run. then over to Rabbit Creek

In approximately 11 months this bear gained from 90 to 145 lbs. - an increase of 55 lbs. For other growth data see data sheets for 1959 and and chased him out, ceasing their pursuit only when the bear was 3 or 4 hundred 1960.

July 15, 1960
yards away. We witnessed this behavior last year. Apparently the sows recognize some bears as dangerous to their cubs and will not tolerate them nearby.

Released yearling No. 26 from trap after holding overnight. He was The action of the sows is spontaneous. It is quite evident that the bears in excellent condition and took off on the run. know and recognize other bears and it is probable that all the bears at Trout Creek are well known to each other.

Drove to West Yellowstone. Did some shopping and made a flight over the bears so chased go into full flight with the sows in pursuit Park with Al Newby in a Comanche and in surrounding country and the cubs bringing up the rear.

July 14. Trout Creek

and buffalo. The small meadows were a brilliant green in the late evening light. Only one of the two traps contained a bear - an adult male weighing 355 lbs. Administered 75 mg. of sucostrin and 32 cc. of nembutal. Bear appeared to be no ground cover at all. Bear was out for 3 3/4 hours (see data sheet).

We spotted our first bear far out in Hayden Valley travelling in to the dump from the north. The bear trails lead across the open valley and into the timber at the far north edge. A well-worn trail paralleled the encampment and was ineffective. Bear became wary and left dump. Returned and Maurice hit No. 26 in neck with 43 mg. of sucostrin. This took effect in 2 minutes. We frightened the sow and other 2 yearlings and then seized the downed yearling and hurriedly put him in the culvert trap. He was much heavier than we had estimated - weighed 145 lbs.

The plane frightened the bears and they took off on the run. We waited 40 minutes then shot cub again with 40 mg. of sucostrin. This put him out and we injected 13 cc's of nembutal. Some individual bears from the air. Maurice made out the colors on Ivan's bear and the markers were visible to all of us. Recognized legs by his size and color. Speed was too great, about 75 mph., to see color markers on most advanced in comparison to other yearlings we have worked with (see dental impressions).

Maurice spotted the yellow bear we marked early in the season. This is the first time we have seen this bear since we marked him. Nembutal dose was heavy and slight cyanosis developed. Flew the south edge of Hayden Valley and then over to Rabbit Creek. In approximately 11 months this bear gained from 90 to 145 lbs. - an increase of 55 lbs. For other growth data see data sheets for 1959 and 1960.

There appears to be very little first-class grizzly habitat. The size of the habitat appeared to be directly related to the size of the population of bears. Hayden Valley was by far the largest area and it contains the largest bear population. Cub weighed 30 pounds. in excellent condition and took off on the run.

There was very little habitat at West Yellowstone except along the Madison River. Maurice brought in a fourth grizzly. Bear No. 145. Captured and

Dental formula $\frac{1}{3} \frac{1}{1} \frac{3}{1} \frac{2}{3}$

Nembutal dose was heavy and slight cyanosis developed.

Flew the south edge of Hayden Valley and then over to Rabbit Creek. In approximately 11 months this bear gained from 90 to 145 lbs. -

an increase of 55 lbs. For other growth data see data sheets for 1959 and 1960.

There appears to be very little first-class grizzly habitat. The size of the habitat appeared to be directly related to the size of the population of bears. Hayden Valley was by far the largest area and it contains the largest bear population. Cub weighed 30 pounds. in excellent condition and took off on the run.

There was very little habitat at West Yellowstone except along the Madison River. Maurice brought in a fourth grizzly. Bear No. 145. Captured and

Released yearling No. 26 from trap after holding overnight. He was in excellent condition and took off on the run.

Drove to West Yellowstone. Did some shopping and made a flight over Park with Al Newby in a Cessna.

The Nez Perce pass region was beautiful and we saw hundreds of elk and buffalo. The small meadows were a brilliant green in the late evening light. There were tremendous stretches of lodgepole and in many areas there appeared to be no ground cover at all.

We spotted our first bears far out in Hayden Valley travelling in to the dump from the north. The bear trails lead across the open valley and into the timber at the far north edge. A well-worn trail paralleled the escarpment and tree line, going generally southwest.

It appeared that few if any grizzlies spend the day in the open grass-sage of the Hayden Valley and very few trails entered the islands of timber. Maurice and Frank began trapping operations again.

The plane frightened the bears and they took off on the run. We buzzed the dump and they scattered in all directions. We could recognize some individual bears from the air. Maurice made out the colors on Ivan's sow and the markers were visible to all of us. Recognized Inge by his size and color. Speed was too great, about 75 mph., to see color markers on most of the bears.

Maurice spotted the collared bear we marked early in the season. This is the first time we have seen this bear since we marked him. Flew the south edge of Hayden Valley and then over to Rabbit Creek and on to West Yellowstone.

There appears to be very little first-class grizzly habitat. The size of the habitat appeared to be directly related to the size of the population of bears. Hayden Valley was by far the largest area and it contains the largest bear population.

There was very little habitat at West Yellowstone except along the Madison River.

Much about relationship of bears to habitat and food can be learned at Pelican Creek. This bear had been captured and marked at Trout Creek on from flights. Can be a tremendous aid in determining carrying capacity and population density in relation to specific types of habitat.

Worked on the cub first, re-immobilizing her with 13 mg. of sucostrin,

Census

Followed by 4 oz's of nebutal. Was out for 3 hours and 2 minutes. Marked

Made a count at West Yellowstone at about 1 A.M. Tallied 12 bears, her as Bear No. 49.

all but 2 were adults. Saw 2 2-year-olds which we did not see on previous

Immobilized Bear No. 40 (recapture). She had been captured and census. This brings the population count up to 14.

marked July 1. Weighed 175 pounds at that time. Now weighed 200, having gained 25 lbs. during a period of 25 days. Bears are just beginning to put on and then leaving. Saw no sows with cubs. weight. Will gain rapidly all during August.

July 16, 1960

Saw data sheet.

Drove back to Missoula.

Immobilized the black sow and gave her No. 48.

July 25, 1960, Trout Creek

worked on 4 bears. It was a busy day.

Maurice and Frank began trapping operations again.

Put a red neck marker on Bear No. 40. Cut a slit just barely through

Andy, Bear No. 4, was trapped by rangers at Pelican Creek. This skin and ran plastic under a 1/2" width of skin. Put powdered sulfa on cut, was the first time this bear was sighted in 1960. Maurice and Frank remarked

him, took measurements and dental casts and released him. He was 25 pounds

Also placed a red plastic neck marker on bear No. 48. Cut slit the heavier than last year - weighed 265 lbs.

opposite direction. The cut was made just before hitting muscle tissue. Believe this may solve festering problem and provide attachment for transmitters. Frank and Maurice had set the traps at Trout Creek.

Shaved hide clean with scissors before making slits in skin.

Neck marker was in good shape. There was still some slight festering

but a radio transmitter could have readily been attached. I replaced one broken

Photographed all 4 grizzlies.

rivet and added a third.

July 27.

July 26, 1960. Trout Creek

Set two traps at Trout Creek 7 P.M. The following marked bears

Both traps caught bears. One was a recapture, Sow No. 40, a 3 to 4- were in traps between 6 and 7 P.M.

year-old bear (estimate of age). The other trap contained the black sow and

No. 37 - white loop - green tip

her black cub was nearby. Maurice shot the cub with 15 mg. of sucostrin using

No. 43 - blue loop - red tip

the Cap-chur gun. Took 1 minute to put her out. Cub weighed 60 pounds.

We weighed bears on the load-o-meter scales and had immobilized the cub when Park rangers brought in a fourth grizzly, Bear No. 45 recaptured and

at Pelican Creek. This bear had been captured and marked at Trout Creek on July 13 when Jess Lowe was here. We named her Jess.

Worked on the cub first, re-immobilizing her with 13 mg. of sucostrin, followed by 4 cc's of nembatal. Was out for 3 hours and 2 minutes. Marked her as Bear No. 49.

Immobilized Bear No. 40 (recapture). She had been captured and marked July 1. Weighed 175 pounds at that time. Now weighed 200, having gained 25 lbs. during a period of 25 days. Bears are just beginning to put on weight. Will gain rapidly all during August.

See data sheet.

Immobilized the black sow and gave her No. 48.

Worked on 4 bears. It was a busy day.

Put a red neck marker on Bear No. 40. Cut a slit just barely through skin and ran plastic under a 1/2" width of skin. Put powdered sulfa on cut.

Also placed a red plastic neck marker on bear No. 48. Cut slit the opposite direction. The cut was made just before hitting muscle tissue. Believe this may solve festering problem and provide attachment for transmitters. Shaved hide clean with scissors before making slits in skin.

Photographed all 4 grizzlies.

July 27.

Set one trap at Trout Creek 7 P.M. The following marked bears were in dudp between 6 and 7 P.M.

No. 37 - white loop - green tip
No. 38 - white loop - blue tip
No. 43 - blue loop - red tip
No. 7 - green sow.

Ranger retrapped marked bear No. 4 "Andy" at Pelican Creek. Same spot where was trapped July 25. Held him in t/rap overnight to be released.

July 29. Took family to 30 mile hole in canyon for fishing. Salmon flies were still out. Fishing was very good. A yearling male weighing 150 pounds.

Dean Blomgren and wife arrived. 1 kg. of suscostrin and 5 cc. of neobarbital. Bear

July 28, 1960. Trout Creek but lifted head and got up suddenly and ran off.

Marked bear No. 50, a 270 lb. male. Took usual data and measurements.

Rangers trapped a large male at Pelican Creek campground. Severely bent 2 1/2" steel bars. Another bar 12 bent would have allowed the bear to get its head out. Rangers shot bear in trap. It was a large black male weighing 625 lbs. Bear putting on fat - 2" across rump. Broke canines and some incisors fighting trap. Skinned bear, fleshed carcass and took organs and tissue (see data sheets). Ken Greer, Montana Fish and Game Dept., picked up carcass and hide and will process them. Family group unmarked. We should

be able to Hauled Andy (No. 4) to Rabbit Creek and released him there.

Orphan cubs at Rabbit Creek have not been observed lately.

Behavior: for quarters for trapping crew at Old Faithful.

No. 7, a sow with yearlings, was observed by Maurice. Yearlings are suckling and sow appears to be lactating. extensive to warrant repair.

Frame bet. Drove to Harry Reynolds and took family. Made plans for transporting a grizzly across Yellowstone Lake.

Little Harry drove to Gardiner to make a count. Mr. Robert R.

Robinson, Observed: 1 yearling is equipment supervisor and will handle sale of car for us. 2 2-year-olds 3 3 or 4-year-olds 1 sow with 1 cub

Send Bill of Sale without name of New Owner to Robinson. Car will Total 8 bears. (Did not see marked sow and 2 cubs). be sold end of September.

Little Harry fell asleep at wheel returning from Gardiner and wrecked the Pontiac at south end of Swan Flats. The Y.P. Co. hauled car 8 miles to Mammoth. Harry was not injured. Accident occurred about 2 A.M. morning of July 29. Arrived at Canyon Ranger Station about 9 P.M.

Fixed up plans with Wes and Maurice for next two weeks' work. Wes with Mike, Pete and panel will trap at Rabbit Creek and West Yellowstone.

July 29.

Captured and marked bear No. 51, a yearling male weighing 150 pounds. Maurice and Wes administered 30 mg. of sucostrin and 6-cc. of nembutal. Bear was apparently anesthetized but lifted head and got up suddenly and ran off.

Followed him up with Cap-chur gun and hit him with another 30 mgs. of sucostrin. Held bear with noose and hog tied him. Administered another 8 cc's of nembutal intrapleurally. Bear began to bite before last dental impression (molars) was taken.

Fortunately this bear was small. Could have given considerable trouble had it been a large bear.

Bear No. 51 is litter mate of No. 6 (green sow's cubs). A light colored yearling is the only member of this family group unmarked. We should be able to shoot it on the dump.

Made arrangements for locking gate at Trout Creek for getting wood supply and for quarters for trapping crew at Old Faithful.

Went to Mammoth with Harry Reynolds Sr. to check on Little Harry and survey damage to Pontiac. Damage was too extensive to warrant repair. Frame bent, right fender and headlight bashed in, head jarred loose. Will process Pontiac for bid as follows:

Send copies of bid for distribution locally to Mr. Robert R. Robinson, Box 35, Mammoth. He is equipment supervisor and will handle sale of car for us.

Send Bill of Sale without name of New Owner to Robinson. Car will be sold end of September.

Family left for Jackson Hole. Frank accompanied them. Will have to make arrangements for another vehicle.

Arrived at Canyon Ranger Station about 9 P.M.

Firmed up plans with Wes and Maurice for next two weeks' work. Wes with Mike, Pete and panel will trap at Rabbit Creek and West Yellowstone.

Maurice and I will take cubs and yearlings on the Trout Creek dump and check bear trails throughout Hayden Valley. Frank and Little Harry will photograph and work on method of attaching radio equipment to bears.

Have many interruptions in our work but will try to follow schedule.

Bears were killed in Gardiner August 1960. One of these was bear No. 19, a 2-year-old weighing 339 pounds. Saw Grey has specimen at Museum. Another small bear was killed and the hunter dumped carcass over river bank at south end of airfield. Says skull is there in a basket. Will check. Barker suspects that a number of grizzlies are poached each spring and hides sold. Says one man made an offer of \$425 for a large hide and skull. This area and W. Yellowstone should be checked carefully for Trout Creek hills.

<u>Date</u>	<u>Activity</u>
Monday, 1	Trap Rabbit Creek - Trails and counts Trout Creek
Tuesday, 2	Ditto
Wednesday, 3	Trap Rabbit Creek Shoot cubs and yearlings, Trout Creek
Thursday, 4	Trap Rabbit Creek Photograph and count at Trout Creek
Friday, 5	" " " Follow trails and make counts at Trout Creek
Saturday, 6	
Sunday, 7	
Monday, 8	Trap West Yellowstone Shoot cubs and yearlings Trout Creek
Tuesday, 9	Ditto Photo. Trails and Counts " "
Wednesday, 10	Ditto Shoot cubs and yearlings, Trout Creek
Thursday, 11	Ditto Ditto
Friday, 12	Ditto Ditto
Saturday, 13	
Sunday, 14	
Monday, 15	Trap Gardiner Shoot cubs. Trout Creek
Tuesday, 16	Ditto Shoot cubs, Trout Creek
Wednesday, 17	Dr. Taber and Dr. Bourliere arrive

Behavior:

Harry Reynolds and I were told that a large male black bear killed in the pickup kept an eye on the sow, we administered nardal. Put cub in and ate a cub at Mammoth. Check this info with 2 of the rangers' wives. The holding on a and drove off. Gave him No. 31. story as I heard it was as follows:

Male bear killed and ate a cub while sow and remaining cub stood by. Sow did not attempt to attack the bear. Campers stood around and watched the incident. I saw the sow and remaining cub on afternoon of July 29. Will try ears and then riveted a small loop of polyvinyl tape.

to check further on details of this incident.

Mortalities:

Barber at Gardiner is very interested in grizzlies. Told me two bears were killed in Gardiner spring of 1960. One of these was bear No. 19, a 2-year-old weighing 235 pounds. Ken Greer has specimen at Bozeman.

Another small bear was killed and the barber dumped carcass over river bank at south end of airfield. Says skull is there in a basket. Will check.

Barber suspects that a number of grizzlies are poached each spring and hides sold. Says one man made an offer of \$425 for a large hide and skull.

This area and W. Yellowstone should be checked carefully for illegal kills. The rip-roar sow still has No. 43 running with her two cubs. The black

sow No. 43 Maurice made a census at Trout Creek. Counted only 60 bears. See data sheet. has happened to her. It seems unlikely that she could not find

July 30, 1960 seems strange she has not claimed him as she was lactating profusely on Wrote notes and laid long-range plans for work during month of August.

July 30-31 Shot a male cub on Trout Creek dump. This was litter mate to bear No. 43 (Paul). Hit in neck with first dart - 15 mg. of sucostrin at distance of 40 feet. at 5:15 P.M. I rode Judy and Harry rode Ranger. Followed up Snake

River trail Immobilized in 2 minutes. Sow was very reluctant to leave. She alerted at sound of gun and remained near the downed cub in spite of racing motor and blowing horn. A shot from the Colt 357 and 2 shots from the 12 gauge finally put her down to the stream 100 yds. away. Maurice and I jumped out and grabbed the helpless but loudly bawling cub. While the boys in the pickup kept an eye on the sow, we administered nembutal. Put cub in holding cage and drove off. Gave him No. 51. bear but this had been done in

spring. Took the usual data. Cub appears to be unusually large for this time of year.

Tried a new marking technique. Put the polyethylene rope through the ears and then riveted a small loop of polyvinyl tape.

July 31, 1960

Behavior:

Drove to Trout Creek about 8 A.M. to release cub No. 51. Cub
This is quite conspicuous and if durable will allow us to make many
more color combinations.

Made a cast of fore foot using geltrate. Held cub in bear trap
overnight.

Behavior:

The black cub of black sow (Cub No. 49) has not yet been claimed by
the sow No. 48.

Both the cub and the sow were captured and marked on July 25. In-
stead the rip-nose sow still has No. 49 running with her two cubs. The black
sow No. 48 has not shown up. Do not yet know whether she has deserted the cub
or something has happened to her. It seems unlikely that she could not find
her cub and it seems strange she has not claimed him as she was lactating pro-
fusely on July 25.

July 30-31

(F.C.C.) Met Harry Reynolds at South Gate and took off for Basin
Creek Lake at 5:15 P.M. I rode Judy and Harry rode Ranger. Followed up Snake
River trail to above hot springs and then took cutoff trail across to hit
Snake again. Expected to meet a Wilderness Society group camping along Basin
Creek. Party did not show up. Went on in rain and camped at Basin Creek Lake.
Next day we went on up to Sheridan Lake, Heart Lake, and on out to highway at
3 P.M. Harry had seen grizzly sign throughout this area in spring. I kept
a close lookout and observed muddy spots, grazing areas, etc. and saw no
tracks. Saw one tree along trail barked by a bear but this had been done in
spring. Believe grizzlies may move out of this area for dumps.

7th Dart hit cub of rip-nosed sow high on side. Had little effect (15 mg.)

8th Dart overshot same cub (15 mg.)

July 31, 1960

Behavior:

Drove to Trout Creek about 8 A.M. to release cub No. 51. Cub bawling loudly. The sow and her other cub No. 43 were at the trap. Cub No. 51 was "bawling" loudly inside trap. Sow would retreat only 50 to 60 feet as we approached with horn blowing. Finally held her ground and then turned and came back to the trap. We retreated in car. Approached once again honking horn and racing motor. She retreated slowly but then again returned and this time we thought she might charge. On the third attempt we moved her across stream. I jumped out and lifted drop gate and the cub came out of the trap on the run. He joined his mother and litter mate. She smelled him then retreated with both cubs in tow. Several hundred yards away she lay down in the sage and allowed the cubs to nurse. Apparently the sow had been waiting beside the captured cub for some time. Drove on to Jackson Hole to meet Frank and pick up equipment.

August 1, 1960

Made plans with Park personnel and made numerous calls. Run from behind us and Maurice, Mike, Paul, Harry and Pete set traps at Rabbit Creek. Paul and Mike remained to make final set after black bears left area. (tip). Attempted to shoot cubs at Trout Creek. male marked on August 28 - 1st dart - 15 mg. glanced off top of head of white-faced cub of white-faced sow. 2nd dart was high and struck mother on foot and fell out (dart recovered) (15 mgs.) 3rd dart hit small cub (1 of 3) high in back and fell out. Cubs weighed 25 to 30 lbs. (7 mg.) 4th Dart hit small cub between ribs. Long needle. Apparently had no effect. (7 mg.) 5th Dart hit cub of rip-nosed sow high on side. Had little effect (15 mg.) 6th Dart overshot same cub (15 mg.)

7th Dart (15 mg.) hit high on rump. Cub was barely immobilized, was 2 1/2 to 3 feet high. Twenty or twenty-five bears in area. Scared them with firecrackers and cracker shells. Was almost dark. Went down over dump after cub. Cub bawling loudly. Was ready with shotgun. Maurice and I hauled him to car and jammed in cage. Cub could struggle and bite. Recovered 3 of the 7 darts. Not too elated with our success. Gun was not shooting accurately. Whole procedure too dangerous after dark, but after surveying things moved off. Had my 30. Held cub overnight.

August 2, 1960. animal and possibly other buffalo had heavily grazed a north facing slope. Wes and crew took off for Rabbit Creek. Immobilized and color marked cub of rip-nosed sow. Had some difficulty with both the succostrin and the nembutal. Gave him No. 53, spooked another large bull. Took off on a run. Took usual data and hind foot impression as well. Left cub sleeping soundly in the shade and headed northwest across Hayden Valley. Left from bridge on May Mountain road at about 11 P.M. half way back to car we spotted a grizzly.

Ran into a number of bull elk in the first timbered island. Stalked them and got within 40 yards. Suddenly a grizzly appeared on the run from behind us and to our right. He ran among the elk scattering them but did not appear to be attacking them. He had ear markers (green loop and purple tip). This would make him bear No. 50, a 270 pound adult male marked on August 28 at Trout Creek. bear we had seen at the Trout Creek dump only last night

(Aug. 1). We did not see this bear again but continued to see elk - mostly bulls. Grizzly alerted as we approached closer. Stood on hind legs and tried to. Located what appeared to be a winter den site. It was located on a steep open grass slope between two stands of timber. The exposure was northeast and it was evident snow would pile deep in the lee of the hill. Grass was very green and luxuriant, probably due to moisture from heavy snow cover.

to use a rifle, the bear caught our scent, turned and ran off toward the trail at that time. The "dump" is in full bloom now and the ground is

Bear dens were evident in the moist sandy earth. Hole was $2\frac{1}{2}$ to 3 feet high and went back into hill 4 to $4\frac{1}{2}$ feet. No lining. Could have sheltered only a small bear. Took photos.

Ate lunch on northeast edge of the second large timbered island. Saw elk and came abruptly upon a large bull buffalo. Maurice and Harry spooked him toward me and for a moment I thought he was going to charge. He stopped with head lowered and tail twitching but after surveying things moved off. Had my 30-06 with me.

This animal and possibly other buffalo had heavily grazed a north facing slope. The common dandelion was very abundant and is an indication of overuse.

Fifteen minutes later we spooked another large bull. Took off on a run.

When we were approximately a mile from the head of Trout Creek we turned East and skirted the timber. About half way back to car we spotted a grizzly in the open. We watched this bear from a distance of about $1/4$ mile. He appeared to be digging along the stream.

Decided to approach closer to determine if bear was marked or could be recognized and to see what bears reaction would be.

Grizzly was unmarked but we recognized it as one of Peg Leg's companions and a bear we had seen at the Trout Creek dump only last night (Aug. 1).

Grizzly alerted as we approached closer. Stood on hind legs and tried to get our wind. He circled around to get our wind then rushed toward us until he had closed the distance to about 40 yards. It was evident the bear did not know just what we were and was trying to approach close enough to determine what had disturbed him. Just as we thought we might be forced to use a rifle, the bear caught our scent, turned and ran off toward the

the timber. The bears rapid approach toward us could have been interpreted as a charge, but bear was actually only trying to identify us. spring and much refreshed pushed The grizzly had been feeding on a small aquatic plant (Isoetes head of Bolanderi). The tuber is starchy and nut-like in flavor. I have eaten them as frequently. Usually they are under water, but in this instance the slough had dried up and the bear was digging them out of the still damp but rapidly caking mud. Collected some specimens. and entered two islands of timber. Saw nothing of int There were large patches of Yampa (Perideridia gairdneri) in the area just we travelled yesterday but no sign the bears were feeding on it. They do use Trout it extensively and I expect to find feeding sites in other parts of the valley. vated 1 1/2 feet Returned to camp 5:30 P.M. across. Numerous feces in the immediate vicinity.

Grizzlies Observed in Field

Arriv 12:10 P.M. - Bear No. 50, about 2-3 miles from Trout Creek

Met Joe 4:20 P.M. - Peg Leg's Companion, about 2-3 miles from Trout Creek.

with August 3, 1960, Senator Dent and wife and Joe Penfold were present.

Bear Took off about 1/2 mile above the mouth of Alum Creek and hiked to Behav within a mile of rim of the valley and then returned. Kept between the creek and the wooded ridge separating Alum Creek drainage and Otter Creek. 18) still has not Observed extensive fields of Yampa (Perideridia gairdneria). Many none were untouched by bears but others had fresh diggings. Six to a dozen plants would be excavated in a patch and then 15 to 25 feet distance another small out digging would occur. There was no extensive unearthing of tubers over large areas, although in many instances this could have occurred as the plants were this abundant. Bears appeared to be making only moderate use of this food source at this time. The Yampa grows on high well-drained soil in the valley and on the of laslopes of the undulating hills. Various species of Lomatium also grow on these tered sites. It is evident that when the grizzlies utilize Lomatium spp. in the roots spring they also dig the roots of "Yampa" although it has not protruded through the soil at that time. The "Yampa" is in full bloom now and the starch content

the root is low and will be until late August or early September.

Saw 2 half-grown coyote pups. Took a bath in a hot spring and much refreshed pushed on until lunch time. Saw little bear sign all morning. At the head of the valley we saw elk (14 in one herd). A large bull buffalo nearly surprised us as we rounded a hill. Moved to the timber. Derek took some photos and boylike shot the buffalo with his slingshot.

Headed S.E. across the valley and entered two islands of timber. Saw nothing of interest in the first but ran into bear sign in the large timbered area just west of the mouth of Alum Creek. This area is located several miles from the Trout Creek dumps. Saw about 8 beds used by grizzlies. Some of these were excavated $1\frac{1}{2}$ feet deep and were 3 or 4 feet across. Numerous feces in the immediate vicinity.

Arrived at car at about 6 P.M.

Met John Good and Tom Hyde at Trout Creek and discussed the bear project with them and guesses, Senator Dentman and wife and Joe Penfold were present.

Bears came in late and the numbers were down.

Behavior:

Cub No. 49 is still with the rip-nosed sow. His mother (Bear No. 48) still has not showed up. Bear No. 53 - cub of rip-nosed sow has not joined his mother. He was marked August 2.

Neither trap at Rabbit Creek had been sprung by grizzlies so we followed out trails to east. Released a big "brown" black bear that we had caught.

There is very little open country in the Rabbit Creek area and most of this is sparsely vegetated and contains considerable thermal activity.

Followed out several draws to lodgepole stands. The understory consisted of large patches of low bush huckleberry but the bushes contained only a few scattered berries. A few small swampy areas contained sedge and the grizzlies had rooted out small quantities.

Wes, Charlie and I covered most of the Rabbit Creek drainage, took some

pictures of hot springs and mud pots.

While climbing a timbered slope I suddenly smelled a grizzly. A hundred feet further on I came across a trail with very fresh grizzly tracks. Believe we jumped a grizzly but did not see him.

Found a very small hot spring with several bird skeletons in stream leading from it. It might be that they drank the water and the heat killed them and they toppled on in. Took several pictures though the light was poor. Day very hot and no fresh water to drink.

August 3, 1960

Wes and I made a count at dump after setting traps. The first bears to come in were a shaggy brown sow and 2 yearlings. They arrived at 6:55 P.M. and were followed at 7:00 by a young sow (4 to 5 yrs.) She was definitely a part of this family group and may have been an older daughter of the sow. At 7:16 we caught the more aggressive and independent of the 2 yearlings. When the gate banged shut the sow, littermate and young adult sow came back to investigate. Sow and yearling stood on hind legs with front on trap and tried to do something for bellowing yearling inside. Sow appeared both disturbed and perplexed.

The sow with 3 small cubs, one of which we shot with a long needle attached to syringe, came in with only 2 cubs. Long needle may have been fatal, having counted 16 different grizzlies. We saw bear with yellow ear tag and part of yellow marker in left ear. Later identified him as Bear No. 2. At 7:50 P.M. a sow marked with green ear marker and a blue neck marker came in with 2 nearly white cubs. This must be bear No. 8. At 7:45 a sow came in with 3 gray cubs, one lighter than other two. The two dark cubs had thin white chest stripes or collars.

Collars not completely encircling neck. Also saw a big dark boar with most of left ear missing.

August 4, 1960

Andy, Bear No. 4, was shot yesterday by Lake Sta. rangers. They dumped him at Trout Creek minus front claws. There was no need to kill this bear and to ruin him as a specimen was inexcusable. Were able to salvage skull, eyes, baculum, testes and heart. Took photos.

Entertained Congressman Saylor and family at Trout Creek. They were very impressed with the bears. All thought it was held to tree after released. Finally

Maurice made a count at the Thumb dump. Saw 4 adult bears.

John Bulger of the Wildlife Federation took movies of grizzlies at Trout Creek. Should be able to catch several grizzlies in one night at Rabbit Creek.

Saaren, Coleman Neuman, National Park Service, arrived and wants to see our bear operation.

August 5, 1960 Maurice drove on to West Yellowstone to prepare cabin for occupancy.

Took Coleman Neuman to Rabbit Creek. Marked bear No. 58, a 470 lb. sow. Believe this sow may be the mother of yearlings we captured Aug. 4., No. 56 and in No. 57. Sow was lactating. This is the heaviest sow we have captured and weighed. Procedure went off well and Coleman was much interested. Frank placed a dummy receiver box on neck of bear. Long swimmer.

Maurice censused bears at Trout Creek and counted 66. Supt. at Lake., U.S. Fish Bears have not been coming in until rather late. of summer.

August 7, The sow with 3 small cubs, one of which we shot with a long needle attached to syringes, came in with only 2 cubs. Long needle may have been fatal. It appeared to have struck the cub high in the back. had two fish meals in the

Canyon and Set 6 snares and 2 culverts at Rabbit Creek before leaving. Snare sets were both trail and cully sets. Moose appears to be too small.

August 6, 1960 One culvert trap was not sprung and other contained a black bear. One snare captured a sow black bear and her yearling was nearby.

A trail set had captured a grizzly - appeared to be a large one but it dragged the large log several hundred feet, splintered the end and managed to pull the cable free. Bear escaped with noose on foot. Tore the ground up around set and apparently fought the snare savagely.

When we were late returning Frank came down to look for us leaving Charlie immobilized the black bear and released her. Foot was slightly skinned. behind. He traversed the canyon wall at a lower level and loosened a small avalanche. Cable was kinked. Bear still thought it was held to tree after released. Finally took off and climbed nearest large lodgepole. Yearling joined her.

August 8, 1960.

All snare sets were tripped. Will have to get heavier cable and larger nooses. Should be able to catch several grizzlies in one night at Rabbit Creek. and the cub was at Pelican Creek on the lower. Wes and Maurice went to Pelican Snare, if properly set, will I believe be very effective. Must be more securely anchored.

Boys did washing.

Wes and Maurice drove on to West Yellowstone to prepare cabin for occupancy. Frank set trap for flash photos tonight. I wrote letters and notes. We will trap at W. Yellowstone next week.

(Fed. agent arrived)

Stopped and let the fellows (including Charlie and Derek) have a swim in the Firehole River. Had a grand swim. Little Harry got exhausted and very nearly drowned. I got to him and pulled him out just in time. He attempted to swim in the fast current and he is not a strong swimmer.

Borrowed a Pontiac (Fed.) from Norman Benson, Fisheries Supt. at Lake., U.S. Fish and Wildlife Service. Will use it for remainder of summer. had to raise supports and fasten trailer to car with grizzlies only 30' feet away.

August 7, 1960

Took Sunday off and hiked down to 3 Mile. Stayed overnight. Caught some nice fish. Frank got one about 5 lbs. Eight of us had two fish meals in the

August 12
Canyon and we brought out several dozen large trout.

Made census at Trout Creek with Maurice. Saw small shaggy brown yearling Charlie and Derek enjoyed the camping and both did well.

about size of cub. I first saw this bear at Trout Creek Aug. 8. This yearling is I took Derek downstream to where the canyon slopes drop abruptly into the river. We scaled the canyon wall several hundred feet and then traversed across. The slope was so steep that the slightest pressure sent rocks avalanching down into the rapids below. Was concerned that Derek might slip but he performed very well and after traversing the exposed slope we descended to the river again. There were no tracks here. We were in virgin water and the fishing was good. Derek caught two large trout, both over 2 lbs. apiece.

First thought this a new family due to red color of cubs. They were a dark grizzled brown in the fall of 1959.

When we were late returning Frank came down to look for us leaving Charlie behind. He traversed the canyon wall at a lower level and loosened a small avalanche of boulder. We all returned with a limit of fish.

August 8, 1960. Searcher (notch in right ear), Bruno, Outlip and Ivan were also present.

Climbed out of the canyon. Rangers at Fishing Bridge had a grizzly sow and the cub was at Pelican Creek on the loose. Wes and Maurice went to Pelican Creek to try and shoot the cub.

August 11 Boys did washing.

Frank set trap for flash photos tonight. I wrote letters and notes.

(Fed. check arrived) This was bear No. 63. We underdosed this bear with

sugostin. Harry Reynolds and I waited in trap after dark but could not get pictures I wanted. Found the holes for camera were too high on cylinder to use reflex housing. It will be difficult to use large flash from trap. Will have to have some modifications made.

Cable to door broke when John tried to raise door to let us out. John had to raise supports and fasten trailer to car with grizzlies only 30' feet away. Harry and I later crawled out of camera windows. of mouth, rear foot pads.

Old hotel burned. Took pictures. It was quite a fire. measuring equipment

August 12 left behind.

Made census at Trout Creek with Maurice. Saw small shaggy brown yearling about size of cub. I first saw this bear at Trout Creek Aug. 8. This yearling is a runt, is wary, travels alone and frequents areas where the "Orphans" of 1959 were usually seen. I believe there is a good chance that this is one of these orphans and that it survived the winter. The walk and run of this bear do not appear normal. There could well be some bone malformation due to nutritional deficiencies. country.

Ate lunch The sow with 90 lb. cub and 2 other yearlings was present. These bears have changed radically in coloration since June. The cubs were reddish brown in June and are now a grizzled brown (light tips and dark beneath). In June we at first thought this a new family due to red color of cubs. They were a dark grizzled brown in the fall of 1959.

The Rip-nosed sow was in with her own cub No. 53 and cub No. 49 from black sow. This was first appearance of No. 53 since marking. Sow also had her other unmarked cub.

Inge, Searchest (notch in right ear), Bruno, Cutlip and Ivan were also present. The total count was 70.

Wes and crew at West Yellowstone trapped and marked grizzlies Nos. 61 and 62.

August 13

Drove to West Yellowstone from Canyon with Maurice and Harry. Wes and crew had trapped a big boar. This was bear No. 63. We underdosed this boar with sucostrin. We gave him a conservative dose as Kenny Sears was present and apprehensive of our killing a grizzly in his area.

This boar weighed 575 lbs. and was muscular with relatively little fat. He fought drugs.

Pulse rate in trap before shots was 116/min. Afternembutal 68/min. and continued to drop.

Took photos of pelage, teeth and inside of mouth, rear foot pads.

Unsuccessful with dental impressions as stirring and measuring equipment had been left behind.

Stopped to see and talk with Joe Fraser. Left reprint.

August 13, 1960

Margaret, Karen, Derek, Lance, Charlie, and I climbed Buck Mountain today.

We started out at 9 A.M. with the intention of hiking as far and as long as time would permit. The first hour or two we encountered heavy brush and this somewhat dampened the children's ardour. By 1 o'clock we were well up in the alpine country.

Ate lunch on a little stream. Saw a large bull elk and watched a black bear move rapidly down the ridge above us.

One weighed 425 lbs. having gained 165 lbs. or approximately 3 lbs. per day during this period of time - a 63.5% gain over her former weight.

After lunch the kids were determined to make the summit. Having attained the open alpine country of rocks, flowers, meadows and streams, their enthusiasm was restored. I agreed to push upward until 5 P.M. (a dangerously late time to be on a mountain summit) but said we would turn back at 5 P.M. regardless of whether we had made the top or not.

This decision spurred them on and we made the top () at 5:10 P.M. Margaret remained 4 or 500 feet below so the rest of us could climb faster. All the kids were thrilled and very proud of climbing their first peak. We arrived back at our starting point at 9 P.M. just as dark was closing in. The kids were tired but still energetic and ate a good supper.

Took photos.

August 14

Went to Balderston's party and discussed grizzly research with Mr. Balderston. Told him about our attempt to get radio equipment and of Philco's offer. Told him I'd send him a copy of my letter to George Ronzee.

On Aug. 17 I got off a letter to Balderston with copy of my letter to George Ronzee.

August 17, 1960

Trapped two grizzlies at Trout Creek. One was a 495 lb. female (quite old); the other a retrap of bear No. 34, a female.

Dr. Taber, Dr. Francois Bourliere of the Univ. of Paris, Dr. Altman, and Les Pengelly accompanied us. Put both bears out with little difficulty.

Made impressions of all the teeth of the old female No. 64. There were caries in practically all the teeth and all four canines were broken and decayed. Bear, however, appeared in excellent condition.

Bear 34 weighed 260 lbs. on June 25, 1960, when we first trapped her. Fifty-four days later she weighed 425 lbs. having gained 165 lbs. or approximately 3 lbs. per day during this period of time - a 63.5% gain over her former weight.

Made a census at the dump. Saw 77 bear - see census sheets.

Hind legs do not appear to have normal movement. May have had rickets

Both Ivan and Inge were present.

or some vitamin deficiency disease.

Set one trap. Bear 34 tore galvanized sheeting off the large trap.

Phoned George Rouse at Philco to learn status of radio equipment.

It will have to be repaired.

They are field testing two models that they hope to get to us shortly. Details

Observed pine nuts in the feces for the first time this year. The written up in my notebook (Frank).

nearest crop we have been able to locate at high on the slopes of Mt. Wash-

burn. Mr. Mike Conn is the engineer working on project. I called him in

afternoon and further discussed the work. In evening John and I took pictures

Behavior:

at Trout Creek of man with CO₂ gun and bear in same picture.

The way in which various individual bears and groups approach the

dump is interesting and bears further study in detail. Maurice went into Shoshone Lake to examine bear No. 47 that had

been reported dead on or near lake shore.

As usual the group moved aside when Inge arrived. He singled out

August 19, 1960:

Scarchest and chased him into water. When Ivan arrived a number of bears

attacked him. This seems to be routine procedure. Captured Bear No. 6 (second retrap). This is the first cub we ob-

tained in 1959, and it weighed 45 pounds at that time. Was retrapped June 29, August 18, 1960:

1960, and weighed 105 pounds. Weighed 160 lbs. today. Gained 55 pounds in 51

days or 1.1 lbs. per day - a 50% increase. Trapped at Trout Creek was empty. Suspect it was not baited properly.

Wrote notes in morning. Contacted Bob McIntyre and Bob Howe. Frank

phoned Philco people concerning tracking system. Dr. Barthrong accompanied us to Trout Creek. Shot a black bear with

a lethal dose of succinylcholine. Heart beat became irregular, cyanosis, respiration

dropped to about 8 per minute, fibrillation of the muscles occurred, heart

stopped beating, bear pronounced dead. Missed twice. Gave it up as it was getting dark.

stopped baiting, bear pronounced dead.

Behavior:

Barthrong autopsied, does not have a digestive tract evolved for

Orphan yearling was present on outskirts of dump. He sat on haunches

watching the other bears eating. When we scared the large bears the orphan

filled with blood and distended. Lungs congested with blood. Coagulation of

yearling moved in to feed. He used the presence of humans as a shield. Was

blood in ventricle. Distended venous vessels. Typical acute heart failure,

apparently more afraid of the other bears than of us. He did not go in and

feed when all bears were assembled and moved off 100 to 150 yards as bears

resembled. Due to overdose of succinylcholine.

resembled at dump.

Hind legs do not appear to have normal movement. May have had rickets or some vitamin deficiency disease.

Phoned George Ronzee at Philco to learn status of radio equipment. They are field testing two models that they hope to get to us shortly. Details written up in my notbook (Frank).

Mr. Mike Conn is the engineer working on project. I called him in afternoon and further discussed the work. In evening John and I took pictures at Trout Creek of man with CO₂ gun and bear in same picture.

Maurice went into Shoshone Lake to examine bear No. 47 that had been reported dead on or near lake shore.

August 19, 1960:

Captured Bear No. 6 (second retrap). This is the first cub we obtained in 1959, and it weighed 45 pounds at that time. Was retrapped June 29, 1960, and weighed 105 pounds. Weighed 160 lbs. today. Gained 55 pounds in 51 days or 1.1 lbs. per day - a 52% increase.

Dr. Berthrong accompanied us to Trout Creek. Shot a black bear with a lethal dose of sucostrin. Heart beat became irregular, cyanosis, respiration dropped to about 8 per minute, fibrillation of the muscles occurred, heart stopped beating, bear pronounced dead.

Berthrong autopsied.

Myocardium contained soft spots (hemorrhagic). The auricle and aorta filled with blood and distended. Lungs congested with blood. Coagulation of blood in ventricle. Distended venus vessels. Typical acute heart failure.

Bear appeared to have died of acute heart failure and pulmonary edema. Due to overdose of sucostrin.

August 22 Discussed possible General Anatomical Notes
(P.B.I.) Thyroid and adrenal glands - very small for animal size.
of the thy Rugal folds ran parallel to small intestine instead of spirally
transverse (typical of carnivores). performing post mortem (Black bear). Aorta
was small. Very large pyloric muscle (upper edge of stomach). took
pictures. Omentum (fat and mesenteric) lay over gut seals intestines in
stomach when injured. adrenals, tapeworm in small intestine, omentum, etc.

August 20, Berthrong: this up with 16 ea. of nebulal. Was apparently too
heavy as Dissected thymus, liver, lungs, kidney, stomach, small intestine,
heart, aorta, etc. Hiked out of canyon after dark. Carried out 30 or 40
trout. Adrenal located directly under renal vein imbedded in fat.

August 21 Located spleen, bladder, pancreas. Spleen very large. Chapman arrived. Spent the morning going over the
Canada Co. Heart large for size of animal. Job of putting it in sequence. Short.
Note: Small thyroid - may indicate a hypo-thyroid. May be reason bear
can put fat on so rapidly. Believe it is pretty good now. of nearly 2 pounds

per day. Bear has digestive tract typical of carnivore yet eats, digests,
and assimilates many plant foods. and Tom and Norma Hyde. Discussed the
problem. Could learn a lot about digestive processes in bears. Apparently
can utilize pentose sugars yet does not have a digestive tract evolved for
that purpose. Breathing was slow and regular, but animal was nervous.

Behavior: The orphan yearling has been coming to the dump very early in day
and feed. Orphan yearling was at Dump and behaving in similar manner to last
evening. Sat at edge of dump and watched other bears feed. Is a lone wolf
and very shy. Set both traps at Trout Creek. One of the "dump kids" entered
and was caught late in afternoon.

August 22 Discussed possibilities with Morgan of making protein bound iodine (P.B.I.) tests on grizzlies to get a metabolism index. This measures the level of the thyroid hormone circulating in the blood.

Took pictures of Morgan performing post mortum (Black bear). Aorta was exceedingly smooth, white and free of any sign of arteriosclerosis - took pictures.

Pictures of adrenals, tapeworm in small intestine, omentum.

August 20, 1960 Took Dr. Werthrong to 3-mile hole. Fishing was slow. Took Karen, Lance, P.M. and Jim. Hiked out of canyon after dark. Carried out 30 or 40 trout. Ravens patrolling the river bank stole several fish we cached.

August 21, 1960 Fred and Cynthia Chapman arrived. Spent the morning going over the Canada Goose film. Fred had done a nice job of putting it in sequence. Cynthia had made the changes I had suggested in the narration. Spent an hour or more perfecting this. Believe it is pretty good now.

Wrote notes in afternoon.

Visited Harry and Lois and Tom and Norma Hyde. Discussed the problem of controlling bears in the Park as well as the irresponsible shooting of Andy - Bear No. 4.

Behavior: 35 pounds. Breathing was slow and regular, but animal was never

The orphan yearling has been coming to the dump very early in day and feeding. Retreats when other bears arrive. He is not afraid of humans and can be approached quite closely. Will try to shoot and mark him.

Set both traps at Trout Creek. One of the "dump kids" entered and was caught late in afternoon.

August 22, 1960. Trout Creek

Had the dump kid - Bear No. 37 in one trap and the grizzled sow and one cub in the other. The cub was No. 52 initially captured July 30, 1960.

The day started warm, but heavy showers occurred in the afternoon and it was blowing a gale and snowing by evening. It was uncomfortable working and we had trouble with 2 bears. It was 6 P.M. before we finished work.

Administered 42 mg. of sucostrin to bear No. 37 which now weighed 245 pounds. Followed this up with 16 cc. of nembutal. Was apparently too heavy as cyanosis developed, respiration was irregular, and alternately slow and rapid. Thought we were going to lose the bear and might have had we not used the resuscitator. Administered O₂ with tracheal catheter. Normal color returned to the tongue and lips almost immediately after bear got O₂ but breathing improved little. Continued to give O₂ for some time as we worked on bear. Six hours after bear was immobilized it moved off. See data sheet.

Put collar on Bear No. 37. Bear No. 37 weighed 145 pounds on June 29, 1960. It gained 100 pounds in 53 days or an average of nearly 2 pounds per day, a 69% increase over its June 29 weight.

Administered 50 cc. of sucostrin to the sow - Bear No. 65, and followed with 15 cc's of nembutal. This did not put her to sleep and was followed with 3 successive doses of 5 cc's making a total of 30 cc's. Sow weighed 435 pounds. Breathing was slow and regular, but animal was never in danger. See date sheet. Took measurements but were unable to make dental impressions due to low temperature. In order to seal ear marker, we had to cover ourselves and bear with tarp. This broke the gale sufficiently that we could keep a lighter and matches burning. Cub ate some bread and meat thrown to him. When milk ceased to flow he took off on the run and disappeared over the hill and this was

the last we saw of him. When Notes on Dosage somewhat satiated he appeared to take alarm. Bear No. 37 received 1 mg. of sucostrin for every 5.8 pounds of body weight based on the last weighing of 245 lbs. Assuming that the 100 lbs. gain is all or nearly all fat then this bear's weight for dosage purposes was 145 lbs. On this basis bear No. 37 received 1 mg. of sucostrin for every 3.45 lbs.

The nembutal was 1 to 15 by latest weight but 1 to 9 of calculated for the June 29 weight, and family left for Jackson.

This bear was overdosed because we did not take into consideration the accumulation of body fat.

September After working on bear No. 37 we transferred the cub (bear No. 52) to the empty trap by lining the traps end to end. A piece of lighted paper spooked the cub out of the trap he had been captured in, into the other. Dropped door and had sow in one trap and cub in other.

Immobilized cub with 16 mb. of sucostrin or 1 mg. per 7.5 lbs. of body weight. Her cub No. 70 which had been captured September 2 was standing by the trap. Cub had gained 20 lbs. since its initial capture July 30. In 23 days it gained an average of nearly 1 lb. per day or 20% wt. increase over its July weight of 100 lbs.

Behavior: captured her cub No. 43 at the dump. See notes for that day. I left the traps When cub No. 52 recovered he went directly to his mother. The sow was still in a deep sleep. He began to suckle. Took milk from 3 mammae going back and forth from one to another. There appeared to be an ample flow at first. In 10 to 15 minutes he sucked her "dry". During this time he showed no fear or alarm at us through I several times approached within 12 feet to take pictures. Cub ate some bread and meat thrown to him. When milk ceased to flow he took off on the run and disappeared over the hill and this was trailed her. At the Mary Mt. Road I turned left downwind and drove fast for

the last we saw of him. When his hunger was somewhat satiated he appeared to take alarm or received some impulse to move off.

Was beginning to snow when we left. Sow was still out and covered with a blanket.

August 23, 1960. Trout Creek

Snowed last night and there was an inch or more on the ground.

Spent the day on housekeeping chores and writing notes and letters.

Dr. Berthrong and family left for Jackson

Phoned Jimmie and ordered some equipment.

Sent off Federal accident form.

September 3, 1960. Trout Creek

Both traps had been set the night before at Trout Creek. We hoped to catch a large boar that we could transport across Yellowstone Lake and release on the shores of the South Arm.

I went out early to check the traps. One had captured the white-faced sow. Her cub No. 70 which had been captured September 2 was standing by the trap. Both cubs of the grizzled sow No. 65 were in the second trap. This entire family group is marked. The sow was beside the trap and would not allow me to approach either trap closely. This sow gave us a bad time on July 9 when we captured her cub No. 43 at the dump. See notes for that day. I left the traps and returned to Hq.

Went back to traps about 8:30. The cub of white-faced sow (cub No. 70) was still there but ran off several hundred yards at our approach. The grizzled sow retreated slowly 100 yards giving us time and opportunity to hitch up the trap containing her 2 cubs. When we started to drive away she ran up the road after us and pursued the car for 1/4 mile. The white-faced sow's cub trailed her. At the Mary Mt. road I turned left downwind and drove fast for

1 1/4 miles, stopping in open country where the view was extensive on all sides. The grizzled sow cast back and forth like a bird dog trying to get the scent of her cubs. Arrived and took the following to the bug colony at Boseman:

We decided to attempt to immobilize both cubs simultaneously and weigh them before the sow approached any nearer.

2. Skull of bear No. 1

One cub went out under the sucostrin but the other was practically unaffected. We were about to put a choker on the larger cub and pull out

Margaret, Mrs. Smith and family arrived.

the immobilized one when we saw the sow approaching rapidly toward us, periodically standing up to take the scent. We hurriedly packed up our gear and de-

wrote notes and attended to correspondence. Drove out to Trout Creek about 5 P.M. The green sow and her three cubs were coming toward the dump from the south. We intercepted her on the Mary Mt. road and Frank took pictures. Should have gotten some good ones. Sow and all three cubs stood other cub as planned. By this time the sow had started eastward across the up at one time.

sage some 1/2 mile from us. It was evident she had not yet determined where her cubs were. After weighing we released cub No. 43. On July 9 he weighed 70 pounds. Now weighed 115 lbs, a gain of 45 pounds. These are the bears we worked on September 3.

The grizzled sow remained in the near vicinity of the Trout Creek

The large bears had not arrived when we left about 8:30 P.M.

dump for about an hour, but never approached us closer than 1/2 mile. We

September 5, 1960. Tr. went ahead with taking care of the white-faced sow in the other trap.

Drove with family to West Yellowstone. Packed grizzly bear milk

immobilized, measured and marked her without incident. in dry ice and Margaret carried it to Boseman airport. Sent it to Dr. Robert

Injected 4 cc's of oxytocin to stimulate flow of milk. Obtained 75 to 100 cc's Will send to Dr. Jenness at Univ. of Minn. Jenness air express.

Purchased supplies and returned to HQ. Set trap for marten.

Killed a black bear for the Park with an overdose of sucostrin. Ex-

September 6, 1960. amined heart after death and found that the auricle contained many minute

Set traps at Trout Creek. Took some movies of the dump 2-year-olds. hemorrhagic spots but very dissimilar from the bear we killed Aug. 19, 1960.

Dr. Pfeiffer, Dr. Hal Braun, Otto Stein and wife, and Gabe Mueling The thoracic region was congested with blood, but bear did not appear to have arrived with Wes, Maurice, and Pat O'Halloran. Grant Hagan and Les

also arrived. HQ was a beehive of activity and work.

Observed marked bear at Trout Creek during evening.

Made plaster cases of the footprint (front of bear No. 1)

died from heart failure. For details see data sheet of September 3 on black bear weighing 265 lbs. 65, the grizzled sow. Released her by pulling the gate with the picken Grier arrived and took the following to the bug colony at Bozeman:

- Other trap contained No. 45 "Jesse". Took her to the government compound where
1. Cub carcass including skull No. 71
 2. Skull of bear No. 1
 3. Hides of cub No. 71 and bear No. 1
 4. Skull of black bear.

Margaret, Mrs. Smith and family arrived.

September 4, 1960.

Wrote notes and attended to correspondence. Drove out to Trout Creek about 5 P.M. The green sow and her three cubs were coming toward the dump from the south. We intercepted her on the Mary Mt. road and Frank took pictures. Should have gotten some good ones. Sow and all three cubs stood up at one time.

Tallied some of the marked bear until dark. The white-faced sow and cub were there. Did not see the grizzled sow and her cubs. These are the bears we worked on September 3.

The large boars had not arrived when we left about 8:30 P.M.
September 5, 1960. Tr.

Drove with family to West Yellowstone. Packed grizzly bear milk in dry ice and Margaret carried it to Bozeman airport. Sent it to Dr. Robert Jenness air express.

Purchased supplies and returned to HQ. Set trap for marten.
September 6, 1960

Set traps at Trout Creek. Took some movies of the dump 2-year-olds.

Dr. Pfeiffer, Dr. Hal Braun, Otto Stein and wife, and Gabe Mueling arrived with Wes, Maurice, and Pat O'Halloran. Grant Hagan and Les also arrived. HQ was a beehive of activity and work.

Observed marked bear at Trout Creek during evening.
Made plaster cases of the footprint (front of bear No. 1)

September 7, 1960 Reunion of Trapped Sow and Cubs

Sept. 7. Recaptured No. 65, the grizzled sow. Released her by pulling the gate with the pick-up. She took off across the sage. Other trap contained No. 45 "Jesse". Took her to the government compound where A.C. current was available and we could take cardiographs. Second recapture of this bear. Trap nights 65. We set two traps on the evening of the 6th and on the 7th. Trap success 45 grizzled sow No. 65 and Jesse No. 45. We released Bear No. 45 weighed 240 lbs. She weighed 185 lbs. July 13 when first captured. When recaptured 13 days later (July 26) she weighed 190 lbs., having gained only 5 lbs. in 13 days. She gained 50 lbs. in 42 days from July 13 to Sept. 7.

We successfully anesthetized bear No. 45 with 40 mg. of sucostrin and 16 cc's of nembutal. Made successful cardiographs with respiration at 16 per minute and were successful with sternal puncture.

Took her to Trout Creek and pulled tail gate. Told onlookers to remain in cars. They got out to take pictures. After raising gate I jumped to ground and leapt for pick-up door. Bear came out of trap like a flash, turned and ran to car door just as I slammed it, wheeled, struck at trap with lightening blow then headed directly for the photographing onlookers. Covered half the distance in seconds then turned and raced up hill to timber. Had she continued charge she would have been among onlookers before they could have gained their cars even though they were only 10 to 20 feet from open doors. I purposely released bear across gully and approximately 200 feet from onlookers. I don't think any fully realized their danger and it was too late to chastize them. I had given instructions to remain in their cars.

Observed marked bear at Trout Creek during evening.

Reunion of Trapped Sow and Cubs

September 8, 1960

Sept. 7, 1960

On the 6th a group of scientists arrived from Missoula to make cardiographs of a grizzly and to take some sternal punctures to try to obtain dividing cells. This group included Dr. Harold Braun, physician and heart specialist, Dr. Bert Pfeiffer, Univ. physiologists, Dr. Otto Stein and wife, and his assistant, Miss Gabriel Mueling. We set two traps on the evening of the 6th and on the 7th we had caught the grizzled sow No. 65 and Jesse No. 45. We released the grizzled sow without immobilizing her and she took off. We hauled Jesse to the fenced compound at Canyon and made a cardiograph (see other notes).

In the evening at Trout Creek we saw three bears approaching. An adult was coming in from the north and two cubs were coming up Trout Creek. At about 300 yds. apart the bears seemed to sense the presence of one another but gave no sign of recognition. Neither the cubs nor the sow seemed to recognize each other until within 200 yds. of one another. The cubs appeared to recognize the sow first and started running toward her. Once they started moving the sow apparently recognized them and started running too. When they got together the cubs suckled immediately. This is the first actual reunion of sows and cubs that I have witnessed. After the cubs were satisfied the sow led them away and off to the north. This was the grizzled sow and her cubs.

When the bears were approaching one another the wind was toward them so that neither got the scent of the other, at least until within a few hundred yds. of each other. Even then it appeared as though the recognition may have been by sight. This tends to collaborate other evidence that the grizzly's sight is not too good at a distance. For further evidence of this see notes on grizzly and kill south of Washburn.

On the 7th we had caught the grizzled sow No. 65 and Jesse No. 45. We released the grizzled sow without immobilizing her and she took off. We hauled Jesse to the fenced compound at Canyon and made a cardiograph (see other notes).

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September 8, 1960

Recaptured No. 52. The largest cub of the grizzled sow (65). The old sow was 1/2 mile away with other cub.

Second trap contained a very large bear. Looked like Searchest. Marked and numbered this bear No. 73, weighed 780 pounds.

Hauled No. 73 to the compound and prepared equipment. Locked gate of compound.

Estimated weight of bear at 600 lbs. but were apprehensive about overdosing and yet realized we could take no chances on a bear this size in a compound 300'x300' and with 14 people present as well as a few uninvited "official" spectators.

Dosed light with sucostrin approximately 1 to 6.6. This did a perfect job of immobilizing. Followed this with 35 cc's of nembutal. Bear was so large that there was little "head" room between his back and the top of the trap. Had to crawl well inside trap to administer the nembutal. Had bear raised up as some do, he could easily have pinned me against trap. Fortunately he did not react to needle. Was very difficult to determine proper injection site and I injected too high to hit the lung. Closed gate and waited 17 minutes. It became evident that the dose was not heavy enough and also was probably being absorbed slowly. Bear could raise head and bite. Inserted pries through holes in the trap in order to prevent bear from raising head or turning. Opened gate after cautioning all to seek safety of cars. Injected 5 cc's of nembutal. Twelve minutes later no apparent effect. Performed same operation again, this time substituting steel fence posts for the wood poles to hold bear. Actually all the poles were intended for was to prevent bear from raising suddenly and crushing me or Maurice against roof of trap. The second 5 cc's injection had some effect but not enough. Injected another 5 cc's. Having difficulty hitting the lung. Still not sufficient to anesthetize bear. Were

worried that nembutal was not getting directly into blood stream and being absorbed slowly. If we gave bigger dose, earlier doses might slowly become accumulative and we would find that we had overdosed the bear.

General rule is that about 1/3 of nembutal dose is metabolized every 45 minutes. We strongly suspected that some of the nembutal was going into fat layers and being absorbed very slowly.

Discussed the pros and cons of giving more. Bear was obviously coming out. Decided bear must weigh more than 600 lbs. and that we had not gotten drug directly into blood stream or lungs.

Risked opening trap once more. Injected 12 cc's of nembutal. This took effect and we had the bear under sedation an hour and 4 minutes after first having gained only 5 lbs. since last capture and weighing on August 22. Had difficulty with administering the succostrin and first two doses were ineffective.

Pulled bear out and realized it was heavier than we had figured. Bear weighed 780 lbs. and dusted with antibiotic powder.

Color marked and measured. Hal Braun and Bert Pfeiffer took two cardiographs. Bear was perfectly anesthetized for the process. Otto Stein and Gabe Mueling tried sternal punctures. We broke several needles and gave up. Took dental impressions. Started to make cast of front foot when bear raised head. Realizing we could have another "Ivan incident" on our hands and within a small compound, we tried des-

perately to move the bear to the trap and shove him in. It took the combined effort of six of us to get the bear in the trap, then we were unable to shove him in far enough to close the gate. Bear raised head. With a supreme effort that left us bushed we crammed the bear in far enough to drop the gate. Bear to get meat out and to Jackson - all without sleep. All were weary. Hunted probably could not have gotten up as he later had a relapse and still had not roused by 3:00 P.M. Respiration rate was 9 per minute and he was breathing deep and regular. Managed to get an imperfect print of foot with bear in trap and foot out under gate.

September 10, 1960

Bear was immobilized and under at least partial sedation for over 4 hours.

Contacted Forest Service and got map of Teepee Creek area from Bahn. Were relieved to finish job. It was risky business and had bear of Forest Service. Saw "Pink" and got more information. He phoned some packers gotten up as some have done we would have had to shoot him at once. The on-lookers as well as the guests from Missoula simply did not realize the danger in spite of our urgent warnings. Had bear gotten up he could have killed or maimed several before they knew what was happening. A bear under partial sedation is extremely fast and has control of tremendous power. It is difficult to convey our experience with "rampant" bears to the uninitiated.

Must cross Park boundary from Gallatin Road in order to get into this area unless we go the long way around up Red Canyon and across the head of Teepee Creek and down to Bacon Ridge. A 2,000 ft. climb from road and approximately difficulty with administering the sucostrin and first two doses were ineffective. 12 miles will put us on top of ridge and among elk. If we make a dry camp

Rope ear marker sites were crusted badly and were infected. Cleaned on ridge September 17 we would be shooting at elk by daylight September 18. and dusted with antibiotic powder.

Problem is how to get elk out without crossing Park boundary. Will Maurice and I drove to West Yellowstone. Flew over Park and Teepee Creek area of Gallatin. Saw some excellent appearing grizzly country. Observed 20 to 50 head of elk between Teepee Creek and Snowslide Creek. Checked over Park land but hunters could move in with guns dismantled. Some landmarks so we could return and hunt elk provided we can find the time.

September 11, 1960

Mike and Pete left with West. Both did an excellent job during summer.

September 9, 1960

Drove to cabins to get bow and arrow equipment for shooting drug into bears. Hope to develop a better technique than air gun and projectile syringe using an arrow and disposable syringes. Wrote notes.

Frank and Harry took off on elk hunt. They had 3 elk by 9 o'clock, and I saw Frank, Harry Reynolds and son dead tired after hunt but all meat in September 10, all bulls - two spikes and 1 4 to 5 year old. Took them 27 hours to get meat out and to Jackson - all without sleep. All were weary. Hunted south of Flag Ranch along base of Tetons on west side of Snake River.

September 12, 1960

Worked on bow and arrow technique. Developed some darts for the CO₂ gun.

September 10, 1960

Drove to West Yellowstone.

Contacted Forest Service and got map of Teepee Creek area from Hahn of Forest Service. Saw "Pink" and got more information. He phoned some packers and they gave us a price of \$10.00 per head for taking out elk which is extremely reasonable.

Drove down to Gallatin to check area Maurice and I had seen from air. Located bridges and other landmarks and realized that the large band of elk we had observed were on a high ridge between Bacon Rind Creek and Snowslide Creek. Must cross Park boundary from Gallatin Road in order to get into this area unless we go the long way around up Red Canyon and across the head of Teepee Creek and down to Bacon Rind. A 2,000 ft. climb from road and approximately $1\frac{1}{2}$ miles will put us on top of ridge and among elk. If we make a dry camp on ridge September 17 we would be shooting at elk by daylight September 18.

Problem is how to get elk out without crossing Park boundary. Will check this further as this has promise of a fine elk hunt and backpack trip.

Checked with Joe Frazie and he said he was not allowing elk out over Park land but hunters could move in with guns dismantled.

September 11, 1960.

Drove to cabins to get bow and arrow equipment for shooting drug into bears. Hope to develop a better technique than air gun and projectile syringe using an arrow and disposable syringes.

Frank, Harry Reynolds and son dead tired after hunt but all meat in freezer and gear cleaned.

Brought notes up to date.

September 12, 1960

Worked on bow and arrow technique. Developed some darts for the CO_2 gun.

September 13, 14, 15, 1960. shot 3 or 4 times and I later learned this shooting brought a. Remained at cabin and worked on notes and perfecting new dark for delivering sucostrin. ing quite light when shooting started in the valley in front of. Chopped wood and did odd jobs around the place. the elk took off.

September 17-21, 1960 ing south paralleling the ridge and cutting eastward and into the. Had earlier scouted and located by air, a herd of approximately a hundred head of elk at the head of Bacon Rind and Snowslide Creeks. ing a shot. About 8:11 Fritz Bell, Maurice, Dwight and I planned to take off from the Highway between Bacon Rind and Snowslide and make a dry camp on the 9,000 foot ridge east of Monument Mountain. later Fritz shot a spike, By 9:00 A.M. we had all filled out. Left early September 17 and hit the steep trail before sunrise with about 30 to 35 lb. packs apiece and in addition our rifles and ammunition. We carried dehydrated foods, trail ration and pemmican. to haul water 1/4 mile or more up. Climbed slowly enjoying the view and the anticipation of the coming hunt. Made camp about 2 o'clock just below the top of the ridge. our meat out the 18 mi. Elk bugled all night, some less than 100 yds. away. 11. While waiting for a Arose before sunrise, climbed to top of ridge and were in the midst of elk. A large bull was bugling only 30 yds. away and upwind from us. Appeared to have a large harem. te from our camp on two successive nights.

Dwight wanted a large bull and the rest of us wanted young cows or spikes. We gave Dwight the first shot and he dropped the bull with a neck shot. The harem spooked and Maurice moved south along the ridge while Fritz and I moved west down the slope and then we in turn separated. Had seen no other hunters. chers agreed to give our next priority next time.

I approached to within 100 to 125 feet of several large bulls that were bugling and put my sights on them. Didn't want a bull so didn't shoot.

Elk were all around me so I passed up several running shots at young bulls and cows.

Maurice and Dwight shot 3 or 4 times and I later learned this shooting brought down a spike.

It was getting quite light when shooting started in the valley in front of me. Decided I had better make a kill before all the elk took off. Many elk were now moving south paralleling the ridge and cutting eastward into the Park.

Hunted for $1\frac{1}{2}$ hrs. and trailed a large bull without getting a shot. About 8:15 A.M. I spotted a fat cow and calf. Dropped the cow with 2 shots. First shot hit the lungs, second broke the right foreleg.

About 30 minutes later Fritz shot a spike, By 9:00 A.M. we had all filled out.

Spent rest of day gutting, skinning and hanging meat.

Had a beautiful camp on the ridge, but had to haul water $1\frac{1}{4}$ mile or more up the slope.

Was several days before we could get a packer to haul our meat out the 18 miles by trail. Nights were cool and the meat kept well. While waiting for a packer we explored the surrounding country. The summer elk range is heavily overutilized in some areas.

Spotted the Satellite from our camp on two successive nights.

Was a strenuous but very pleasant and successful hunt. I hiked a great deal, was in good condition and enjoyed this hunt as much as any I have taken.

Made friends with some packers and we hope to hunt in this area again next year. Packers agreed to give our meat priority next time.

This is good Bighorn sheep hunting in area and we hope to include them in our hunt next year.

September 21, 1960

I received a call from Dick Hite, the Mt. Washburn lookout. He informed me that he could see a big grizzly on an elk kill in a meadow to the south of Washburn. The elk was a big bull and apparently the bear had just killed it. Another bull elk was lying down only several hundred feet away and was watching the grizzly. It is possible that the two bulls had been fighting though Dick had not seen them. While the grizzly was partly burying the elk another smaller grizzly appeared but then ambled off to the north. The grizzly could be seen defending his kill from all comers including ravens and coyotes.

I called Bob Howe to see if he could hike into the grizzly kill with me. John and Maurice were still off on an elk hunt. Bob and I met at the foot of Washburn and then drove to the top through rain, snow and clouds. Due to clouds and snowflurries we were unable to see the grizzly. On our way down the back side of the mountain we tried to locate the best place to take off. Explored several spots but the poor weather and the lateness of the hour weighed against going in. We decided to wait until morning and if weather permitted hike in early.

The next morning the 22nd was still cloudy. It was 10 o'clock before the sky cleared enough that we could spot the grizzly and his kill from a southern ridge of the mountain. The grizzly lay on his kill most of the time but occasionally got up and moved around for a few feet. I took some pictures through the mist with the 400 in. lens. These were quite distant and taken just for the record in case we failed to get closer. The sun was shining when we left our cars at the old Geology camp at the low saddle on the road down. We decided to take only one rifle, a 375 magnum, as we were loaded down with camera equipment. Bob carried the rifle and I took my 400 inch lens and tripod. I also put a loaded 38 in my pack.

along the northern edge of the meadow and once again got to the spot where we

The bear was in the fourth meadow east of our cars. We approached this from uphill and into the wind. The wind was blowing from the sw and up the mt. Just as we arrived in a position where I thought we might soon see the bear a large bull elk walked out into the opening in front of us. He scented us and trotted off to the south. I hurriedly took a picture and then spotted the grizzly at the far end of the same big meadow. The elk was headed right toward him. I took another hasty shot of the elk in foreground and grizzly in distance. With big lens grizzly was not sharp.

Bob and I then began a cautious stalk of the bear using terrain and trees to keep out of sight. The bear gave no indication of suspecting our presence until we got to within several hundred yards of him. We crawled out to a small stand of trees in the open and from here took pictures of the bear on his kill. He may have caught the light reflections from our cameras. At any rate he became restless and moved off to the timber that nearly joined our small stand. He was sniffing and trying to pick up a scent. We were unable to see him after he entered the timber and as it was quite dense he could approach us very closely before we could see him. I debated climbing a tree and then decided to get out into the open and cross the meadow to the east. Here the grizzly could not approach us closely unseen and we still had trees to climb. The grizzly had been protecting his kill against all comers and I was not at all certain how he might react to human intruders.

Soon after we reached the cover of this other stand of trees the grizzly returned from his reconnaissance and once more protectively spread himself over his kill. We approached to within 450 feet of the grizzly from this direction but due to a rise in the ground and back lighting could get no pictures. We saw no ear markers at this distance nor had we seen any before. I decided to again try to approach the bear from the north and west. We circled along the northern edge of the meadow and once again got to the spot where we

I thought this might make him turn, but did not yet want to shout or shoot to had first taken pictures and first made the bear suspicious. Apparently he again heard us or noticed movement. At any rate he once more left his kill and started toward us. As he moved west into the timber we moved east keeping out of sight. We were again in the uncomfortable situation of having a grizzly within several hundred yards of us in dense woods where we could not see him nor follow his movements. I decided it would be wise to go up a tree so both Bob and I picked lodgepoles with low limbs and climbed them. We ate our lunches up here and waited to see what would happen. The grizzly had not returned by twenty minutes and I began to suspect that he had scented us or heard us and taken off.

We dropped out of the trees and cautiously approached the dead elk out in the middle of the meadow. I wanted to photograph this kill as well as look it over for possible signs of death. The elk was a huge one and would go 800 lbs. or better. His head and antlers were uncovered but the rest of him was under a mound of earth a foot deep. The antlers measured approximately 52" from skull to tip and were approximately 40" across from tip to tip. I removed the camera box from the tripod and 400" lens and both Bob and I took pictures. Suddenly I looked up and saw the grizzly approaching out of the shadows of the timber to the West. He was between 200 and 250 feet from us and moving right ahead. The first thing I did was to tell Bob "There's the grizzly". I left the 400" lens and tripod as well as my pack which was on the ground and started backing off toward the trees a hundred yards or more behind us. I held on to my camera but pulled out the 38 that I had tucked in my shirt. Bob started backing up too but held his pack in one hand and still kept the gun on one shoulder. I told him to throw a shell in the chamber and hold it at ready. I took his pack. For a moment the grizzly hesitated and I took the opportunity to snap a picture and take a couple of steps toward him.

I thought this might make him turn, but did not yet want to shout or shoot to scare him. The grizzly reared up to see and smell better and waved his arms as he rose. He then ran toward us and reared up again. By this time we were backing off as fast as we could go. The grizzly's attitude was that of a bear determined to protect his kill. When the grizzly dropped to the ground this next time he made a rush for us and the elk. We were getting close to timber so turned and ran. The grizzly stopped at the elk instead of coming on. I doubted if we could get up a tree in time if he rushed us so turned to face him. A few seconds after he reached the elk he picked up our scent. This was apparently the first time he had scented us and thus realized that we were humans. As quick as a flash he turned and ran for the far timber. He was still running when he disappeared.

We again returned to the kill and I gathered up my camera equipment. I partly uncovered the elk and both Bob and I tried to turn it over so we could see whether there were cuts or slashed on the neck or belly. The bear had eaten on the rear quarters but much of the elk was still intact but beginning to smell. With our combined efforts and using the legs as levers we were unable to turn the elk over. We were hampered by the dirt but nevertheless the elk was a very heavy one.

After this we packed up our gear and headed back to our cars staying downwind of where we thought the bear might be. This bear was very silvery in appearance and his coat was matted like an old one. When lying on the elk he looked as big as the elk but it was difficult for me to accurately estimate his size. I doubt if this is a bear we have seen before.

At this time of year most of the big bull elk have large harem of cows. The mating and constant herding leave many of the bulls tired and rangy by the end of the rut. I have observed some to date that were tired and lying down but she was not sufficiently immobilized to allow me to take a tag in one ear. She got to her feet and Frank took stills of Maurice

down. They did not even respond to a bugle at close range. There is a possibility that the bull the grizzly was feeding on was tired and sleeping and in this condition was struck by the bear.

The berry crop this year was very poor. The grizzlies got very little food from the huckleberry harvest. The white pines (Limber and White-barked) are devoid of cones in all areas I have visited. Thus this fall food supply is quite limited. It is possible that this will cause the grizzlies to turn to preying on large game from now on. With the tourist season over there is little food available at the dumps. The campgrounds now offer only tidbits too. Two projectile syringes. Frank took pictures as she came around. She recovered

September 23, 1960

Shot a bull elk 5.7 miles from Trout Creek Dump near the head of Hayden Valley. Art Hayes and I dropped him in a small open meadow ringed by low hills. Bulls were bugling all around. Hope to attract bears to this spot then trap them with noose or steel traps and make observations of marked grizzlies. Checked the elk kill at head of Trout Creek. Coyotes and raven were there but no bears as yet.

September 24, 1960

Drove to top of Mt. Washburn and looked for grizzly that had made a kill of bull elk in meadow below. Ravens were on hill and much of it had been consumed. Waited about an hour and bear did not return.

September 25, 1960

Set two culvert traps at Trout Creek. "Dump Kids" were there about noon. Spent the day at Mammoth. Discussed the Gallatin elk problem with

Saw only one grizzly there when we returned about 9 P.M.

September 25, 1960

Captured 2 grizzlies at Trout Creek - both unmarked. Hauled them up Trout Creek about three miles. Immobilized the smaller one, a female weighing approximately 200 pounds. Injected 30 mg. of sucostrin. This put her down but she was not sufficiently immobilized to allow weighing. Put an ear tag in one ear. She got to her feet and Frank took stills of Maurice

September 27, 1960

and I attempting to shoot her with the Cap-chur gun. Should have obtained some excellent shots.

Had difficulty immobilizing the second bear. We underestimated her size. Had to give multiple doses of sucostrin, 32 - 10 - 30 mg. This was ineffective. An hour and a half later gave 37 mg. Did not inject. Ten minutes later gave 37 mg. additional and 10 mg. 6 minutes later. This partially immobilized the bear and we were able to pull her out of trap though she could still bite and raise her paws. Put an ear tag in one ear. Did not retrieve two projectile syringes. Frank took pictures as she came around. She recovered slowly - characteristic of multiple doses. Bear probably weighed 375 to 400 lbs. Were unable to weigh her. She made a lunge at Maurice and me. In turning quickly to retreat (we were within 30 feet of her) I pulled a muscle in my diaphragm or between the ribs. Still painful.

Checked the elk kill at head of Trout Creek. Coyotes and raven were there but no bears as yet.

September 28, 1960

Checked the bear kill at Alum Creek. Only coyotes and ravens there.

Saw only 3 grizzlies at Trout Creek dump at dusk. Not many coming in now. Little food there.

September 26, 1960

Spent the day at Mammoth. Discussed the Gallatin elk problem with Chief Ranger Nels Murdock.

Maurice visited the elk kill at head of Trout Creek late in the afternoon. A 3- or 4-year-old grizzly had located the kill and had fed on it. Grizzly was lying over kill in a protective manner.

Bull elk challenging one another on Swan Lake Flats.

Sow with 3 red yearlings (No. 26) were eating the black bear kill on Alum Creek.

September 27, 1960

Visited the elk kill at head of Trout Creek. About half the elk had been consumed but grizzly was not present. Three coyotes took off. This was about 9:30 A.M.

Returned to kill about 5 P.M. Coyotes and ravens were present. Returning to car we saw the grizzly coming out of timber. He did not see or wind us. He ambled slowly but directly to the elk kill and immediately began to cover it with earth. In 10 minutes he had completely covered elk except antlers. Did all digging with forepaws.

Grizzly got our wind, we were about 125 yds off, and took off at a run with a large chunk of meat in his mouth. Disappeared in woods with raven diving at him. Did not return while we were present.

Set 2 traps at Trout Creek. Several unmarked bears were present.

Maurice went to Grebe Lake with Bill Bergen to shoot an elk. Did not hear or see any although they were in the area several weeks ago.

September 28, 1960

Captured two bears both unmarked. One was "Peg Leg", the other a ♂ yearling - litter mate of No. 26.

Hauled both bears part way up Mt. Washburn in order to take pictures.

Peg Leg probably weighed 300 to 350 lbs. and is a 3- to 4-year-old bear. We had difficulty immobilizing him. Multiple doses failed so we waited 50 minutes and tried again. Put him down but he could still bite and raise head. Opened gate and he crawled out but was unable to get to his feet. Took photos as he came out of the effect of the drug. Attached 2 metal ear tags. Due to multiple doses he came out slowly although never completely immobilized. Started rolling down mountain side, momentarily gaining his feet then rolling again. Came to rest on a relatively level area without harm.

Had difficulty immobilizing the yearling also. She weighed 205 lbs.

Took usual measurements and dental casts. Frank took numerous photos.

Put bear back in trap and returned her to Trout Creek. She was under effect of the nembutal for 6 hours and 38 minutes.

The two bears we numbered 76 and 77 respectively.

Tried to take an elk up Trout Creek but failed to locate one where we wanted to make the kill.

September 29, 1960.

Spent day in office doing paper work, writing notes, etc.

Letter from Dr. Harold Braun said he was sending needle for sternal punctures and catheter for use on resuscitator.

Bob Casebeer and Bob Bent spent afternoon discussing Wilderness problems of Forest Service and National Park Service.

Checked Gardiner Dump.

Observed the collared cow No. 419 with the new calf Sylvia and 2 yearlings. 3 orphaned yearlings have been sighted since and now

June 14, 1961. Bob and I left Missoula 7:15 A.M. and arrived at Old Faithful at 4:30 P.M. Met Bob Shaw and Lee Robinson. The cow which we had captured Nov. 18 that we had captured and marked in 1959 at Rabbit Creek was in the campground with 3 calves and making trouble. Rangers had chased the cow Sylvia. For a period of 10 days or more they had allowed her to roam along a 3 to 5 mile stretch of the Firehole River that parallels the road and did not remove her because she quickly became a major tourist attraction. She

Feb. 10-18, 1961 much of her time in the large meadow in front of Old Faithful Lodge. Winter trip in search of grizzly sign. cubs and on occasion cubled

past Old See Harry Reynolds' notes of Feb. 20 also. J. Craighead. This was

May 3, 1961 by the District Ranger and administration at Mammoth. As the tourist

numbers Met Maurice at Yellowstone after giving lecture on grizzly bear re-ly search to Billings Audubon Society. raiding camps and feeding at the garbage cans.

Four range Observed 4 grizzlies up the Lamar feeding on the elk heads disposed-- of during the winter elk reduction. each night. The rangers were frantic and

wanted Syl One bear was No. 32 collared bear originally captured at Trout Creek.

The other three were all marked bears and bore colored markers: tted Sylvia and

cubs in a grassy glade along No. 67 - Originally marked at Gardiner did not approach

close. About dusk she came No. 68 - " " " " No. 46 - the campground and we Trout Creek approach

her with It is presumed that these bears wintered up the Lamar or possibly outside the Park to the east. ground now loaded with campers. At 11 P.M. we

May 5, 1961 the hunt afraid that we were only aggravating the situation.

June 8, 1961 Checked Gardiner Dump.

Observed: the collared sow No. 21 with the news that Sylvia and 2 yearlings cubs had just raided 2 orphaned yearlings have been sighted carts and rove

June 7, 1961 slowly toward the spot where Sylvia was lying with her cubs around

her. At Maurice and I left Missoula 7:15 A.M. and arrived at Old Faithful

at 4:30 P.M. Met Bob Howe and Lee Robinson. turning her back toward the

campground Sow No. 18 that we had captured and marked in 1959 at Rabbit Creek was

in the campground with 3 cubs and making trouble. Rangers had named the sow

Sylvia. For a period of 10 days or more they had allowed her to roam along

a 5 to 6 mile stretch of the Firehole River that parallels the road and did not

not remove her because she quickly became a major tourist attraction. She

was not effective. While preparing another dose the cub climbed out of the

bauling slot in the trap and escaped. We loaded the cub off with the Ford

apparently spent much of her time in the large meadow in front of Old Faithful Lodge. She grazed in the meadow, romped with her cubs and on occasion ambled past Old Faithful within 20-25 feet of tourists snapping pictures. This was encouraged by the District Ranger and administration at Mammoth. As the tourist numbers increased the problem became acute. When we arrived Sylvia and family were roaming the campground at will raiding camps and feeding at the garbage cans. Four rangers were required to keep curious and ignorant tourists at a safe distance. This vigil lasted well into each night. The rangers were frantic and wanted Sylvia removed.

We loaded the CO₂ gun and 6 propulsive darts. We spotted Sylvia and cubs in a grassy glade along the river, but she was wary and we could not approach closely. About dusk she came into the campground and we attempted to approach her with a vehicle. Our flashlights alerted her and she moved swiftly back and forth through the campground now loaded with campers. At 11 P.M. we called off the hunt afraid that we were only aggravating the situation.

June 8, 1961

Lee Robinson awakened us about 6:30 with the news that Sylvia and cubs had just raided an ice box. We dressed, re-loaded the darts and rove a pickup slowly toward the spot where Sylvia was lying with her cubs around her. At sight of the pickup she ran across the loop. We raced the vehicle around to the other side and intercepted her, turning her back toward the campground. As she passed between an opening in the lodgepoles I fired and struck her back of the shoulder. Shot was made at a distance of about 50 feet. While we turned the pickup, she disappeared. Drove around the loop and saw her sprawled on the ground (75 yards from where she had been shot) with her cubs hunched in close to her.

Sylvia partially immobilized from the muskoxone chloride and from 200 yards away attempted to immobilize the cub. Used jab stick and it was not effective. While preparing another dose the cub climbed out of the baiting slot in the trap and escaped. We headed the cub off with the Ford

and Maurice Drug had apparently taken effect in about $1\frac{1}{2}$ minutes. I got out of vehicle and approached to within 25 feet of bear. Saw she was immobilized so shot a cub and in quick succession hit the other two. These quickly immobilized. The first dart shot at a cub struck the side of the head and drug did not inject. This cub climbed a tree to a height of 20 feet. Another dart immobilized cub immediately. We could get under way again. We hauled him. Dragged Sylvia to culvert trap and pushed her in and tossed one cub in with her. Placed the other two in another culvert trap. All came out of drug nicely. We used a good tussle until the drug took effect. Cub weighed 20. Examined areas along the Firehole where Sylvia had torn up the turf in search of tubers. Some areas were 20 feet long and 3 feet across.

Behavior: It appeared that the major food sought was (not in flower). It has a trailing rhizome extending from plant to plant. The larger specimens have an enlarged root base. Sow laid the sod back and fed on the roots as well as tubers of: a. *Smilacina stellata* b. *Umbelliferae* c. *Cirsium* were anxious to release the cub with the sow as both were in strange territory. Released the cub on the sow's trail. The sod was composed largely of sedge, some clover, grasses, and and he took off then lay down for a rest. We suspected the sow had not gone a surprisingly large number of tuber and rootstock bearing plants. far. Maurice howled like a cub and the sow raised her head out of the sage about $1\frac{1}{4}$ mile away. The cub moved off in the general direction of the sow, *Lomatium* but we saw no place where this has been excavated. following her trail. When about 300 yards apart the sow saw the cub and Immobilized Sylvia (wt. 225 lbs.). Ranger guessed 400 to 500 lbs. called. Cub instead of turning toward sow, took off on a dead run. Sow took (See data sheets). Re-marked her and released her at Trout Creek. Left after cub and quickly overtook him. His first reaction was fright, then he Sylvia partially immobilized from the succinylcholine chloride and drove recognized his mother and the two nosed one another. Cub started to suckle 200 yards away and attempted to immobilize the cub. Used jab stick and it but the sow moved off at a steady gait with the cub in tow. was not effective. While preparing another dose the cub climbed out of the baiting slot in the trap and escaped. We headed the cub off with the Ford

No. 74 - Marked with one tag only - O.K. Bear was released to photograph.
No. 57 - Color markers gone - Yellow tags O.K.
No. 67 - Color markers and tags O.K.

and Maurice jumped out and tried to run him down while I drove thru the sage heading the cub off when he raced for the bank of Trout Creek. Maurice winded before the cub. I took up the chase afoot and in desperation made a flying tackle when it looked like he would reach the creek bank and get away. I knocked him over but hit a grass hummock so hard I thought I had broken a few ribs. Maurice pounded on the cub before he could get under way again. We hauled him, bawling, back to the vehicle, immobilized him, marked him, and took the data we needed. Both Maurice and I were exhausted; the cub was still strong and gave us a good tussle until the drug took effect. Cub weighed 20 lbs. Cub did not have all its deciduous incisors and first molar was just erupting. For information on dentition see data sheets.

Behavior:

While we were chasing the cub, the sow was searching for her offspring less than one-half mile away. We expected her to head for us at any time but she apparently did not hear the cub and moved off in the opposite direction. We worked hurriedly and with apprehension. When the cub revived, the sow was nowhere in sight. We were anxious to release the cub with the sow as both were in strange territory. Released the cub on the sow's trail and he took off then lay down for a rest. We suspected the sow had not gone far. Maurice bawled like a cub and the sow raised her head out of the sage about 1/4 mile away. The cub moved off in the general direction of the sow, following her trail. When about 300 yards apart the sow saw the cub and called. Cub instead of turning toward sow, took off on a dead run. Sow took after cub and quickly overtook him. His first reaction was fright, then he recognized his mother and the two nosed one another. Cub started to suckle but the sow moved off at a steady gate with the cub in tow.

- No. 52 - Color and tags O.K.
No. 51 - Right rope gone. Left intact but fly gone.
Ear tags O.K.
No. 26 - Color markers gone - red tag on left ear O.K.
No. 74 - Marked with one tag only - O.K. Bear we released to photograph.
No. 37 - Color markers gone - Yellow tags O.K.
No. 65 - Color markers and tags O.K.

Sylvia is an exceptionally tame bear that inhabited the Rabbit Creek dump. She was the tamest grizzly we had ever encountered at the time we marked her in 1959. Her behavior with regard to humans is certainly atypical. In past years we had approached her to within 25 feet. The rangers told us that some tourists approached her to within 10-15 feet to take photos. She will probably cause trouble and we expect to hear more from her before the summer is over.

Feeding Activity

Sylvia spent many hours grazing in the Old Faithful area where rangers could observe her.

She spent two days at one fresh elk carcass. It was not known if she killed the elk or found it dead.

Darrel Coe observed one other grizzly feeding on a freshly killed elk. (See Darrel's report).

June 9, 1961

Drove to Rabbit Creek and picked up Sylvia's other two cubs which we held overnight in a culvert trap. They had been eating well and bawling loudly. Cubs readily ate milk and hamburger.

Collected 18 scats deposited by Sylvia. These appeared to be composed entirely of vegetation. Recognized elk thistle leaves in one scat. Will analyze these as they are accurately dated.

Behavior

Twenty to 25 bears were at the Trout Creek dump.

Marked bears observed:

- No. 43 - Color markers gone - Tags O.K.
- No. 52 - Color and tags O.K.
- No. 6 - Color markers gone - Yellow tags O.K.
- No. 51 - Right rope gone. Left intact but fly gone.
Ear tags O.K.
- No. 26 - Color markers gone - red tag on left ear O.K.
- No. 74 - Marked with one tag only - O.K. Bear we released to photograph.
- No. 37 - Color markers gone - Yellow tags O.K.
- No. 65 - Color markers and tags O.K.

June 10. A medium sized adult male and a small light colored female exhibited sexual interest. The male smelled the female's genital organs and attempted to mount. She led him over the hill and exhibited mating behavior for 5-6 minutes. Could not witness all the activity but it appeared that the male bred the female. At any rate a mating act was consummated with the female receptive. The female broke off the engagement by lowering her head, biting at the male and rolling out from under him.

A large boar Beeding when we arrived spooked and later returned. He attempted to mate with a small sow No. 65. She was not receptive but not hostile either. This sow is the Grizzled sow and had cubs last summer. The large boar had light patches on either side of the neck plus an injured lower lip which allowed the upper canine to be fully visible. He kept close to the Grizzled sow and would not let other males approach. The large boar salivated profusely as he approached the Grizzled sow and she also salivated though not as profusely. Both bears mouthed one another for 3 or 4 minutes. Each held mouths open and bared canines but made no attempt to bite. Male kept circling female attempting to smell her genitalia. Female when pressed too forcibly would sit down. No mating occurred.

Had known-age yearlings, 2-year-olds and 3-year-olds all together. The 3-year-olds are difficult to distinguish from the 2-year-olds. Slightly larger and rangier. There is sufficient dimorphism and individual size variation to make determination of these ages extremely difficult even with known-age animals where direct comparison can be made. Believe it is impossible to age by size criteria bears seen under conditions where comparison of age classes cannot be made. It is possible to sort these age classes out over a period of time and with many observations. This can be done during June and July but becomes increasingly more difficult as the season progresses.

June 10, 1961 cubs developed bad cases of diarrhea; probably from stress and the milk. Bear No. 77 was trapped by rangers at Norris Junction. She is the litter mate of No. 26 and offspring of the Black Sow - Family group 10. We made many observations of this family during the summer of 1960. We easily recognized No. 77 as a 2-year-old female captured and marked just before we terminated trapping operations last fall. Colored markers were in good shape.

Trout Creek

Behavior Took 77 to Trout Creek and injected 30 cc. of succinylcholine chloride. (See data sheets) Although a much lighter dose than she received last fall, it put her out quickly and caused cyanosis. Waited until she appeared to be reviving then made intrapulmonary injection of 9 cc. of 250 mg. pentobarbital sodium. Pulse rate dropped to 16 per minute. Cyanosis steadily improved. We weighed her (145 lbs.) then started taking measurements. Noticed she had suddenly stopped breathing. Bear died - she must have been more susceptible than on previous occasion. This has been characteristic of several animals we have immobilized one or more times. Ears were crusted with dried serum from slit in ear. Ears had not headed around the polyethylene rope. This is rough and may irritate tissue. If this is typical, we will have to discard it as a marker.

Spent afternoon skinning and boning bear and autopsying. Right atrium and ventricle and posterior vena cava were distended with coagulated blood. (Similar to other deaths from overdosage). X-rayed skull and epiphyseal sutures of humerus and tibia and fibula. Made dental casts of full upper and lower jaw using our new dental trays.

Washed cubs and put the small one on a leash. Weighed 15 lbs. Took notes on dentition. Took three of us to spreadeagle cub and wash him. Fought chain around neck and has continued to do so. Male rested most of his

Both cubs developed bad cases of diarrhea; probably from stress and the milk diet. Cubs were extremely thirsty; diarrhea causing the dehydration. Female cub weighed 20 lbs. and was considerably more powerful than the runt male. Both bawled all afternoon and most of the night. Male cub easily climbed a lodgepole 6" in diameter. Used jaws to help climb and hang on to limbs. All evidence that a successful mating was consummated, and the cub was born.

Trout Creek

Behavior Soon after the first bear left another arrived and attempted to mate with Grizzled Sow and her two yearlings were at Trout Creek. Yearlings were at dump when sow arrived. She chased them away and it is apparent that she has weaned them as yearlings. A large male appeared and showed interest in the Grizzled Sow. He smelled her genitalia and checked her over thoroughly. She was not receptive but it does appear as though she is attractive to males and may come into estrus later. Sow evinced interest in the male but would not hold for him to mount until he was present 10 or 15 minutes. He then mounted the Grizzled Sow and remained in position for 5 minutes. No indication a mating was consummated. Sow's mammary glands were enlarged and these were quite visible with the scope. After a little activity on the part of the male, the sow turned and snapped at the boar and then broke away.

Suspect this same boar attempted to mate this sow last evening. This behavior would indicate that the Grizzled Sow is going to come into estrus this spring. Whether she does or not her behavior is unique; she is more receptive to males than any other sows we have observed with yearlings or 2-year-olds. The medium sized adult male observed breeding June 9, again mated with the same small female (both bears unmarked). Copulation took 12 minutes. Male clasped the female tightly around the abdomen. Male rested most of his

weight on hind quarters of the 200 lb. (approx.) female. Sow disengaged by snapping at boar and rolling out to one side. Male slapped at female as she broke away. After mating, the male immediately left and showed no further interest in the sow. He took off across Hayden Valley. Sow remained to feed.

As on previous occasion both male and female salivated profusely at beginning of intercourse. All evidence that a successful mating was consummated, and the current swift. Bare Fang was easily but the current carried him down.

Soon after the first boar left another arrived and attempted to mate with the sow. She was not receptive. but he put on a dash of speed and crossed.

A medium-light colored male arrived and attempted to mate with the Grizzled Sow (No. 65). She was not very receptive and no mating occurred.

It seems that sows in estrus or coming in estrus are receptive to any male. The large males will apparently breed any receptive female. Some males are more possessive than others. Ingomar has been the exception to this general rule. He is highly possessive, but neither in 1959 or 1960 did we see him breed any female other than his "runnin g mate". He kept all other bears away from her, but did not seek out other bears in estrus.

June 11, 1961

Trout Creek.

Census

A young boar and a small sow were "love playing" when we arrived. They may have been breeding before we arrived.

The Grizzled Sow No. 65 was at dump with only 3 other bears.

As we were driving out to Trout Creek we saw four grizzlies across the Yellowstone River about 1 mile from the Trout Creek turnoff. One of these was the large boar with the light-colored neck and shoulder patches. We had earlier referred to him as "Bare Fang" because his lip is turned away and

Large boar
Large white sow
Sow - 3 cubs
Adult sow (probably 34)
Unmarked 3-year-old
Sow

Total - 22

the canines are exposed on one side of his jaw. At 7:15 P.M. he started to swim river, but cars on highway apparently deterred him and he returned up the river bank and lay down in the sage. We went on to Trout Creek but finding few bears there returned to the river about dusk (8:40 P.M.). We had positioned ourselves for only a few minutes when the large boar arose, ambled to the river and started swimming. The river was about 50-60 yds.

Date: 6/12/61
across and the current swift. Bare Fang swam easily but the current carried him downstream about 100 yds. He left the water and headed directly for the road. We tried to cut him off with the car but he put on a dash of speed and crossed about 150 feet in front of us and raced up the steep bank on the far side of the road, his wet hide still throwing water and leaving a wet wake in the dry road cut. It was almost dark. This is the first crossing I have witnessed, although the bears do it frequently usually at dusk or at night.

Medium-sized bear returned, sought out No. 39 and tried several times to mate with her but Inge interfered. Finally appeared to be successful in mating with sow 39. Inge returned from chasing other bears and forced Medium-size boar to dismount and run.

Inge again made an attempt to breed No. 39. Appeared to be concerned only with exercising his authority over the other males.

Census

Green sow No. 7
Medium bear copulated No. 6 Weaned this spring
No. 51 as 2-year-olds.
Littermate - unmarked
Dump sow No. 39
Medium-size boar pulled Ingomar No. 12
No. 26 Were family 10-
Littermate to 26, unmarked just 77 killed
Medium size boar - scar on right side of face
No. 41 - Ivan
No. 74 - 3-year-old
Cutlip
Large boar unmarked
Large boar " but Inge disrupted activity early
Large white sow
Sow - 3 cubs
Adult sow (probably 34)
Unmarked 3-year-old
Sow

Total - 22

Inge moved off - He did not mount a sixth time. Inge returned and put the Medium boar on the run. He herded sow 39 back to the edge of the dump. He showed no interest in mating with her.

12 Adults
2 2-year-olds
2 3-year-olds
3 cubs

Total 22

During the course of his breeding activity Inge several times approached (Grizzled Sow No. 65 and her two weaned yearlings were not present)

Chronology of Breeding Activity at Trout Creek

Date: 6/12/61

Time: 6:30 P.M. to 8:45 P.M.

Weather: Cloudy, cool and raining.

"Medium-sized boar" mated with the Dump Sow No. 39.

Inge interfered with breeding by chasing Medium-sized boar away. Boar was alert and wary of Inge.

After chasing Medium-sized boar Inge made no attempt to mount or mate Sow No. 39.

Medium-sized boar returned, sought out No. 39 and tried several times to mate with her but Inge interfered. Finally appeared to be successful in mating with sow 39. Inge returned from chasing other bears and forced Medium-size boar to dismount and run.

Inge again made no attempt to breed No. 39. Appeared to be concerned only with exercising his authority over the other males.

Medium boar copulated a fourth time with sow No. 39. After breeding got well under way Inge stalked over; the sow rolled out to the side and Medium-size boar pulled away in a hurry. Penis was out and erect and was evident that the Medium-size boar had been copulating; not just going thru the motions.

Inge returned to eat and chase other boars. Sow 39 now very receptive. Medium boar mounted her a fifth time but Inge disrupted activity early before any serious breeding was accomplished.

Inge moved off - Medium boar mounted a sixth time. Inge returned and put the Medium boar on the run and this time herded sow 39 back to the edge of the dump. He showed no interest in mating with her.

During the course of this breeding activity Inge several times approached the Green sow No. 7, mouthed her neck, nuzzled her, but made no attempt to mount her. Inge appeared affectionate but uninterested in mating. Sow No. 7 cowed slightly at his approaches, but offered no resistance.

Ivan, No. 41, arrived from the southwest. His markers were discernable and his canines were missing.

Inge immediately took after Ivan chasing him 2 to 300 yards. While Inge was away playing the role of "boss bear", the Medium-sized boar copulated with Sow No. 39 for the seventh time. While this was occurring No. 74 (a 3- or 4-year-old male) mounted and mated the Green sow No. 7. This was the first time this sow had been bred in the course of the evening. She was receptive to this small male. Sow No. 7 had earlier showed considerable interest in the Medium-size boar but he had evidenced no interest in her. Sow 7 followed him around and lay down beside him, but the Medium boar was interested only in sow No. 39.

After the 7th mating and attempts at mating between the Medium boar and Sow 39, this boar showed no more interest in any of the sows including No. 39. There is little doubt that he successfully bred Sow 39 several times in spite of the disruptive influence of Inge.

When No. 74 terminated breeding activity with Sow 7, she turned, swiped at him with a front paw and ran him off several hundred feet.

Cutlip arrived from the north, a ponderous, scarred male. As Cutlip moved in, a large dark boar came in from the west and south. Inge chased this boar for 1/2 mile across the sage flats. Inge would strut stiff-legged, bow his neck then rush at the intruder. Cutlip kept moving in slowly.

all belligerence, turned and ran from Inge. Inge remained in command without Inge turned from the large black boar and moved toward the creek to intercept a fight. The other bear made a wide detour and headed for Sow No. 3. Cutlip. Cutlip deflected his course, giving ground to Inge as he approached but he did not run. This show of defiance appeared to be sufficient and Inge slowly out across the flats and met Ivan at a distance of 1/2 mile from the dump and well clear of the other large males. Ivan mounted Sow No. 7 almost

Cutlip met sow No. 7 as she was leaving the dump area. He mounted her with no preliminaries and proceeded to try and breed her. His mind was not entirely on the task as he kept a sharp watch on Inge and occasionally raised up lifting the female with him to take a long look in all directions - nose up and ears erect, swift movements of head.

Cutlip did not appear to have successfully bred the sow when the big black boar that had earlier been "run out" by Inge moved in and forced Cutlip to "break off" and chased him away. Inge in turn ambled over and ran off the big black boar before he could get anything started.

Cutlip moved in while Inge and the black boar were running across the flats. He mounted Sow No. 7, became alerted and got off, mounted again, got off a third time. He was not effective and finally broke off and moved away.

At this time there were 4 very large boars in the meadows and the Medium-sized boar. They were: Ingemar, Cutlip, Ivan, the big black boar.

Ivan remained far out on the sage flats apparently afraid to come in and join the activity.

A fifth large boar now appeared coming in from the east.

Inge immediately challenged the large boar as he had all others upon their arrival. The fifth boar came on, strutted stiff-legged, pawed the ground and arched his neck. Inge moved on steadily and purposefully. At about 100 feet distance, the fifth boar ceased his strutting, suddenly lost

all belligerence, turned and ran from Inge. Inge remained in command without a fight. The other bear made a wide detour and headed for Sow No. 39.

During this period of challenge of males, the Green sow No. 7 moved slowly out across the flats and met Ivan at a distance of 1/2 mile from the dump and well clear of the other large males. Ivan mounted Sow No. 7 almost immediately and unmolested by the other large males bred her for 9 minutes. This was the fourth male to copulate (apparently successfully) with sow No. 7 during the course of the evening.

Inge continued to patrol the area of the dump but mated with none of the sows. Apparently his self-appointed task is to interrupt breeding activity without himself taking part. He kept himself busy stirring things up.

The large 5th boar attempted to breed sow 39. She was receptive but Inge chased him away before he could get under way. This boar went around the hill and returned. Inge returned from the other side of the hill herding sow 39 with him. neither are taking noticeably.

The med-sized boar that earlier in the evening had bred sow 39 moved out across the flats and forced Ivan to disengage sow No. 7 after 9 minutes of breeding activity. He chased Ivan 1/4 mile. Ivan, a much larger bear, young and powerful is apparently defenseless due to loss of his canine teeth.

No. 74 (3-4-year-old) chased the green sow No. 7, but Cutlip intercepted and mounted her. This huge boar nearly completely covered the sow. He got on and off the sow several times when disturbed by other bears but finally got under way and bred her for 12 minutes.

The 5th boar chased and mounted sow No. 7 and appeared to consummate a successful mating. This was the fourth male to mate with the green sow No. 7. almost continuously. We have padded and taped the leash, but they soon tear thru this and the leashes must be retaped to prevent the cubs from breaking

Thus sow thus had intercourse with the following males in sequence:

No. 74 (3 to 4-year-old)

Cutlip - old male

Ivan - vigorous adult male in prime

Cutlip (second time)

5th Boar (male in prime)

Sow No. 39 had intercourse 7 times with one male - the medium-size boar and the 5th boar attempted to breed her but was unsuccessful.

It became too dark to observe further and the entire situation too confusing to interpret.

June 13, 1961 We put the female cub on a line we injected her with 2 mgs.

Worked around hdq. and wrote notes all morning.

Have both cubs on chain leashes and these attached to a No. 9 wire line so they can run 20 to 30 feet. Placed a box at one end of wire for them to enter.

The small male has been bawling a lot and has torn up the ground and turf as far as his leash will allow him. The female seems more placid, but neither are taming noticeably.

Noticed the male cub had a swelling on the side of his jaw. Three of us held him down and I examined his mouth. Had apparently injured the deciduous canine. When I applied pressure to the swollen area, pus and blood gushed out from the base of the canine. I injected male cub with 1 cc. of penicillin.

Fed both cubs small chunks of meat at frequent intervals. They have been eating and thriving on the flesh of the 2-year-old grizzly (No. 77) that we killed. Frequent feeding has as yet had little effect in taming them. Both will rush and strike at an intruder and they constantly run to the end of their leashes and are jerked end over end. They fight and chew the leash almost continuously. We have padded and taped the leash, but they soon tear thru this and the leashes must be retaped to prevent the cubs from breaking

evidenced any interest in her. No large males were present. their teeth. They frequently clasp their front paws behind their heads and turn summersaults in their attempts to fight the collar and chain. The chain with a 30-06 - 150 gr. bullet at 275 yards. First shot struck high on shoulder collar seems to be extremely annoying. The male climbs up on his box and and broke her down. Finished her off at closer range with a head and a neck then grabs the wire line and hangs like a sloth. When it appears that he can shot. Killed elk (a dry cow) at 5:30 P.M. Dragged her 150 feet into the hang up longer he chins himself and then grabs the wire with his teeth and meadow and left her.

holds on until finally jaw and forelegs give way and he tumbles to the ground. Great Grey Owl has been sighted in the meadow near our Hdq. Was here Have not been able to get the cubs to eat thistle or other vegetation; in 1960. but they relish the grizzly meat and milk. Both drink a lot of water.

June 14, 1961

Before putting the female cub on a line we injected her with 2 mgs. Jim Cole and family arrived with a deep freeze and other equipment. of succinylcholine chloride. This hit her very hard and for a few moments Worked with the cubs most of the morning. Both seem wilder than cyanosis developed and her breathing became shallow. She recovered in a few even. Have bitten thru the heavily taped chain. Female broke one dediduous minutes. This 2 mg. of drug had far more effect than 6 mg. injected when canine on the chain. The male still had a swollen jaw but it was no longer originally captured. See data sheets. Suspect this sensitivity is due to draining. Injected 1 cc. of penicillin intramuscularly.

stress.

Injected each cub with 3/4 of 1 cc. of diquel - a tranquilizer.

Behavior

Took effect within 10 minutes. Both calmed down and stopped bawling. During Trout Creek.

the course of the day both ate from our hands. Still showed fits of temper

Very few bears came in. Six two-year-olds were present: No. 6, but were much quieter. Slept during the afternoon. Fed them small bits of No. 51, No. 26, No. 29, Sucostrin Kid's sister, and 2 unmarked 2-year-olds. nest frequently.

The two-year-old age class can be distinguished now from year-

The boys have Hdq. quite shipshape now.

lings and 3-year-olds, but it will become increasingly difficult as they put Jim Cole, Lois and Bobby drove up Hayden Valley with me to inspect on weight.

the elk kill. Nothing had been to it. Saw several dozen buffalo and elk.

The sow of Sucostrin Kid came in and vigorously chased her two-year-

Took some nice photos of elk.

old No. 29 away. This is another 2-year-old litter mate that is weaned. Since

Behavior

marking Sucostrin Kid No. last summer, we have never seen him again. We

Very few bears at Trout Creek. Inge was up to his old trait of chas- suspect he is in the population somewhere but just has not been observed.

ing all bears, leading or herding the sow back to dump but showing no interest

Sow No. 34 with pink loop-yellow-tail came in. She was a lone

in mating.

sow last year and is apparently alone this year. None of the young males

The med. size bear bred a sow, but could not determine which sow it

was.

evidenced any interest in her. No large males were present.

Shot a cow elk (No. 1 for this season) high up Hayden Valley. Shot with a 30-06 - 150 gr. bullet at 275 yards. First shot struck high on shoulder and broke her down. Finished her off at closer range with a head and a neck shot. Killed elk (a dry cow) at 5:30 P.M. Dragged her 150 feet into the meadow and left her.

Great Grey Owl has been sighted in the meadow near our Hdq. Was here in 1960. Later learned that Sylvia and cub were seen at the Chittenden Bridge June 14, 1961 about 6:30 P.M. Thus she was at that time a little over 1 mile from Hdq.

Jim Cole and family arrived with a deep freeze and other equipment.

Worked with the cubs most of the morning. Both seem wilder than ever. Have bitten thru the heavily taped chain. Female broke one deciduous canine on the chain. The male still had a swollen jaw but it was no longer draining. Injected 1 cc. of penicillin intramuscularly.

Injected each cub with 3/4 of 1 cc. of diquel - a tranquilizer. Took effect within 10 minutes. Both calmed down and stopped bawling. During the course of the day both ate from our hands. Still showed fits of temper but were much quieter. Slept during the afternoon. Fed them small bits of meat frequently.

The boys have Hdq. quite shipshape now.

Jim Cole, Lois and Bobby drove up Hayden Valley with me to inspect the elk kill. Nothing had been to it. Saw several dozen buffalo and elk. Took some nice photos of elk.

Behavior

Very few bears at Trout Creek. Inge was up to his old trait of chasing all boars, leading or herding the sow back to dump but showing no interest in mating.

The med. size boar bred a sow, but could not determine which sow it was.

En route to Hdq. we spotted Sylvia and cub No. 78 along the highway at Alum Creek. She was moving steadily south with the cub trailing. Kept her nose to the ground and paid no attention to cars. We followed her for 1/4 mile. She stopped frequently to feed on clover (Trifolium spp.). Sow tore huge mouthfuls. Cub followed suit. Sow crossed Alum Creek on the highway blocking traffic. Tourists approached closely in cars and neither she or cub evidenced any fear. She was last reported at Clearwater Springs on June 12.

Later learned that Sylvia and cub were seen at the Chittendon Bridge at Canyon at about 6:30 P.M. Thus she was at that time a little over 1 mile from Hdq. where we have her other two cubs. Fortunately she headed south. We can expect trouble from her and will provably have to shoot her with dart gun and ship her to a zoo. (No. 65).

Had sirloin steak for supper. and another unmarked sow. Ings

Got news that two yearling grizzlies were giving trouble at Gardiner. Maurice and Jim drove down to check situation. Cubs did not come into town but were seen at the dump. Maurice set a culvert trap. her over 3 times

June 15, 1961 sweep of a forepaw and smelted her genitalia. On one occasion

Cubs were much tamer this morning. The male would come to the hand and feed. The female was not as docile but would eat from the gloved hand.

The diquel is supposed to be effective for 2 to 3 days. This plus constant feeding and attention is bringing them under control. the Med.

Received a contusion of the rib when I tackled the grizzly cub on June 9. Had ribs taped by the doctor this morning. down after 1 minute.

Helped to rescue two young men who climbed down canyon of Yellowstone at Inspiration Point. Rocks were loose and the rescue area dangerous. Art Hayes, Jones and I roped down and after 3 hours of work got them out. Both were greenhorns and subdued by their experience. One boy was wearing slippers. A large rock nearly hit Jones. Boys were lucky to get out without a serious accident.

Learned that Sylvia and cub were at Cascade and Y.S. River heading for Lake. Were on the road and traffic was stopping. Reported that tourists were approaching closely. One tried to touch her ear tags. We will immobilize her again, but probably will have to kill her as she is getting more dangerous each day. The Grizzled Sow No. 65 had yearlings last year. Her mammary glands were full.

Maurice and the boys left to take care of Sylvia while I helped with the rescue.

Trout Creek

Jim and Lois Cole accompanied us to Trout Creek.

Behavior:

During the 4 1/2 minutes that Inge bred the Grizzled Sow, Outlip came over the hill. When we arrived at Trout Creek the Med. sized boar was attempting to breed the Grizzled Sow (No. 65).

Inge came in and herded No. 65 and another unmarked sow. Inge remained with sow No. 65 herding her around for over an hour. During this period he mounted the sow 3 times but was ineffective. After each mounting he lay down and the sow would lie beside him. He rolled her over 3 times with a great sweep of a forepaw and smelled her genitalia. On one occasion they "playfully" mouthed each other - each biting gently at the other's mouth and head. They both salivated profusely; continued this "play biting" for 15 minutes. Three times the sow took the initiative and rolled over on her back and allowed Inge to scent her. Inge kept continuous vigil as the Med. sized boar approached. He kept all bears at a good distance.

Mounted sow No. 65 a fourth time but dropped down after 1 minute.

Inge and Sow 65 roamed back and forth and during this time Inge mounted 3 more times and remained on sow successively longer but did not breed her.

When Maurice shot Sylvia with the drug she rushed toward the lake passing with Inge made a long dash to chase other boars away. The Med. sized boar moved in and mounted sow No. 65. Inge appeared to sense this and returned and the boar retreated.

Inge mounted sow 2 more times (total of 9) but although he appeared to be more stimulated and remained in position longer, he did not breed the sow. Finally things got under way. After remaining on Sow No. 65 for 20 minutes it was obvious that the sow was being bred.

The Grizzled Sow No. 65 had yearlings last year. Her mammary glands were still enlarged and it is possible that her yearlings were suckling only a few weeks ago.

Inge took $41\frac{1}{2}$ minutes to breed the sow. The interval between breedings for this sow is 2 years.

During the $41\frac{1}{2}$ minutes that Inge bred the Grizzled Sow, Cutlip came over the flats and passed by within a few feet of Inge and the Sow. This occurred at the height of the breeding activity. Inge remained unperturbed and Cutlip passed by with his head lowered. Neither bear challenged the other and Cutlip showed his usual deference to Inge.

June 16. Inge's pursuit of the sow began when we arrived at Trout Creek at 5 P.M. and ceased when they separated at 8:15 P.M. (3 hrs. and 15 min.)

Inge remained with the sow until dark, still keeping other bears away.

There was no breeding by other bears.

The light was good during much of the activity and I should have gotten some good pictures.

Maurice and Mike found Sylvia and her cub along the highway in the Bay Bridge area south of Lake. Rangers were watching her but in spite of this close attention, some tourists approached the sow to within 40 or 50 feet.

When Maurice shot Sylvia with the drug she rushed toward the lake passing within 5 feet of a fisherman who had been ordered out of the area by and that we observed swim the river, come in from the N.E. It appeared as

if he would challenge Inge, but at about 100 yds. distance he bowed his head the rangers. The first dart was ineffective, the second put her out. and turned aside. Inge ran him off 1/4 mile.

The cub climbed a lodgepole 50 or 60 feet. Maurice shot him and then climbed up and retrieved him from the topmost limbs where he had wedged when the drug took effect.

Observed the cub nursing Sylvia. He made a peculiar chattering-hammering sound as he nursed. Sounded like a jack hammer or a woodpecker.

We were happy to have Sylvia safely behind bars. She is a very gentle bear with no fear of humans. One slap at a curious tourist and the entire research project would be endangered. There are some rangers who

think the study is taming the bears. There is no basis of fact for this assumption. Captured a yearling in trap at Gardiner. This was one of two orphans. Immobilized, marked, X-rayed and made dental casts.

Marked this yearling with a sew fabric - Herculite. Used gray loop and white tail. No. 79. Released yearling at Trout Creek (See notes). June 17, 1961

The little male cub hung himself over his tethering wire during the night. He must have gotten on top of his box and jumped over the wire and

as he did so threw a half hitch in the chain and around his neck. He must have died quickly and quietly as we heard no sound. It was a freak accident. June 16, 1961

Park Administration decided Sylvia would have to go. They are planning to send her to Mexico. We immobilized her and removed the ear tags

Skipped the cub and boned out the skeleton. Hated to lose the little fellow. He was getting tame and beginning to respond to attention.

Immobilized the cub. See data sheets. Cub weighed 18 pounds having lost 2 pounds in the long treks he had been making with his mother. Took

Jaw, both upper and lower contained necrotic tissue. May have done sufficient injury to teeth and jaws that permanent teeth would be affected. X-rays, dental and foot impressions.

Trout Creek

Adrenals were large. Reached the kill she stood up several times apparently

Behavior

Took specimens of testes, lung and sternum for Dr. Stein.

Inge was present with the grizzled sow at 6 P.M. The Med. sized boar was also present. Inge lay with his sow, indulged in some love play incisors and canines and her muzzle is beginning to swell. Also administered 1 cc. of digel.

"Bare Fang", the large boar that appeared at Trout Creek earlier and that we observed swim the river, came in from the N.E. It appeared as

Trout Creek

6:00 P.M. Weather fair.

if he would challenge Inge, but at about 100 yds. distance he bowed his head and turned aside. Inge ran him off 1/4 mile. Sow remained 1/2 mile out on the flats. Very few bears in the area by sundown.

Observed the cub nursing Sylvia. He made a peculiar chattering-hammering sound as he nursed. Sounded like a jack hammer or a woodpecker. He shifted from one nipple to another. Could not tell whether he was getting any quantity of milk.

Captured a yearling in trap at Gardiner. This was one of two orphans. Immobilized, marked, X-rayed and made dental casts.

Marked this yearling with a new fabric - Herculite. Used gray loop and white tail. No. 79. Released yearling at Trout Creek (See notes).

June 17, 1961

The little male cub hung himself over his tethering wire during the night. He must have gotten on top of his box and jumped over the wire and as he did so threw a half hitch in the chain and around his neck. He must have died quickly and quietly as we heard no sound. It was a freak accident.

Skinned the cub and boned out the skeleton. Hated to lose the little fellow. He was getting tame and beginning to respond to attention.

Incisors and canines were broken. Canines were turning dark. Jaw, both upper and lower contained necrotic tissue. May have done sufficient injury to teeth and jaws that permanent teeth would be affected.

Adrenals were large.

Took specimens of testes, lung and sternum for Dr. Stein.

Shot the female cub with 1 cc. of penicillin as she has broken her incisors and canines and her muzzle is beginning to swell. Also administered 1 cc. of diquel.

Wrote notes during P.M.

Trout Creek

6:00 P.M. Weather fair.

While sow was gathering her family the boar returned to the kill. Sow

As we arrived Inge came across the flats with his sow No. 65. Sow finally assembled her cubs and returned to within 25 yds. of the boar, but lay down but Inge came on to the dump and fed. Sow remained 1/2 mile out on the flats. The cubs would not go closer. They continually stood up and looked around.

Sow sat down with cubs; male continued to eat. From the behavior of the sow,

The Black Sow No. 48 (weaned cub after we captured her in 1960) came in to feed. I suspect she and cubs originally found the elk kill.

Sow left with cubs and walked east along edge of woods. Cubs played and wrestled. Drove up Mary Mtr. Road to check elk kill No. 1.

A young adult male No. 46 was on the kill. Had a blue loop in right ear. Further to east a sow came out of the trees and walked west directly toward the sow and cubs. They came face to face detecting one another at Most of the carcass had been consumed. about 30 yds. Both alerted. The sow and cubs moved 20 feet into the timber.

While No. 46 fed, an unmarked sow with 2 cubs approached the kill while the second sow passed them still following the edge of the meadow and from the east following the edge of the meadow. The male alerted and then timber. Sow moved toward the kill; male still feeding on it.

bolted when female and cubs approached. The sow growled and "woofed" but did not approach the kill closer than 150 yds. The male returned to the kill and the sow and cubs retreated. Male fed awhile and then walked 1/4 mile in direction the sow had approached. He kept to the edge of the meadow, returned to kill. The sow was in estrus and the male determined this and immediately began pursuing the sow in a slow but determined manner. The sow

About 20 minutes later the sow and cub appeared from the N.W. At first we thought they were a new family but the cubs were readily identifiable. circles keeping her muzzle to the ground before she sat down and allowed the One was a very light colored cub with a dark streak on the hump. The other male to sniff her. She arose and continued circling. Male increased his speed was dark with a light collar. The sow must have circled a mile or more to and jumped on the female clasping her back of the neck and throwing the weight the west as we could have seen her cross the meadow had she been any closer. of his body on her. His weight slowed her pace but she kept moving. She of-

As the sow again approached the kill she stood up several times apparently trying to scent the boar. Bear continued feeding. but she pulled away after 1 or 2 minutes.

The sow went past the kill at about 40 or 50 yds. then doubled back and rushed the boar. The boar took off on the run. Sow went to the kill but disengaged after less than a minute and the circling continued. Circles narrowed down to a diameter of 20 to 30 yds. Male mounted - disengaged. Mounted 4th time and then a 5th. Female lay on her side; male pulled her up with forelegs, chewed roughly on her neck then bowled her over with a shove.

While sow was gathering her family the boar returned to the kill. Sow
 Love play of biting, rolling continued for 10-15 minutes.
 finally assembled her cubs and returned to within 25 yds. of the boar, but
 the cubs would not go closer. They continually stood up and looked around.
 to the ground. She lay on her back and male lay over her. Love play contin-
 Sow sat down with cubs; male continued to eat. From the behavior of the sow,
 used from this position. Male then mounted sow for 6th time but could not
 I suspect she and cubs originally found the elk kill.
 breed.

Sow left with cubs and walked east along edge of woods. Cubs played
 Sow ran into woods and male followed. Both passed by the elk. It
 and wrestled.

became too dark to detect what was happening. Suspect male ended episode
 Further to east a sow came out of the trees and walked west directly
 by successfully breeding the sow.

toward the sow and cubs. They came face to face detecting one another at
 about 50 yds. Both alerted. The sow and cubs moved 20 feet into the timber
 Killed a dry cow with 12 gauge slug at 125 yards. Will have to move elk to
 while the second sow passed them still following the edge of the meadow and
 a better spot for observing.
 timber. Sow moved toward the kill; male still feeding on it.

Park Administration wants to ship the cub with Sylvia. We are
 Female with cubs sat down and waited. The second sow rushed at the
 holding out for the cub. We would like to mark and release it and determine
 male but her bluff failed to rout the boar. Instead he left the kill and
 whether it survives the winter. Bowled all night and disturbed our neighbors.
 moved steadily toward the sow. This appeared to be a first meeting of this
 June 18, 1961

sow and boar. The sow was in estrus and the male determined this and im-
 mediately began pursuing the sow in a slow but determined manner. The sow
 moved in 75 to 100 yd. circles with the male in close pursuit. She made 3
 circles keeping her muzzle to the ground before she sat down and allowed the
 male to sniff her. She arose and continued circling. Male increased his speed
 and jumped on the female clasping her back of the neck and throwing the weight
 of his body on her. His weight slowed her pace but she kept moving. She of-
 fered no other resistance to the male. Male pulled her to a stop and mounted
 but she pulled away after 1 or 2 minutes.

but she pulled away after 1 or 2 minutes.
 feed for some time. Other bears came in, see census.
 Sow circled area twice and then male mounted a second time. They
 disengaged after less than a minute and the circling continued. Circle nar-
 rowed down to a diameter of 20 to 30 yds. Male mounted - disengaged. Mounted
 4th time and then a 5th. Female lay on her side; male pulled her up with
 forelegs, chewed roughly on her neck then bowled her over with a shove.

Behavior:
 Ings and Grizzled Sow present when we arrived. Both continued to
 feed for some time. Other bears came in, see census.

Sow circled area twice and then male mounted a second time. They
 disengaged after less than a minute and the circling continued. Circle nar-
 rowed down to a diameter of 20 to 30 yds. Male mounted - disengaged. Mounted
 4th time and then a 5th. Female lay on her side; male pulled her up with
 forelegs, chewed roughly on her neck then bowled her over with a shove.

Love play of biting, rolling continued for 10-15 minutes. At 8:45

Inge was Male rolled on his back with feet in air. Arose and wrestled female to the ground. She lay on her back and male lay over her. Love play continued from this position. Male then mounted sow for 6th time but could not breed.

Grizzled Sow No. 65

Sow ran into woods and male followed. Both passed by the elk. It became too dark to detect what was happening. Suspect male ended episode by successfully breeding the sow.

Shot elk No. 2 1/2 mile west of first bridge on Mary Mt. road. Killed a dry cow with 12 gauge slug at 125 yards. Will have to move elk to a better spot for observing.

Park Administration wants to ship the cub with Sylvia. We are holding out for the cub as we would like to mark and release it and determine whether it survives the winter. Bawled all night and disturbed our neighbors.

June 18, 1961

Hooked pickup to elk No. 2 and dragged it to second bridge on Mary Mt. road. Ravens and coyote had been at the elk.

Went fishing on the Yellowstone above the Lamar Bridge crossing. Got a nice mess of fish.

Trout Creek

Arrived about 6:00 P.M.

Behavior:

Inge and Grizzled Sow present when we arrived. Both continued to feed for some time. Other bears came in, see census.

Inge left and wandered out on sage flats. Grizzled Sow continued feeding with a large boar beside her. Boar showed no interest in her. Inge returned, boar moved away. Inge began eating but showed no sexual interest

in sow but was possessive. Inge showed no interest in other sows. At 8:45

Inge was lying with his sow No. 65. chad elk into pickup and took it to Trout

Creek. Want to observe behavior Census and other bears on a kill placed at

the dump. New bears arrived for the first time:

Inge

Grizzled Sow No. 65

Sow and 3 cubs

Sow and 2 cubs (same one observed at elk kill last night)

No. 26

Dump sow

Boar (observed at dump early in June) captivity.

2 light - 2 year olds

No. 5. - mother of Sucostrin Kid we made an easy day of it.

No. 40 or 42 - 2 year old that appeared to have a collar

No. 74 - 2 year old or 3 year old - bred the green sow

Unmarked - 2 year old

Collared bear (unmarked one) white collar entirely around neck

The running mate No. 32 was observed up the Lamar May 5. This

was the first time this bear had been sighted since being captured and marked June 24, 1960.

May West and 2 yearlings

Cutlip

1 adult

1 2-year-old - Sucostrin Kid's sister

No. 64 - very old sow (did not breed last year or this year)

1 adult

No. 30 Old Blue - large adult male and all fed together.

Black sow - weaned her cub after capture last year. Has not

come in estrus as far as we know.

Sows Observed in Estrus - Trout Creek

June 20, 1961

1. Young unmarked sow

2. Green sow No. 7

3. Dump sow No. 39

4. Grizzled sow No. 65

5. Sow - unmarked observed with Old Blue No. 30 at elk kill
kill No. 1

for free and he followed us back into the timber for over 1/4 mile. Bear on
June 19, 1959 (Note, this must be 1961 ?)

kept close by but explored everything he came upon. Bear smell and scents

Arose at 5 A.M. and drove to Trout Creek. There were 19 bears at

the dump.

Trout Creek

There was a new sow with 3 cubs and Bear No. 75.

Arrived 5:30 P.M. Clear - Warm. and

Were no bears on elk kill No. 2.

No bears arrived until 7:15 P.M. completely consumed by coyotes

and ravens. No indication bears had found it.

Maurice shot a cow elk at the head of Hayden Valley. Made the shot with 30-06 150 gr. at 400 yds. Winched elk into pickup and took it to Trout Creek. Want to observe behavior of Inge and other bears on a kill placed at the dump.

Spent morning writing notes. Park still has not found a home for Sylvia or given us permission to release her cub. Both sow and cub are eating well. Female cub that we have on leash is becoming tamer but still fights her captivity.

Crew has been tired today and so we have made an easy day of it.

Placed cow elk in sage, 50 yds. from dump at 5:30 P.M.

Ravens spotted it but none started feeding until nearly dark.

Maurice spent night watching bears feeding. First bear to locate elk quickly located the bullet hole by smell and then parted flesh and hide on outward sweep of fore feet.

Twelve bears were feeding on the carcass at one time. Maurice said Inge chased the bears away once but they returned and all fed together. Nothing but hide and a few bones left by morning. Family arrived from Missoula.

June 20, 1961 Recently well-disciplined cubs make well disciplined yearlings.

Spent part of morning getting the family squared away in their quarters. Fixed a place for the fox and the two sparrowhawks. Turned the fox free and he followed us back into the timber for over 1/4 mile. He kept close by but explored everything he came upon. Bear smell and scats didn't frighten him.

Trout Creek Led north across Hayden Valley from dump. Grizzlies had been

Arrived 5:30 P.M. Clear - Warm.

No bears arrived until 7:15 P.M. completely consumed by coyotes and ravens. No indication bears had found it.

Behavior: Had earlier marked Sylvia's cub with Herculite. We released him and he took off across Trout Creek. Took a long drink, climbed the opposite bank and immediately began to get strange smells. He would move 8 or 10 feet then hit some strange new smell. Some smells brought him to an abrupt halt. He reacted to others by turning and heading off in a new direction only to be stopped suddenly when he crossed another new smell. Most of the scent must have been from bears of the night before. of 30 yards. He came on toward us

Behavior: Don, Mike, Derek and I all took to the trees. Bear got our scent

and turned. Males standing and sparring. Has not been much of this until now.

Mae West came in with her yearlings. They were extremely well-behaved cubs and are now quietly well-behaved yearlings. Mae disciplined her cubs severely and they would stay put wherever she put them. This early training is still evident. She keeps her yearlings close to her and they don't begin feeding until she consents. This is in marked contrast to some of the undisciplined yearlings whose mothers pay scant attention to them and were lax in training them as cubs.

The weaned yearlings - those of the Grizzled Sow are entirely on their own.

Apparently well-disciplined cubs make well disciplined yearlings. The well-trained and attended yearlings are probably less likely to raid camps, etc.

A new large male arrived. Is light colored and has a large scar on forehead.

June 21, 1961

Hiked north across Hayden Valley from dump. Grizzlies had been eating Lomatium clover, Trifolium and Cirsium foliosum.

Visited elk kill No. 2. It had been completely consumed by coyotes and ravens. No indication bears had found it.

Behavior:

No. 51 - two-year-old we sighted across the Yellowstone River at Alum Creek. Watched it swim backwater of the river. Appeared to have scented some carrion - perhaps waterfowl. Fed on this for 15 min. (1 to 1:15 P.M.). We drove south to try and head off grizzly which started to swim main channel of river. We walked out along the ridge and suddenly came upon him in the lodgepole timber at a distance of 30 yards. He came on toward us and Maurice, Don, Mike, Derek and I all took to the trees. Bear got our scent and turned and fled. Although not yet a large bear it could have been dangerous. This bear was captured and marked as a yearling in 1960 and weighed 150 lbs. at time of capture. No. 51 is offspring from the green sow No. 7. Inge was in a rambunctious mood during the evening. When we arrived at Trout Creek a fairly large unmarked boar mounted the grizzled sow No. 65 while Inge was away. He returned before things got going and chased boar away. Inge was in a fighting mood and chased bears in all directions all evening. He fought Mae West and bit her severely. She was with her yearlings and stood up to him. The bear community was kept in strife and turmoil all evening. Took Frost and Dick Lucknow to Trout Creek for photographs. Phoned Frank at Moose. Orphan No. 68 sat at a distance. Phoned Folks in Florida and made arrangements for Mother's trip. June 22, 1961 Captured yearling No. 52 of Grizzled sow in the Canyon Camp Ground. He is a large yearling and weighed 140 lbs. Ear markers were in excellent condition. Took dental casts, foot cast and made X-rays. Have dental casts and paw impressions of this bear as a cub. Will make interesting comparison. Kids had fun swimming.

Immobilized cub 18 A. We are attempting to tame this cub so we can take growth records. X-rayed cub, took dental casts and foot print. Karen is taking on this task. Will also record food consumed.

Placed Sylvia in a cage and she was sent off to New York Zoological Society. She is a beautiful bear and we hated to lose her; but her temperament is such that she should adjust nicely to zoo life.

Behavior:

As the chapter of Sylvia's life in Yellowstone Park came to a close her cub No. 78 was beginning to make grizzly bear history. We had released him June 20 at Trout Creek.

We saw cub No. 78 sitting on the south bank of Trout Creek about 1/2 mile from the dump. The sow that we had first seen on elk kill No. 1 came up the valley, spotted cub No. 78 either by sight or smell and stopped and watched cub for 15 or 20 minutes from across the stream. The sow and her litter finally approached cub No. 78 and he ran to the sow and her family. The sow was anything but hospitable. She struck at the orphan cub, but he did not retreat. The orphan cub closed in mingled with her cubs and followed at her heels as she moved off. Orphan kept close and she crossed the flats. The sow suddenly turned and knocked the orphan cub over with a rapid swipe of the paw. The orphan still persisted but kept at a respectable distance as he followed in the wake of the sow. Sow sat down with her 2 cubs. Orphan No. 78 sat at a distance of 25 feet but was restless and quite suddenly took off on a dead run away from the sow. The sow started moving. Orphan kept 100 to 200 yards ahead of her.

As night settled down there was no clue as to how this little drama might end. We hoped that the persistance so characteristic of the species might bring about an understanding between orphan and sow and he would be adopted or at least tolerated. The cub made a bold and courageous try.

Kids had fun swimming.

Tested sound recording equipment of Lucknow. He offered to let us use equipment next spring. It did a very nice job of recording bear sounds.

June 23, 1961

Sylvia's cub No. 78 showed up across the Yellowstone River at Sulphur Mountain. Cub was feeding on roots and on angleworms it found under dried buffalo chips. Had turned these over for several hundred yards along the river bank.

Cub had apparently swam river. Appeared to be in good shape. Color marker was very conspicuous. Apparently was not adopted by the Sow with 2 cubs.

Took George Silk (Life Magazine) out to Trout Creek to take pictures of grizzlies. Also looked over the possibilities of getting photos of mountain sheep on Mt. Washburn and shots of grayling at Grebe Lake.

Silk used 1000 mm. lens.

A large boar and sow stood up on hill to south not 100 yards from us. Both of us shot but light had changed drastically and doubt if either of us got the picture.

June 24, 1961

Arose at 4:30 and went to the head of Hayden Valley. George Silk took pictures of elk.

Worked at Trout Creek in evening. Silk used 2000 mm. lens. Shot High Speed Ektachrome - 1/500 at f. 10. Used a motor to turn film and trip shutter. Could focus and take pictures very rapidly. Was able to get excellent expressions on both coyotes and bears at a distance.

Captured Cub 78 at Sulphur Mt. along highway. Had been stopping traffic. Moved him and placed in cub box. Was hungry but in good condition.

June 25, 1961

Family, Frank and Silk drove over to Firehole for a day of relaxation. Kids had fun swimming.

Trout Creek

weight. It is becoming more and more evident that size and weight is not an accurate indicator of age in the 1 to 3 year old age groups.

Spent afternoon photographing with Silk.

Behavior:

Cub 78 was sighted near road at Trout Creek turnoff along Yellowstone River. Inge mated with the Grizzled Sow. Apparently she has come in estrus again. We first observed Inge breeding the Grizzled Sow on June 15. We have seen Inge and this sow nearly every day since. They have been together but we have noted no love play or attempts to breed. Inge as well as the other boars have shown no interest in the Grizzled Sow. On June 21, Inge began to show some interest. If no other matings occurred and if there is a recurrent estrus, then the interval between is 9 days.

Inge was on the Sow for 15-20 minutes. It was probably longer but observations were not made at the time mating began. There was every evidence that a successful mating was consummated.

Another large boar and sow were breeding at the same time only 30 or 40 yds. from Inge. Was unable to identify these bears. Breeding is still in full swing.

Released cub 78 at Trout Creek dump.

Returning from Trout Creek in the evening we sighted 3 grizzlies across the Yellowstone River. They swam river behind the hill and headed up Trout Creek toward dump. Maurice and Mike and Harry hiked to 3 Mile and had wonderful fishing. Everyone caught 20 or 30 trout. Brought a nice mess out of the canyon.

June 26, 1961

Spent morning catching up on notes and writing letters. Shaped up summer plans with Frank and Maurice.

Sent film to National Geographic. with other known-age bears individuals were crawling out of the river and fastening themselves on rocks and trees and the entire scene was covered within an hour or two last season. We designated them 2-year-olds on a basis of their size and after leaving the water.

weight. It is becoming more and more evident that size and weight is not an

Cub 18A has been eating well. She was rather rough and belligerent accurate criterion of age in the 1 to 3 year old age groups.

so administered about 1 cc. of diquel.

Looked for mountain sheep on Mt. Washburn with George Silk. Sheep

Cub 78 was sighted near road at Trout Creek turnoff along Yellowstone have not arrived at this altitude yet.

River. Tourists were stopping to watch him. Thought we would have to recap-

Captured yearling No. 52 in Canyon Camp Grounds.

ture him but when we arrived we could not locate cub.

Sent Harry Reynolds, Jr. up Hayden Valley with George Silk. They

Trout Creek

ran into several hundred head of elk and buffalo and got some excellent

Inge arrived with grizzled sow but showed no interest in her.

pictures. They saw 2 grizzlies at dusk.

No. 33, a large boar and one other boar unidentified both bred

Went to cocktail party at Supt. Garrison's.

the Grizzled sow. Inge did not defend sow.

Trout Creek

Ivan arrived but was timid and did not stay long.

Behavior:

Sow 34 was in with 2 cubs. This sow received a very heavy dose of

Inge took a new sow. Stayed close to her all evening.

pentobarbital sodium last year on June 25. It apparently had no adverse

Released the 2-year-old No. Dump bid at Trout Creek about 6 P.M.

effect on fetal development nor did it cause abortion in the case of this

June 28, 1961

SOW. Spent the morning making plans and writing notes and letters.

Hiked down to 3-mile hole in Yellowstone Canyon. Margaret and family

To date we have sighted the following sows with cubs at Trout Creek:

vent, also George Silk from Life, Frank, Lance, and Harry. Carried sleeping

bags and tarps. Salmon flies were out and fishing was superb. Fried trout

on hot rocks for supper. The salmon 1 " - 2 " 1 " - 2 " 1 " - 2 "

clouds over the canyon. There must have been hundreds of thousands or more.

June 27, 1961

Could pick them up at will anywhere along the bank.

One of the dump kids No. was captured at Thumb by Park rangers.

Probably caught 70 or 80 trout, returning most of them. Johnny

This same bear was sighted by our crew at Canyon on June 21.

caught 8 or 10, all of them 1 1/2 to 2 1/2 lbs. He had a great time and did very

We immobilized the bear and X-rayed it and made foot and dental

impressions.

June 29, 1961

The polyethylene braided rope and dummy transmitters were still

in excellent shape.

A comparison of the dental casts with other known-age bears indi-

calgranites (nymphs) were crawling out of the river and fastening themselves

cates pretty conclusively that this bear and its litter mate were yearlings

on rocks and trees and the mature salmon fly emerged within an hour or two

last season. We designated them 2-year-olds on a basis of their size and

after leaving the water.

weight. It is becoming more and more evident that size and weight is not an accurate criterion of age in the 1 to 3 year old age groups.

Carried several limits out of the canyon. Enjoyed the solitude and beauty of the canyon and river. Looked for mountain sheep on Mt. Washburn with George Silk. Sheep have not arrived at this altitude yet.

Started back about 3 P.M. when temperature had dropped. Took it slow but steady. Johnny made it down and up in great shape. He took the lead going up.

Captured yearling No. 52 in Canyon Camp Grounds.

Sent Harry Reynolds, Jr. up Hayden Valley with George Silk. They ran into several hundred head of elk and buffalo and got some excellent pictures. They saw 2 grizzlies at dusk.

Two fishermen coming down released a small avalanche of rocks that Margaret sighted just in time and we all dove for the shelter of some large rocks. It was fortunate it occurred where it did. There are many exposed places where we would not have been able to seek cover.

Went to cocktail party at Supt. Garrison's.

Trout Creek Behavior: Mike, Don, and Maurice came down in the morning and joined us for the day. Inge took a new sow. Stayed close to her all evening.

Released the 2-year-old No. Dump kid at Trout Creek about 6 P.M.

June 30, 1961

June 28, 1961

Spent the morning making plans and writing notes and letters. Hiked down to 3-mile hole in Yellowstone Canyon. Margaret and family went, also George Silk from Life, Frank, Lance, and Harry. Carried sleeping bags and tarps. Salmon flies were out and fishing was superb. Fried trout on hot rocks for supper. The salmon flies were so abundant that they formed some nice shots of elk in the large meadow. Set up cameras including the 1000 and 2000 mm. lenses. George got clouds over the canyon. There must have been hundreds of thousands or more. At 6:00 P.M. a small grizzly came out of timber to the northwest. Could pick them up at will anywhere along the bank.

Probably caught 70 or 80 trout, returning most of them. Johnny up their ears, but although less than 1/4 mile away did not take alarm. Caught 8 or 10, all of them 1 1/2 to 2 1/2 lbs. He had a great time and did very well. Bear turned back into the timber. Mike and Harry made contact.

Fifteen minutes or so later the same grizzly raced out of the timber across the meadow into the sunlight and sagebrush. A few minutes later it came running full speed back on its trail with a coyote in hot pursuit.

4 A.M. and took some early morning shots. In the cool of the morning the Grizzly was probably a 2-year-old. Suspect it got too close to the den or helgramites (nymphs) were crawling out of the river and fastening themselves on rocks and trees and the mature salmon fly emerged within an hour or two after leaving the water. Should have gotten some good pictures. Both George and I shot like mad. I was using the 1000 mm. lens when bear first crossed meadow with elk in foreground. Took photos.

Had trout for breakfast and again for lunch. They were delicious. Carried several limits out of the canyon. Enjoyed the solitude and beauty of the canyon and river.

Started back about 5 P.M. when temperature had dropped. Took it slow but steady. Johnny made it down and up in great shape. He took the lead going up.

Two fisherman coming down released a small avalanche of rocks that Margaret sighted just in time and we all dove for the shelter of some large rocks. It was fortunate it occurred where it did. There are many exposed places where we would not have been able to seek cover.

Mike, Don, and Maurice came down in the morning and joined us for the day.

June 30, 1961

Spent the morning making plans and writing notes and letters.

Accompanied George Silk to the upper end of Hayden Valley to photograph elk and grizzly for the Wildlife Portfolio that Life is preparing.

Set up cameras including the 1000 and 2000 mm. lenses. George got some nice shots of elk in the large meadow.

At 6:00 P.M. a small grizzly came out of timber to the northwest into the long shadows thrown by the lodgepole. The elk in meadow pricked up their ears, but although less than 1/4 mile away did not take alarm. Bear turned back into the timber.

Fifteen minutes or so later the same grizzly raced out of the timber across the meadow into the sunlight and sagebrush. A few minutes later it came running full speed back on its trail with a coyote in hot pursuit. Grizzly was probably a 2-year-old. Suspect it got too close to the den or pups of coyote. Both George and I shot like mad. I was using the 1000 mm. lens when bear first crossed meadow with elk in foreground. Should have gotten some good pictures.

July 2, 1961

About dusk a large sow crossed the meadow feeding on plants as she moved. Marked and released the young bear we shot free-roaming yesterday. Elk paid no attention. Grizzly was marked; she came within 75 yds. Had difficulty immobilizing him (see data sheet). Bear is either a 2-year or 3-year old. Showed some wear on the incisor and I suspect it may be a 3-year old. Molt and jaw were slightly deformed. This was evident from the dental casts. This deformity may have caused the wear or it may be a 3-year-old. by a 2-year-old grizzly. Three or four of them have been treed. Wanted us to hike back to their operation and immobilize bear. Suspect the bear has been bluffing them and is playing. Agreed to go if bear returned, but doubt if it will.

July 1, 1961

Blister rust men at Canyon reported that their crews have been chased by a 2-year-old grizzly. Three or four of them have been treed. Wanted us to hike back to their operation and immobilize bear. Suspect the bear has been bluffing them and is playing. Agreed to go if bear returned, but doubt if it will.

July 3, 1961

Both white-bark pine and lodgepole pine are seeding in and establishing themselves under mature lodgepole. If the white-pine blister rust can be controlled, the white-bark will probably form a climax over much of Yellowstone.

Checked prairie falcon eyrie at Elk and Rocks between Jackson and the Hogback. There were 3 young, 12 and 27 but all could fly too well for us to catch them. Spent morning trying to run them down.

Feeding on Yampa (Perideridia gairdneri) Maurice and I approached thru timber to within 60 or 75 feet. I shot bear with syringe dart. It struck bear in rump. Maurice backed me up with 12 gauge with slugs. Both of us were prepared to climb a tree fast, but bear bolted when shot. He dropped about 2 or 300 yds away in some dense pole timber. We lost sight of him

and it was with considerable caution and apprehension that we scouted thru the dense timber. Finally located him completely immobilized. Maurice and

July 5, 1961

I dragged him 3 or 400 yds. by the hind legs. Mike and Harry made contact with us and they took over and raced for the pickup and trap dragging the bear behind. Bear was just beginning to come out of effect of sucostrin when we shoved him into trap and closed the gate. another young adult sow. Appeared to be in estrus.

Trout Creek

July 6, 1961

Photographed elk at head of Hayden Valley. Rangers moved dead buffalo from Yellowstone River to Lake Marie Road. There were 10 grizzlies feeding on the putrid carcass when we came back down road. Took photos.

July 2, 1961

Marked and released the young bear we shot free-roaming yesterday. Had difficulty immobilizing him (see data sheet). Bear is either a 2-year or 3-year old. Showed some wear on the incisor and I suspect it may be a 3-year old. Molar and jaw were slightly deformed. This was evident from the dental casts. This deformity may have caused the wear or it may be a 3-year-old. Have no known-age 3-year-olds yet so can't be sure.

July 3, 1961 Drove to cabin for the 4th. Never saw so much traffic in Yellowstone. Same applies to Jackson Hole.

July 3, 1961

Checked Prairie falcon eyrie on elk refuge. Birds had flown.

July 4, 1961

Checked prairie falcon eyrie at Elephant Rocks between Jackson and the Hogback. There were 3 young, 1♀ and 2♂ but all could fly too well for us to catch them. Spent morning trying to run them down.

Checked Great Gray Owl site. Ted Hartgrove picked up a young flightless owl along the Whitegrass road and gave bird to Frank. Could not locate a nest in the vicinity. Can't imagine how young owl got on road unless someone put him there.

Took kids swimming. Celebrated the 4th with Harry Reynolds and family.

July 5, 1961

Paid Reed Moulton for ditch. Talked with Rudd. Left for Yellowstone.

July 9, 1961 Stopped to see Harry Reynolds and Tom Hyde.

Maurice and boys had worked on 4 bears today - a sow and 2 cubs and another young adult sow. Appeared to be in estrus.

July 6, 1961

Met Frank Goodyear at Carbella and looked over his land and the site where Forest Service plans to build a new road.

Goodyear has about 10,000 acres of beautiful country much of it on elk winter range.

Discussed the road proposition with Duvendack, Ed Barry and 2 other Forest Service men. They pushed hard for the new road but finally decided to make repairs on the old road. New road would cost approximately \$240,000. Goodyear granted them right of way without charge.

Set 2 traps at Trout Creek.

July 7, 1961

Worked at headquarters during the morning. Checked bears at Rabbit Creek with Maurice. Very few bears came in. Counted 7. No luck on the trapping.

Photographed elk between Norris and Madison Junction. Arrived back at headquarters late. Family had arrived from Jackson Hole.

Boys set 2 traps at Trout Creek.

July 8, 1961

Trapped the Grizzled Sow and a medium-sized large boar.

Chased cub No. 78 out of culvert this side of Trout Creek. Had a 3" slash on inside of hind leg. Took the hide off but no bones broken. Noosed cub and placed in box. Had difficulty immobilizing both the boar and the Grizzled sow. See data sheets. Made some good dental impressions of the boar.

Grizzled sow had been in estrus.

Held cub No. 78 for release across the lake.

July 9, 1961

Old Sow No. 64 had no cubs in 1960 and none in 1961. Teeth of this bear Worked on data in morning. Took hike up Specimen Ridge with family, Mike and Don. Got some nice specimens of petrified wood.

July 10, 1961

Took cub No. 78 across lake and released on Promintory Point.

Lake rangers had a grizzly in their trap. Hope to get a photo of

Shot elk No. 4 in the large meadow at upper end of Hayden Valley on Mary Mountain road. Killed dry cow at about 50 yards with shoulder shot using 30-06 and 150 gr. bullet. Elk dropped in its tracks. Will try to photograph bears on this kill.

Driving back down Trout Creek we watched a grizzly digging tubers. A band of elk stood motionless on a hill above the bear and watched him for several minutes. Bear approached within 150-200 yds. of elk without disturbing them. Took photographs. Bear weighed about 300 lbs.

Trout Creek

Old Blue No. 30 was in and Maurice observed him breeding a sow. Inge chased No. 30 away but did not in turn attempt to breed the sow.

Breeding activity appears to be waning.

July 11, 1961

The dump bear No. 38 was captured at Lake. Took measurements, dental casts, foot cast and X-ray. See data sheets.

Trout Creek

Behavior:

Sandra No. 15 has recently come into the dump. Maurice observed a boar breeding her this evening. Two years ago she was a virgin and we tentatively aged her as a yearling. It is possible that she is 4 years old now or a minimum of three. Bear bred her for 30 minutes.

Old Mose a very old bear (unmarked) bred a sow. He met no opposition from other bears.

The Old Sow No. 64 had no cubs in 1960 and none in 1961. Teeth of this bear showed extreme wear when we captured her in August 1960, but she was well fleshed and appeared in good condition.

Suspect this bear is too old to breed.

Mike and I dragged elk kill No. 4 to a sagebrush ridge overlooking the meadow where we have seen so many elk and bison. Hope to get a photo of

grizzly on kill with elk feeding in background.

Elk was heavy and we were bushed after moving elk - mostly uphill.

July 12, 1961

Checked the elk kill up Trout Creek at about 5:30 A.M. Nothing at the kill. Neither ravens, coyotes or bear had found it.

Photographed elk, bison, and crane.

Observed 20 bears at Trout Creek at 5:30 A.M.

Trapped the 2-year-old runt that was orphaned a year ago. It does not appear much larger than a yearling but has the conformation of an adult.

Maurice and crew worked on the runt No. 862 while I caught up on paper work and phone calls, etc.

July 12 This is a very interesting bear. Dental casts show it is definitely a 2-year-old. See data sheets.

Behavior:

In 1959 the last observed breeding was July 7, in 1960 July 11, and it now looks as if July 10 may mark the termination of breeding this year.

Observed the following sows and cubs:

Sow No. 34	- 2 cubs
Sow	- 3 "
"	- 2 "
"	- 1 cub

Watched a cub suckling. It made the same peculiar suckling chatter that we have observed in other cubs. Had a good opportunity to observe this with Sylvia and her cub No. 78.

A large dark unmarked boar has begun to make his personality felt in the bear community. He has done quite a bit of breeding and although he has not directly challenged Inge, he nevertheless does not back down readily.

The other evening Maurice watched him challenge Inge. He is not yet ready to cope with Inge, but he may well be the bear to take over

command when Inge ages. Named this bear Fidel.

Frank and Charlie spent night up Trout Creek at elk kill. See Frank's notes for July 13 and 14.

GRIZZLIES ON ELK

July 9, 1961

John, Maurice and I took a cow elk in the upper part of Hayden Valley beyond third bridge where road makes a sharp bend in trees. Shot elk just at sunset. Took pictures of elk herd in valley near pond of water.

July 11, 1961

Visited kill in evening with ES and still no bears present and no coyotes, ravens or magpies.

July 12, 1961

John visited kill early in morning and it was still untouched.

July 12, 1961

Charlie and I drove out to kill arriving about 7:45 P.M. There was nothing on kill and no sign that it had been touched. We parked in trees about 500 ft. away and watched until dark. Cow and bull elk came by to our right. Cows barked when they detected us. Took a few pictures. No bears came in as long as we could see or hear. Slept in panel wagon.

July 13, 1961

Awoke at 4:00 A.M. and wiped moisture off windows to look at kill. The light was still poor and a heavy mist hung over the valley. There was no sign of a grizzly. We dressed and started to move along edge of woods and saw a small grizzly coming toward kill at 4:45. This bear came up to the elk approaching warily. He came in from the SW and swung around to come in from the NW. The light was still very poor and the bear stayed at kill only a minute and then left. She (later identified as No. 40) took off to the NW and then coursed over the fields like a bird dog. She ran with nose to ground and occasionally stopped to sniff and look about. She circled over to the

north and again approached the elk after roaming over to the east. This time she came in from the NE and started right away to tear away at the elk. The bear appeared to have partially circled the kill to see if any other bears had approached it or were nearby. This may have been the bear's first appearance or she may have been in during the night hours. From my position I could not tell whether the carcass had been eaten but it appeared to have been slightly shifted from the evening position. It was immediately apparent that the bear was tagged. It bore two yellow tags but no markers. The bear started eating on the rear end and tugged away at the flesh and tendons with her jaws but using the front claws to move the hide or to push with when pulling backwards with her head. Several times she partially rolled or pushed the elk and occasionally grabbed a leg and pulled to shift the position of the carcass. I could clearly hear her paws strike the legs and her jaws snap shut on bone.

While the bear was eating I took pictures using HS Ekt. A cow elk moved up behind the bear but in the distance and stood sniffing the air. Mist still hung in the low ground. I took two pictures and then the elk left. Slowly elk moved out from the far timber to the NW. Without showing alarm but for no apparent reason the bear left the kill going off to the NW and out of sight over the immediate hill. I then noticed another grizzly coming in from the SW but too far off for the first one to see. There was little or no air movement but apparently the first bear winded the newcomer. This one was a much larger dirty brown bear. It was not black but close to it. It had no ear tags. While this bear was approaching I saw another one coming in from the east. This was a rangy black colored bear. He reached the kill first and started immediately to tear up the carcass and ate as though quite hungry. This bear had Al (silver colored) tags in both ears but no markers. Shortly after the arrival of the second bear the still

larger brown one poked his head up over the hill just behind the feeding bear. As the big bear came in the black one ran off a short distance but immediately returned and was not molested by the larger bear. I photographed both bears on the elk with a herd of elk in the background. The big bear fed only for 5-10 minutes and then turned abruptly and started moving off to the NW. He seemed warier than the other bears and perhaps got a faint whiff of our scent. Though not alarmed he definitely had detected some sort of danger. This large bear was not marked and perhaps had had less contact with man than the others.

While the bears fed and particularly the black one alone Charlie and I moved through the lodgepole timber until we were directly opposite them and as close as we could get without walking toward them in the open. At this point we were 75-100 yds. from the car and with few climbable trees nearby. Charlie carried the single shot shotgun and I had the 357 sidearm. After the black grizzly had been feeding for some time he left the elk and started directly toward us. He appeared to be starting out on a reconnaissance trek which they seem to periodically make at a kill; especially soon after arriving at one. I took a couple of pictures as the grizzly approached and told Charlie to start through the woods toward the panel wagon. The grizzly was about 200 yds. away and though walking was covering the ground rapidly. I picked up the camera and tripod and started after Charlie. The grizzly apparently did not detect me until I started to run. A few minutes after this he took off in the opposite direction but as I had not looked back I did not know just where he went or where he was. I decided to wait awhile near the car and see what would happen next. In about ten minutes the bear that had first come to the elk (No. 40) reappeared and moved in directly to the kill. He had apparently been hanging around nearby but out of sight and saw the black bear leave. The bears had gone I examined the carcass. Not a great deal had been eaten. I moved up close on this bear and took quite a few pictures, some with a whole band of elk in the background. On several occasions I moved. The head had been chewed on and eaten and the eyes devoured.

into the open 3 or 4 yds beyond the trees and took pictures. This bear as well as the black one looked right toward me without apparently seeing me or giving any indication that they detected my presence. After a while this bear like the black one left the kill and started toward me. I took several pictures after he left the elk and then decided to move. I had already told Charlie to start moving through the woods toward the car. The bear approached to within 200 ft. and I would have liked to let him come closer for a picture but with Charlie present was afraid to risk it. This time I decided to try yelling before running. When I waved my arms and gave a yell the bear stopped, looked at me a second and then took off on a run to the West. Just before disappearing over a rise he slowed down and almost stopped. After a few minutes I followed through the timber and reached a point where I could see the rest of the big valley to the south and west. The grizzly had disappeared.

Prior to the arrival of the first grizzly I had not seen coyotes, ravens or magpies in the neighborhood of the elk. Soon after his arrival a coyote moved in and was followed by ravens wheeling in close and finally a magpie came. The coyote went into the kill when the first grizzly left but then moved off apparently seeing or sighting the other approaching grizzlies before I did. These three scavengers seem to wait until the bears open up the carcass before they come in and try to feed. The coyotes probably would have started on the elk had they been real hungry.

None of the bears made any attempt to bury the elk as they regularly and characteristically did in the fall. None lay down or slept on the carcass and at least two bears tolerated one another though both appeared hungry. All the bears were in such constant motion eating that I had difficulty getting shots at 1/50 sec. stopped down to get background.

After the bears had gone I examined the carcass. Not a great deal had been eaten. The rear end had been partly eaten and the intestines pulled out. One section of these had been dragged off 30 feet by the largest bear. The head had been chewed on and eaten and the eyes devoured.

and if our aging is correct, she first bred at 3 years of age. Took dental casts and other measurements and will be able to definitely establish her age nearly consumed and dragged down into the sagebrush. The small bear No. 40 next year when we have known-age 3-year-olds in the population.

and a medium sized unidentified bear were the only ones there. They spent the night and still no other bears appeared in the morning. Probably the I identified him on May 3, 1961 opposite the Lower Ranger Station. three grizzlies that I saw and perhaps more ate this whole elk in the course of the day - from daylight to sunset. In fall the grizzlies did not consume less he was not observed all last summer although his collared litter mate any such quantities of meat in such a short time.

was seen frequently at Trout Creek. It seems logical to assume that the reason for the burying of the This most recent capture was made at the G loop of Pelican Creek elk in fall and not at this time of year is that in the fall the bears are Campground. He weighed 300 lbs. This is the same weight as the adult collared bear captured at Gardiner on 8/5/59. We suspect this sow was the protect and defend the food rather than consume it. At this time of year mother of the two collared cubs.

they are relatively lean and hungry. Their instinct seems to be to eat, not hoard. No. 32 has only a partial collar; the litter mate has a complete collar. From observations made so far they seem more inclined to share food as they do at the dumps. It will be interesting to see if these distinct Trout Creek.

types of behavior for summer and fall hold true or are at least somewhat characteristic of the seasons.

Derek and I drove up Trout Creek at 6:30 P.M. and slept over night at elk kill No. 4 near the third bridge.

F.C.C.

July 13, 1961

Grizzlies had been feeding on the carcass all day and there was little left. We adopted a runt black bear.

Spent several hours in the early morning looking for nest of Great Gray Owl in vicinity of headquarters.

July 14, 1961

Had two bears in traps at Trout Creek and in addition ranger phoned from Fishing Bridge to tell us they had a grizzly caught on July 12.

He was the same bear that had been on the kill when we went to bed. Worked on the following bears:

Suspect he spent the night at kill as there was little left of the carcass. A large unmarked bear No. 87 A large grizzly approached about 5:00 Sandra No. 15 did not come onto the kill. The collared bear No. 32

Examined the kill and decided there was little to be gained by A group of African students accompanied us to Trout Creek and observing longer.

served our bear-handling methods. Had a little difficulty immobilizing No. 87 but finally put him nicely to sleep. Named this bear Kasavuba.

Driving back down Trout Creek, Derek and I saw Inge and a sow approximately 4 miles up the valley from the dump and moving NW across the flat. Sandra No. 15 is probably a 3-year-old bear. She was bred this year.

and if our ageing is correct, she first bred at 3 years of age. Took dental casts and other measurements and will be able to definitely establish her age next year when we have known-age 3-year-olds in the population.

The Collared bear No. 32 is chalking up quite a range. Maurice and I identified him on May 3, 1961 opposite the Lamar Ranger Station.

We originally captured him at Trout Creek June 24, 1960. After release he was not observed all last summer although his collared litter mate was seen frequently at Trout Creek.

This most recent capture was made at the C loop of Pelican Creek Campground. He weighed 300 lbs. This is the same weight as the adult collared bear captured at Gardiner on 8/5/59. We suspect this sow was the mother of the two collared cubs.

No. 32 has only a partial collar; the litter mate has a complete collar. The litter mate has been observed off and on all during June at Trout Creek.

Derek and I drove up Trout Creek at 6:30 P.M. and slept over night at elk kill No. 4 near the third bridge.

Grizzlies had been feeding on the carcass all day and there was little left. There were two bears on elk when we went to bed, sleeping in the Ford. Took some photos.

July 14, 1961

At 4 A.M. I looked out and saw the smaller grizzly with yellow ear tags. He was the same bear that had been on the kill when we went to bed. Suspect he spent the night at kill as there was little left of the carcass. A large grizzly approached about 5:00 A.M. but did not come onto the kill.

Examined the kill and decided there was little to be gained by waiting longer.

Driving back down Trout Creek, Derek and I saw Inge and a sow approximately 4 miles up the valley from the dump and moving NW across the flats.

Mae West and her two yearlings were 3 miles from dump, Yellowstone

Lake on July 10. Counted about 20 bears at dump at 5:30 A.M. Traps contained bears.

July 10. 1. No. 74 that we marked with one ear tag. Frank took photos of Maurice and me shooting this bear with projectile syringes last fall. We left for Rabbit Creek to check traps after breakfast.

July 10. This is a young bear (see data sheets and dental impressions).

Maurice observed this bear breeding this June. Creek using the dart gun. Fired 4 shots. 2. Sucostrin Kid's sister No. 29 (2-year-old). Drug did not take effect. For information on these two bears see data sheets. We not successful.

Missed on Had extreme difficulty immobilizing these two bears and finally gave it up at about 11:30 A.M. with 3 mg. dose of sucostrin. Both still alive.

Maurice and Wes and crew returned and immobilized them in the afternoon. Everything went well (see data sheets).

Behavior: I left at 3:30 P.M. for Missoula.

July 14-17, 1961 I served a young adult (3-4-year-old) grizzly trailing 2 black bears. Spent in Missoula. He playing. Sent one black bear up a lodgepole

July 18, 1961 I shot about 15 feet up tree after black bear. Black bear climbed up to top. Left Missoula for Yellowstone. Struck adult Great Gray Owl 1/4

mile from headquarters as I was driving in about 9:00 P.M. Turned back and picked him up. Was still alive. climbed over and forced him back up the lodgepole. The Mother, Cony and family drove back with me. kept this little guy

July 19, 1961 I saw a black bear up to my shoulder. It is almost

July 22, 1961 Great Gray Owl alive and apparently O.K. although leg may be paralyzed or injured. Out Creek about 4:30 A.M. to make an elk kill. A heavy fog lay on. While I was away No. 88, a 500-lb. male was captured at Trout Creek on July 18. On July 18 Wes and crew captured a 635-pound male and 260-lb. male at Rabbit Creek.

One of the Dump Kids, No. 38, was captured at Lake and Frank took it across Yellowstone Lake and released it on Promontory Point.

Ignatz No. 78, Sylvia's cub, arrived at north end of Yellowstone Lake on July 17. He had to travel at least 30 miles to get there. Probably followed the shoreline. Was released on Promintory Point the afternoon of July 10. ~~Measured and X-rayed cub (pat) 12A. Weighed only 30 lbs. having lost 4 lbs.~~ Wes and crew left for Rabbit Creek to check traps. ~~ing or developing~~
July 20, 1961 ~~will release her soon. Mary's Cub. There was a large time~~

Captured cub of sow No. 34 at Trout Creek using the dart gun. Fired 4 shots at about 50-60 feet. Hit one of sow's 2 cubs but drug did not take effect. Hit cub of another sow on rump - this hit was likewise not successful. Missed one shot. Fourth shot hit one of the cubs of sow No. 34 and cub went down within a minute or two with 8 mg. dose of sucostrin. ~~weighed 275-300 lbs.~~
~~Now weigh~~ Ran sow off, grabbed bawling cub and placed in cage and drove off.
~~No. 2. See shooting data sheets~~ Rabbit Creek ~~and 22, 1961~~

Behavior:

Trout Creek

Wes observed a young adult (3-4-year-old) grizzly trailing 2 black bears. Grizzly appeared to be playing. Sent one black bear up a lodgepole and then climbed about 15 feet up tree after black bear. Black bear climbed up to top of tree. Grizzly descended and treed another black bear. Then grizzly went from tree to tree keeping the two black bears up. When one started to descend, the grizzly ambled over and forced him back up the lodgepole. The grizzly weighed approximately 300-350 lbs. Kept this little game up for some time. ~~got a shot. Drove up to Mary Mountain cabin. It is situated~~
July 21, 1961 ~~lake. Would be a good retreat when we want to get some writing~~

~~accomplish~~ Drove up Trout Creek about 4:30 A.M. to make an elk kill. A heavy fog lay over the valley and we saw no elk. On return trip we sighted a large bull 1/2 mile from the main highway. Maurice took a running shot and missed. ~~The Dump Kid No. 35 was reported back at the Pelican Creek Campground.~~ There were about 20 bears at the dump at 6:00 A.M. ~~Was back by~~
~~evening of July 22 - 4 days of travel covering between 30 and 50 miles.~~

Immobilized and marked cub No. 92 which is one of two cubs of Sow No. 34. Made dental impressions and took X-rays of upper and lower jaws. Had permanent molars No. 1 both upper and lower. Released cub at Trout Creek.

Measured and X-rayed cub (pet) 18A. Weighed only 30 lbs. having lost 4 lbs. since last weighing. Apparently she is not growing or developing normally so we will release her soon.

Photographed the Great Gray Owl. It cannot fly but has no broken bones. Apparently has a concussion.

Locked our camp with Rabbit Creek at 6:30 A.M. Could not locate

One trap contained a black bear. Other trap contained Old Yellow bear No. 2. First captured at Trout Creek 6/27/59 and weighed 275-300 lbs. Now weighs 510 lbs. (See data sheets) Had extreme difficulty immobilizing No. 2. See shooting data sheets for July 21 and 22, 1961.

Behavior: Trout Creek

There are now 18 cubs coming in regularly at Trout Creek.

Tried to make an elk kill at Cascade Lake but couldn't locate any elk. was in camp with her wounded cub. Cub No. 92 a male was marked and released.

Polypropylene rope arrived - 1" diameter. Hope to make collar of it to house radio and batteries.

July 22, 1961 34 saw and placed her cub No. 93 in a bear trap and drove

Drove up Trout Creek about 4:30 A.M. to make an elk kill. Saw elk but couldn't get a shot. Drove up to Mary Mountain cabin. It is situated on a beautiful lake. Would be a good retreat when we want to get some writing accomplished.

George Silk arrived and photographed grizzlies at Trout Creek.

Behavior: to nurse while the mother was on the move. Took 3 1/2 days for

The Dump Kid No. 38 was reported back at the Pelican Creek Camp-ground. He was released at noon July 18 at Promintory Point. Was back by evening of July 22 - 4 days of travel covering between 30 and 50 miles.

July 23, 1961 Took Mother and children to Old Faithful.

July 23, 1961

George Silk photographed moose with Harry Reynolds.

Margaret, Mother and family drove to cabin at Moose.

Got off correspondence and did odd jobs around headquarters.

Went up Washburn to locate Bighorn Sheep. There was a large fire to the west. Sunset was terrific.

July 24, 1961

Looked for moose with George Silk at 4:30 A.M. Could not locate them in the desired area along Yellowstone River so drove up Mt. Washburn to check on the Mountain Sheep. George got some very nice photos of ewes and a lamb.

Photographed grizzlies at Trout Creek in the evening.

Behavior:

Maurice and I shot a cub. We shot 4 shots and hit two cubs twice each. Only the 4th shot was effective. We got the second cub of Sow No. 34. She was in dump with her unmarked cub. Cub No. 92 a male was marked and released at Trout Creek July 21 and has not been seen since although the sow and litter mate have been at dump each evening observations were made. We chased sow No. 34 away and placed her cub No. 93 in a bear trap and drove away then returned to photograph. About a half hour later Sow No. 34 returned with Cub No. 92 which had been missing. Apparently they had just reunited. Cub was bawling loudly and attempted to suckle. Sow was restless and kept circling the dump apparently looking for her other cub No. 93 which we had just immobilized and carried off. Cub No. 92 trailed her trying valiantly to nurse while the mother was on the move. Took 3 1/2 days for the reunion. Cub No. 92 was released afternoon of July 21 and first sighted again late evening of July 24. There was little doubt that this marked the reunion of mother and cub.

July 25, 1961 Shot 9 or 10 darts, 7 or 8 of which Immobilized cub 18A, marked with ear tags only and released at Trout Creek. Cub headed west up the drainage and was last observed a mile or more from release site. Marked and released cub No. 92 but had not yet reunited with cub No. 93. Marked and released cub No. 93, daughter of No. 34. She weighed 60 lbs. Her litter mate a male No. 92 weighed 55 lbs. This cub had the claws of both front paws greatly worn from digging (see foot cast). The nails were raw and bleeding. She must have done this digging roots and tubers as the cubs do little or no digging at the dump. It is interesting that her litter mate No. 92 had long sharp claws and showing little evidence of digging. Apparently these two cubs had entirely different food habits. One would assume that if feeding habits are learned behavior, both cubs would have been eating similar food and both would have showed approximately the same degree of wear on the claws. Both were both united with their mother No. 34.

Rangers from Lake District captured the Dump Kid No. 38 on July 24. They held him overnight and brought him to Trout Creek this morning. Was captured at Pelican Creek Campground. When first captured July 11, 1961, he weighed 185 pounds. Now, July 25, he weighed 205 lbs. Having gained 20 pounds in 2 weeks and done a considerable amount of traveling. Released No. 38 at the Gardiner Dump. After release about 9 P.M. he returned and fed.

While in the trap we fed elk thistle (Cirsium foliosum) to Bear No. 38 and he consumed it with apparent relish. The collared bear (unmarked and with complete collar) was observed at Trout Creek Dump. Apprehended personnel that broke through Trout Creek barricade.

About 7 P.M. we shot another cub at the dump with 15 mg. of succinylcholine and got Mac West's yearling we had hit the night before. Took 20 mg. to

immobilized. Tried to shoot a cub at Trout Creek. Shot 9 or 10 darts, 7 or 8 of which were direct hits but failed to immobilize a single cub. Will check gun. Trap we had on hand.

Sow No. 34 was in dump with sub No. 92 but had not yet reunited with cub No. 93 released at 10 or 11 A.M. this morning.

Great Gray Owl improving.

July 26, 1961

Wrote notes, made plans and worked around headquarters.

Arrived at the Trout Creek Dump about 5 P.M.

Shot a cub at about 50 feet with Cap-Chur gun. Drug did not appear to take effect. Shot one of Mae West's yearlings and then a 2-year-old grizzly No. 51. Failed also to immobilize these. Dosages are heavy but for some reason were not effective.

Cubs 92 and 93 were both united with their mother No. 34.

Finally shot and immobilized a cub after dark. Was only partially immobilized and bawled loudly. Managed to scare bears off long enough to grab cub and throw it in cage on pickup. It was a male and weighed 163.

July 27, 1961

Captured 2 unmarked bears in traps at Trout Creek. Both appeared to be 3-year-old bears. Male weighed 275 and we gave it the number 95. Numbered the female N99 96.

Marked cub No. 94 obtained last night. It's teeth were well developed. Had permanent incisors, canines and two molars, both upper and lower (see dental charts). Was a male and weighed 55 lbs. This is the most advanced cub we have ever captured at this time of year. Jean and family watched us work on the bears. Everything went smoothly.

About 7 P.M. we shot another cub at the dump with 15 mg. of sucostrin and got Mae West's yearling we had hit the night before. Took 50 mg. to

immobilize him. Mae would not leave her yearling and charged the car, but finally retreated and we hurriedly grabbed the yearling and threw it in a bear trap we had on hand.

Frank took photos from inside another bear trap.

Behavior:

One of the rangers at Canyon observed a coyote chasing a grizzly. He had been watching the grizzly digging tubers when a coyote burst out of the sage and took the bear off on a dead run, nipping at his heels. Grizzly was probably a two-year-old. Ranger said the coyote appeared to be in earnest. I made a similar observation at the head of Trout Creek.

A black bear came into headquarters about dusk and killed our pet black bear cub before any of us could intervene. Bear disembowled cub but did not eat it.

July 28, 1961

Immobilized and color marked cub No. 97. It was a male weighing 65 pounds. Took X-rays and dental casts.

Worked on Mae West's yearling. It was a male and weighed 163 pounds. Took dental casts and X-ray and gave it number 98.

Lake rangers captured the collared bear No. 32. Weighed it and released it at Trout Creek.

Got ready to leave for Jackson and Detroit.

August 8, 1961

Four grizzlies were captured while I was in Detroit, Michigan, testifying at the grizzly mauling case of Williams vs. the U.S. Government.

Mauling occurred in 1959 in Glacier Park. See depositions of Williams and Winter. Had we waited in hiding another 10 minutes we probably would have seen The grizzlies captured were:

Cub No. 99

Cub No. 100

There were no trees to hide in case of attack.

August 10, 1961

Both shot with projectile syringe darts at Trout Creek.

Looked for the sub Yagata along Yellowstone Lake but could not

1 adult No. 101

1 ' No. 102

Both captured in traps.

Maurice made 2 elk kills one up Trout Creek and one at Gibbon Meadows.

Bear No. Visited elk kill at Gibbon Meadows. Two young black bears were at the kill. One kept chasing the other one away and while we were observing prevented him from feeding. The aggressive one was in the process of covering the kill with dirt and grass.

We left kill at dark. around headquarters. Was returned from West

August 9, 1961

We killed grizzly No. 103 at West Yellowstone. Apparently gave a heavy dose of sucostrin and followed this too closely with pentobarbital sodium. We skinned and boned it as it was apparently a 2-year-old bear. See data sheets. evening of August 11 for Moose to take a few days' leave.

August 12 Ranger Muss shot a grizzly at Smith Gate which was running about among the campers. It was a 2-year-old. Sent it to Ken Greer along with No. 103 and some other specimens we have had on hand. 2-day raft trip down the Snake Checked the elk kill at Trout Creek (A.M.) A sow and cubs had been at this kill and perhaps some other bears. None were seen but tracks were evident. Climbed Mt. Teton with John Thine and two companions and Karen and Derek Bull moose are feeding regularly in the Yellowstone River. about 1

P.M. Got Checked elk kill again at 6 P.M. There was nothing at kill, so we waited about 1½ hours. As we were leaving about dusk we intercepted a large unmarked boar. He got our scent and turned and ran ¾ of a mile to the nearest timber. Had we waited in hiding another 10 minutes we probably would have come on the boar unexpectedly at close range in the narrow defile where Trout Creek emerges. There are rocky outcroppings here. We went heavily armed as the rough terrain made visibility poor and there were no trees to climb in case of attack.

August 10, 1961

Looked for the cub Ignatz along Yellowstone Lake but could not locate him.

Checked out our radio equipment.

In the afternoon we immobilized a sow captured at Canyon. This is bear No. 107. She reacted to the sucostrin and I thought we might lose her for a few minutes. Came around O.K. Released her at Trout Creek. See data sheets.

August 11, 1961

Wrote notes and worked around headquarters. Was returned from West Yellowstone. He and crew captured 3 grizzlies:

No. 104

No. 105

No. 106

See data sheets.

Left evening of August 11 for Moose to take a few days' leave.

August 12 to August 20, 1961

Spent August 12, 13, and 14th at cabin with Mother and family.

Took Karen, Derek, Johnny, and Charlie on a 2-day raft trip down the Snake River from Buffalo River to Moose.

August 19, 1961

Climbed Mt. Teweentot with John Thune and two companions and Karen and Derek. Started climbing at about 5:30 A.M. Arrived on summit about 1 P.M. Got back to Jenny Lake Store about 7 P.M. Had a good climb but there was a lot of loose rock.

Morgan and Pat arrived.

August 20, 1961

Worked on flower book.

August 21, 1961

Margaret and Mother drove me to South Gate of Y.N.P. where Don met me.

Discussed the News Release problem and photo policy with Wes.
August 22, 1961 with the grizzly research. They countered that the gravel
mixing of Wes left for Missoula, affect the study too and should be pulled out.

Maurice, Frank, Wes and crew ran the number of tagged and marked
bears to 114. operate in Trout Creek from Oct. 20 to the time heavy snow forces
them out. Two traps were set during the night. We captured cub No. 92 and
93. The sow No. 34 was at the trap site. We drove her off and ran the traps
up Trout Creek about $1\frac{1}{2}$ miles. upper valley or activity after 5 P.M. would
seriously We were attempting to immobilize the first cub No. 92 when I looked
up and saw the sow approaching upwind and about 250 yds. away. Maurice and
I fired cracker shells and this moved her off to the top of the ridge about
500 yds. away. She remained there for an hour while we worked on the cubs.
She finally disappeared over the ridge. We kept a sharp lookout fearing she
might return at a time when we were engrossed in the work. have been giving
trouble. We took dental impressions, foot casts and blood samples.

August 24 On both cubs the deciduous 4th pre-molar upper jaw was about to
shed and the permanent pre-molar was erupting. Two cones being visible one
directly beneath the dec. pre-molar and the other just anterior to it. 116.

Morgan too Checked a buffalo kill at head of Trout Creek. Bears had been there
but none were present when we arrived. methods in the future. I retained their

Saw Great Gray Owl in upper meadow of Trout Creek drainage. Bear
weighed 3 Set traps at Trout Creek. Note autopsy and took blood samples. 122

August 23, 1961 Hybrids of both black and grizzly are relatively small -

about 1/3 Meeting with Supt. Garrison at Canyon. Date: Aug. 23 - about
9:00 P.M. the spleen large - fairly close to 1 mile for once fishing. had a

Mr. Garrison intimated that pressure was being brought to bear on
him to let the buffalo-reduction people operate in the Trout Creek area. This
pressure was apparently coming from the Undersecretary.

Apparently the Buffalo outfit has been told that their operation would interfere with the grizzly research. They countered that the gravel mixing operation would adversely affect the study too and should be pulled out.

Garrison pulled them out to keep harmony. He now plans to let the gravel crew operate in Trout Creek from Oct. 20 to the time heavy snow forces them out and then again in May and June. I told him this would not interfere with our work and that I fully supported his stand in keeping the buffalo operators out as any work in the upper valley or activity after 5 P.M. would seriously disturb our observations.

Dr. Berthrong and family arrived. Lake had captured a large black bear and brought it to Trout Creek. We transferred it to our trap and plan to hold it overnight and have it available for Morgan to autopsy on Aug. 24.

Canyon rangers captured the yearlings of the Rip-nosed Sow. These were captured earlier. They are in very poor condition and have been giving trouble in the Canyon Campground. These are Nos. 53 and 114.

August 24, 1961

Lake brought us a 2-year-old grizzly captured at Lake Campground.

We began the day by immobilizing and marking this bear No. 116. Morgan took blood samples and demonstrated some efficient methods of taking blood samples. We will utilize these methods in the future.

Next killed the black bear with an overdose of sucostrin. Bear weighed 350 lbs. Morgan did a complete autopsy and took blood samples.

The thyroids of both black and grizzly are relatively small - about $1/3$ the size of the adult human thyroid. The adrenals are also very small, the spleen large.

The thyroids lay on either side of the tracheae, covered by a thin layer of muscle. The two lobes are connected by a bridge of tissue.

The adrenals are imbedded in fatty tissue and difficult to locate. They lie anterior to the kidneys and are supplied by the adrenolumbar vein. The larger postcaval vein can be readily located and serves as a clue to the position of the adrenals.

The sorta is much thickened.

We noted the longitudinal convolutions in the small intestine.

Collected the thymus and pancreas.

We sacrificed both No. 53 and 114. Both were in poor condition.

Morgan found lumbar infarcts in the lungs of both bears. Also nodules and necrotic areas.

The upper half of the small intestine of both grizzlies was impacted with round worms. They were particularly abundant in the duodenum and jejunum.

Measured the small and large intestines from the rectum to the distal duodenum included the jejunum, ileum and colon. One bear measured 49 1/2" and the other 46".

There were 32 round worms in a 3 foot section of the upper small intestine. There is no doubt that these worms have been causing serious trouble.

Morgan will send a full report on this.

Neither bear had accumulated any fat and both still retained their winter coats.

Morgan made blood platelet counts in evening and centrifuged the blood.

August 25, 1961

Took Morgan and family down to 3 Mile for some fishing. Had a grand day in the canyon. No one else on this stretch of river. Brought back 45 trout and cooked them for supper.

valuable Maurice and Mike tried to capture Ignatz. Rangers at Lake had attempted to rope him and he bit one of them and scattered all, escaping with a rope around his abdomen.

during Maurice and Mike were called to help. Tried to get a shot with the drug CO₂ gun but Ignatz was wary and they could not capture him. He is fat and in good health.

August 26, 1961

Morgan and family left for Colorado Springs. Spent the morning on correspondence and notes.

August 27, 1961

Canyon rangers trapped grizzly bear No. 80. This is the third recapture. Bear weighed 185 lbs. Will release it at extremities of Park, hoping it will not return to Canyon. Ranger Art Hays and crew have killed a number of black bears in the Canyon Campground. This has made food available and it apparently has been attracting the grizzlies. With a "normal" population of blacks, the refuse is consumed early in the day or evening and there is little left by nightfall to attract grizzlies. With the black population greatly reduced, this food has not been utilized and the grizzlies have been attracted and are returning night after night.

August 28 This we think accounts for the large number of grizzly sightings and captures in Canyon Campground.

about 40 The old story, you can't disturb or disrupt nature without starting a cause and effect relationship.

August 28, 1961

Wrote notes and got off correspondence during the morning.

Went to Trout Creek with the intention of shooting a sow with cubs. Our plan was to immobilize a sow with marked cubs in order to get the entire family marked. By selective shooting we can thus mark or recapture the most at 325-350 lbs.

valuable bears. A sow can be marked in a few minutes so it can be recognized next year. This spring we ran into the situation where we had unmarked sows without cubs and could not determine whether these sows had lost their cubs during the winter, weaned them in the spring or were sows that had not given birth to cubs the past spring. In view of an apparent high cub mortality it is desirable to mark as many sows with cubs as possible. If these marked sows then turn up in the spring and summer of 1962 without their cubs (would then be yearlings) we would know more about the fate and activities of the family group. A sow brought a cub in with a tin can wedged on a forefoot. Decided to take this cub instead of a sow. Shot it with 20 cc. of succostrin, put it in a trap and held overnight.

Shot No. 26, a two-year-old on which we have accumulated considerable data. Drug dose was not sufficiently heavy and we failed to immobilize him.

August 29, 1961

Immobilized cub captured the night before. Gave it No. 117. Took dental casts and X-rays of paws. For full information see data sheets.

Recaptured No. 116 at Fishing Bridge Campground. Was released August 24 at Trout Creek. Taken to Crystal Creek and released 8/29. Shot a sow at Trout Creek. She had two cubs one of which was marked. Sow was about to cross Trout Creek when the drug took effect; she collapsed on the bank. Placed a square aluminum tag (H 1584) in the right ear upper outside, and a round red (00 340) in the left ear upper outside. Injected 3 cc. of oxytocin and obtained about 40 or 50 cc. of milk.

Sow revived after a short time and waded into creek and emerged with only her snout above water. She called her cubs and they came to stand on the bank looking quizzically at her. Gave her No. 119. Estimated her weight at 325-350 lbs.

August 30 Sow wandered westward with cubs and we moved the vehicle and got in position for another bear. Number 26 came in and we hit him with 75 mg. of succostrin. He went down, then rolled to the bottom of the 30 foot deep trench. This contained about $1\frac{1}{2}$ to 2' of water. Bear was not fully immobilized but could hold head out only for short periods of time. It was obvious the bear would drown as drug took effect so Maurice and I rushed down the slope to haul him out while Mike stood guard to keep other grizzlies away. I grabbed him by one ear and Maurice got the scruff of his neck and we managed to hold his head above water and at same time evade the uncoordinated thrusts of his forepaws. We held him until he appeared to be reviving rapidly, then released him and raced up the nearly vertical slope. The bear lunged upward and then rolled back down the slope and into the water.

August 31 Fearing he still could not maintain his equilibrium we started down the slope again to wade in and haul him out again. It was dark by this time and we had to ask Mike to flash a light on the bear so we could see his condition and situation. The bear would lift his head gulp some air and then drop forward until his head was almost completely under water. Great bubbles would rise as he blew out the air, then he would raise his head for another breath. He was too well coordinated to handle and yet there was still danger of him getting a lung full of water. We approached to within 20 feet, he reared up to a full sitting position then lunged shoreward. It didn't take a second look to assure us that he could take care of himself now and would soon be taking care of us if we didn't get out of the pit. It had been raining steadily all the while. We climbed up the slippery slope wet and bedraggled and gave this bear up for this particular night as a bad job. Bear No. 26 subsequently moved off with full control of his power and bulk.

Captured No. 118 in Canyon Campground. Used Cap-Chur gun to effect capture.

August 30, 1961

Marked the 2-year-old female captured at Canyon August 29. Gave it No. 118.

Ashby Stiff, manager of the Canyon Hotel, and his friends Col. and Mrs. Muling and 2 children and Stiff's secretary Jóni watched us work on the bear. They seemed quite interested and asked intelligent questions.

Visited Trout Creek dump about 6:30 P.M.

About dark we attempted to shoot a sow with cubs. Hit sow with 60 mg. but either dart failed to fire or else dose was too light. Waited 20 minutes then hit sow in neck with another dart. Nothing happened. Found we had picked up a dart loaded for cubs and had struck her with only 20 mg. It was dark and we quite for the evening.

August 31, 1961

Spent day writing notes, inventorying equipment, housecleaning and getting off correspondence and phone calls.

Was called from Missoula to inform me that Frank Dunkle is calling a meeting of I and E people on September 6 at 9 A.M. and would like me to attend if possible and describe the bear study.

Dan Moscovitz called from Denver and I gave him information on the bear study for release in a weekly magazine section that appears in one of the Denver Sunday papers.

September 1, 1961

General Food Conditions:

The huckleberry crop has been generally good throughout the Park. This is in marked contrast to the conditions that prevailed during 1960. The low bush (Vaccinium scoparium), the western bog blueberry (V. occidentale) and the Big whortleberry (V. membranaceum) have all produced fair to good crops of berries.

similar. To date there has been little or no utilization of white-bark pine cones and seeds (Pinus albicanlis). No estimate of the crop has been made to date.

Phoned Frank Dunkle, Fish and Game concerning News Release and photographs. Trap arrived and we hauled the bear over the snow about 40 yards to the trap and hoisted it in.

Cub Mortality Later we checked bears and found. Since the study began in 1959, it has been noted among both marked and unmarked animals that the number of yearlings do not begin to approach in number the cubs that each year went into hibernation.

We suspect a heavy over-winter cub mortality, but sufficient data on marked bubs and sows is not yet available to be certain of this supposition.

Examined, bled and autopsied bears. Sections of tissue were sent to Dr. Bar. It is possible that some yearlings are weaned early in the spring and disperse widely and so are not seen at our observation areas. It is also possible that a large percentage of yearlings do not visit the dumps because they are not able to compete with the larger bears once they lose the protection of the sow.

It seems most probable that a heavy cub mortality occurs during hibernation or very early in the spring.

Our records support the fact that little mortality occurs during the spring and summer of cub-hood and that cubs enter the pre-hibernation period in excellent condition, with heavy layers of fat and weighing between from 80 to 130-150 pounds.

September 2, 1961

Number 118, a 2-year-old sow returned to Canyon Campground and as rangers asked us to remove it.

Maurice had earlier shot this bear free-roaming with 45 mg. of sucostrin. This had proved to be a good dose. Accordingly I measured a

similar dose and shot the bear from a distance of 40 feet. The bear ran 30 yds. turned and faced me, then dropped 15 seconds after the dart had struck. The needle struck the clavicle and injection was into the shoulder muscles.

Bear was breathing shallowly but regularly. Four minutes after injection the trap arrived and we hauled the bear over the snow about 40 yards to the trap and hoisted it in. Several minutes later we checked bear and found it had stopped breathing but heart was still beating. We administered artificial respiration but to no avail and bear was dead 11 minutes after injection. Gradually improved. When it was apparent that she was coming around.

An intra-venous injection may have occurred. Movement of the dark animal at a time when respiration was still critical may have been a factor. Skinned, boned and autopsied bear. Sections of tissue were sent to Dr. Berthrong. Took and Hall head first into the stream. She had the

Bear appeared to be in good condition. Intestines contained round worms but they were relatively few in number and there was no congestion. covered us from one direction and Frank from the other. Took X-ray of upper and lower jaws and right front foot. She weighed Retained reproductive tract and heart. water and gravel. Mike

Made preparations for moving into winter quarters at ranger housing unit. With much exertion we hauled the cow up on the September 3, 1961 she was breathing regularly and deep and was rapidly coming

Hiked into Yellowstone Canyon from north side of Mt. Washburn. Trip was pretty rugged. Had to climb part way up canyon twice in order to progress downstream a few hundred yards. Cliffs and water meet with progress barred along the shore. Saw many osprey nests, caught several limits of nice cutthroat. Arrived back at car after dark, somewhat weary but delighted with the new country we had seen. tags in each car as well as one colored marker. (See data sheet)

September 4, 1961

Shot sow No. 120 on the dump. She was lactating and had two cubs, neither of which had been captured and marked.

Hit sow in neck with 75 mg. of sucostrin. She ran over the embankment with her cubs following and collapsed at the edge of the stream.

It was nearly dark but we chased other grizzlies off and went down to bear. Dose was too heavy and bear was breathing very shallowly and irregularly. Administered light artificial respiration to maintain breathing rhythm. Condition of bear gradually improved. When it was apparent that she was coming around O.K. we left her and retreated to our vehicle. It was then dark and we observed sow with the car headlights. We were afraid the sow would fall into the stream before recovering fully and drown. Sure enough she tried to gain her feet and fell head first into the stream. She had the use of her forepaws but could not hold her head erect for any length of time. When it became apparent that she would drown if some action was not taken, I ran down the slope while Mike covered me from one direction and Frank from the other. I grasped her hind leg and began pulling her shoreward. She weighed at least 350 lbs. and pulled hard against water and gravel. Mike seeing me struggling with the bear laid down the gun and raced down the slope to join me in pulling. With much exertion we hauled the sow up on the gravel bar, saw she was breathing regularly and deep and was rapidly coming out of the effect of the drug. We ran up the bank in the dark hoping no bears had closed in on us and hoping that the sow would not lurch back into the water. Fortunately she remained relatively quiet until she could hold her head erect. She then crossed the stream, climbed the far bank and moved off across the sage where her cubs joined her. Took no milk sample but placed ear tags in each ear as well as one colored marker. (See data sheet)

September 5, 1961

Maurice returned from Missoula and brought Pat O'Halloran with him. Continued our packing and preparation for moving. Worked on plant specimens and organized all dental and paw impressions. Don and Mike worked on this and other jobs.

Started cleaning work on the mess hall.

September 6, 1961

Ken Grier and Leroy Ellig picked up hide, skull and skeleton of bear No. 118. This young sow had a beautiful coat of light hair. In last No. 98 sighted at Sylvan Lake.

Made arrangements with Ken Greer for a food habits study.

September 7, 1961

with Pat O'Halloran going over data for his thesis on magpie predation. Worked around Headquarters. Maurice made a count at Trout Creek. Cub No. 92 belonging to sow No. 34 and litter mate of No. 93 is still missing. Cub has been missing approximately 16 days. Apparently has never rejoined its mother.

September 8, 1961

Captured bear No. 29 weighing 252 pounds. Took dental casts and will compare these with casts taken earlier in the season to determine if there has been any measureable growth changes. Foot cast was not taken.

Drove to Moose and remained there through September 10. Visited with Dr. and Mrs. Larry Gould.

September 11, 1961

Dick Davies of Philco's Western Research Laboratory arrived.

The dump kid No. 37 was captured at West Thumb. This bear weighed 215 lbs. in late June. Now weighs 315 lbs., having gained 100 pounds since June 27, 1961.

Pat O'Halloran left for Missoula this morning and I gave him some grizzly milk samples to airmail to Dr. Jefferies at Univ. of Minnesota.

September 12, 1961 did equipment with Dick Davies. We placed the small transmitter and snowed during night. We had difficulty immobilizing and anesthetizing bear No. 37. Bahizi and Ettinger were present. Marcel Bahizi is Asst. Supt. of Park Albert in the Congo. He was interested in our work and hoped we could come to the Congo and study the gorilla.

Took foot and dental casts of No. 37. Maurice, Pat and I prepared the meals. N.P.S. recaptured sow No. 107 in Canyon Campground. Weighed 310 pounds. Released at Trout Creek.

Attempted to kill an elk in the Cascade area but were unsuccessful in locating any, for our purpose.

September 13, 1961 We elk kill up Trout Creek. This kill was made at the head of the lake. Worked with Pat O'Halloran going over data for his thesis on magpie predation on pheasants. Grizzly approximately 2-year-old was on the kill. Had eaten the meat. Took Marcel Bahizi and Bob Ettinger up Trout Creek. Allowed Bahizi to shoot a large bull elk which we wanted to take in that area so as to attract grizzlies. He made a clean neck shot and dropped the bull just where we wanted it. He was thrilled with the experience. Bull elk were bugling all around us, giving a constant signal, one a slow pulse and the third a rapid pulse. Returned about 8 o'clock and all of us had a delicious trout dinner. Spent evening learning about Albert Park from Bahizi. The rhinos are a problem - an estimated 18,000 of them in the Park. Elephants also there in large numbers. It is one of the few remaining havens for the gorilla and the banded chimpanzee. Gorillas live largely in the dense bamboo forests, feeding extensively on bamboo shoots. Like the grizzly this great primate is a threatened species. Bahizi said a large male will weigh over 600 pounds. Would like us to set up a study there. Would be a real challenge.

September 14, 1961 and I checked the elk kill up Trout Creek. I carried the 357 and so Pat O'Halloran left for Missoula this morning and I gave him some grizzly milk samples to airmail to Dr. Jenness at Univ. of Minnesota.

Tested radio equipment with Dick Davies. We placed the small transmitter and antenna collar in a tree and attempted to get the signal with the portable directional receivers. Both the continuous and pulse signals came in strong. The directional receivers did not prove effective for over a mile. Many problems yet to be ironed out.

Frank has been working with Dick while Maurice, Pat and I prepared the meals and did the many necessary chores. We seem to be making headway but we were disappointed in the range of the portable direction finders.

The transmitters operate on 32.01 megacycles. This appears to be a good frequency for our purpose.

Checked the elk kill up Trout Creek. This kill was made at the head of the valley.

An unmarked grizzly approximately 2-year-old was on the kill. Had eaten the entrails and fat lining the intestine.

September 15, 1961

Frank and Dick Davies got three of the small bear transmitters operating. Each had a loop antenna that will encircle the bear's neck. One transmitter emitted a constant signal, one a slow pulse and the third a rapid pulse.

We attempted to locate these with two portable directional receivers (Osborn) (transceivers).

Maurice carried the slow pulse transmitter about his neck and hiked into the lodgepole forest near Canyon. We then tried to locate him with the two directional receivers by nulling the signal.

Equipment worked well but the range is much less than we had hoped for - not over 3/4 mile.

Maurice and I checked the elk kill up Trout Creek. I carried the 357 and scope and Maurice led off carrying the 12 gauge shotgun with slugs.

Less than 100 yards from the car we entered heavy timber and the trail contoured around the hill. We suddenly came upon a sow No. 119 with two cubs not 40 yards in front^{of}/us and on the trail. She saw us at the same time we saw her.

We stopped, alerted to the danger and realizing that if she moved toward us we would probably be forced to shoot. Fortunately she turned and fled even before we had time to fully size up the situation.

Afterwards we realized that we had been ill prepared for such a situation had the sow charged. There would have been little opportunity to climb a tree unless we decided on doing this instantly. Neither of us had even looked for a climbable tree. Both of us would have been very reluctant to shoot and yet this decision would have had to be made quickly or she would have been on us. Actually neither Maurice nor I had thought seriously of killing the sow during the few seconds we faced her.

We had shot this sow with the dart gun at Trout Creek dump on Aug. 29, 1961. We had ear-tagged her at that time, taken a milk sample and estimated her weight at 325-350 pounds. We had earlier marked one of her cubs giving it number 99. This sow thus had every reason to fear us and run; or to recognize us as an enemy and charge. It was in the best interests of all that she took the former course and fled with her cubs.

With the sow and cubs behind us and in hasty retreat, we moved on down the trail to a point where we could view the elk kill.

A small dark grizzly probably a yearling had been on the kill, but was in full flight across the opening apparently frightened by the sow and her warning "woofs" rather than by our approach.

At about 6 P.M. the 2-year-old that had been at the kill yesterday came ambling in from the west. We checked him with the scope and he was an unmarked bear. This grizzly fed a little on the carcass but did not appear

to be hungry and was frequently checking the wind for scent.

We observed him for about 15 minutes and until nearly dark. A shift in wind took our scent to him and he left on the run and did not stop until he was a good 1/4 mile away.

Maurice and I walked out to the kill. Only the viscera had been eaten. The hams, back, forelegs and neck had not been touched. The carcass had been partly covered with earth and grass.

It is doubtful if the sow No. 119 and her cubs had been to the kill. We apparently intercepted them as they were approaching the carcass.

September 16, 1961

A black bear got into Dick Davies' car, tearing the convertible top so it was a total loss.

Maurice and I repaired it and covered the top with a plastic sheet so he could make it back to California.

Dick and his wife Marian and Frank left for Moose.

Checked the elk kill at Trout Creek. Carcass had been covered with more earth, but little feeding had occurred since yesterday. Observed kill from 6:00 to 6:30 P.M. but no bears appeared.

September 17, 1961

Maurice and I drove to West Yellowstone, then down the Gallatin to Bacon Rind Creek. We back-packed about 30 lbs. of food and equipment apiece up the mountain to our old hunting camp of last year.

Saw some elk but they were not as numerous in the area as last year.

Carried water from a spring in the valley and left it in a water bag on the ridge (about 9,000 ft.) so we could make a dry camp on September 24. Cached our supplies and equipment and then scouted the ridge for elk.

Was again recaptured Aug. 19, 1960 and weighed 160 lbs. On Aug. 2, of 1961 it weighed 210 lbs. as a 2-year-old. She gained 50 lbs. since the last recapture.

September 18, 1961. 95 is a male and litter mate to Numbers 26 and 77.

Phoned Fritz Bell and made final arrangements for elk hunt. He will bring his son, Mike, and Derek over to W. Yellowstone on September 23.

Phoned Cecil Gubser and made tentative arrangements for a trip on the Missouri to look over area being considered for a National Park.

Wrote notes. Frank returned from Jackson. Moved tables and other equipment out of the Y.P. mess. of this bear for Dr. Johnson at Paget Sound.

Set traps at Trout Creek and N.P. trap at Canyon. Was raining hard and we got soaking wet.

September 19, 1961 Listella of Y. Park Co. for a steak dinner.

General F Captured an unmarked young bear at Canyon and recaptured "Lonesome" No. 5 at Trout Creek. We originally captured No. 5, a female, at Trout Creek in 1959 and also in 1960.

No. 5 weighed 300 pounds. Took measurements, dental charts, dental casts and paw prints. Suspect there was practically no net trap in the

Trout Creek Immobilized young bear captured at Canyon. Gave it No. 121. Female weighed 115 lbs. that bears have the "scars" again. Seem to have this

in the Not certain whether it is a yearling or a retarded 2-year-old.

Took dental casts, dental charge and foot cast.

Worked on radio equipment in afternoon. correspondence.

Set 2 traps at Trout Creek.

September 20, 1961

Recaptured bear No. 6 at Trout Creek and also No. 95.

Total No. times bears were handled

Bear No. 6 is a female and weighed 260 lbs. This was the first cub

new individuals captured

marked on the project and was initially captured July 4, 1959. It then

No. captured by Project

weighed 45-50 pounds. On June 29, 1960 it weighed 105 lbs. as a yearling.

Free-ranging (60% gun)

Was again recaptured Aug. 19, 1960 and weighed 160 lbs. On Aug. 2. of 1961

Total No. individuals recaptured

it weighed 210 lbs. as a 2-year-old. Has gained 50 lbs. since the last re-

No. captured by Project

capture.

had to be re-

Trapping

Free-ranging

Bear No. 95 is a male and litter mate to Numbers 26 and 77.

No. 95 weighed 360 pounds and is a very large 2-year-old (see data sheet). We re-marked this bear with polyethylene braided rope.

Tested radio and collar with field-strength indicator while transmitter and antenna loop were placed around bear's neck.

Took photos.

Took a blood sample of this bear for Dr. Johnson at Puget Sound.

This season we have as of this date re-trapped 46 bears and initially trapped and marked 44 new ones.

Had Mr. Liatella of Y. Park Co. for a steak dinner.

General Food Conditions:

Bears have been eating a lot of vegetation lately. Has been little food at Trout Creek dump.

The white-bark and limber pine nut crop was very poor. Many mature trees bore no cones at all. Suspect there was practically no nut crop in the Trout Creek area as none were observed in feces.

Have noticed that bears have the "scours" again. Seem to have this in the spring and in the fall.

September 21, 1961

Spent morning catching up on notes and correspondence.

Set 2 traps at Trout Creek.

Summary of 1961 Trapping

Total No. individuals captured	65
Total No. times bears were handled	93
New individuals captured	45
No. captured by N.P. Service	4
No. captured by Project	41
Trapping	24
Free-roaming (CO ₂ gun)	17
Total No. individuals recaptured	29
No. captured by N.P. Service	12
No. captured by Project	17
Trapping	14
Free-roaming	3

cold and Total captures made of free-roaming bears heavy gusts of wind. Left

Note: 3 new individual bears captured by N.P.S. Took photos.
6 new individual bears captured by Project.

Maurice and I returned to headquarters and packed for our elk and

Summary of Trapping Success

bighorn sheep hunting trip in the 1959-1961. We were about to leave for West

Yellowstone 1959 met Fritz Bell, Derek and Mike Bell when Supt. Garrison phoned

Trap nights 21
and invited Successful trap nights 14
Trapping Success 76%

Haines (photo man). I managed to make a plausible excuse for Maurice and me.

1960

Frank agreed Trap nights 71
Successful trap nights 51
spite of our Trapping success 71.8%

1961

ice and I met Fritz and the kids at West Yellowstone at 5:30 P.M.

Trap nights 77
Successful trap nights 46
Trapping success 59.6%

drainages with Al Newly. It was snowing in gusts and visibility was so poor
Over 30 year period we have handled a total of . . 189 grizzlies.
that we had to fly at tree-top level and dodge in and out of the cloud banks

September 22, 1961

in order to see. We saw no elk and only a few isolated trails up Migration
Captured female No. 40 at Trout Creek. Had difficulty anesthetiz-
Creek where we planned to hunt and we hunted last fall.
ing her with penta. Bear weighed 300 pounds.

Spotted about 40 head of elk to the west of Red Mt. in the Sage Creek
We instrumented this bear and named her Marion in honor of Dick

drainage. These elk were only 2 or 3 miles west of the Rainbow Camp. Decided
Davies' wife. Dick has been largely responsible for developing the transis-
it would be too far for us to hunt the first day. These elk were high (9,000
tor radios and receiving and directional equipment at Philco's Western Research
ft.) and in fairly deep snow. Sighted many elk low on Teepee Creek below the
and Development Laboratories.

snow. Most of these were in the Park. Saw elk on the north side of Snowslide
Marked No. 40 with yellow vinyl tape in one ear and white in the
Creek. Returned at dusk after flying an hour. Skinned over the top of Red
other. Took dental casts and then tested the transmitter after securing it
Mountain and Earnest Miller Ridge. Saw no sheep or sheep tracks. Saw several
around bear's neck. Tests were made with the portable transceiver and the
moose at about 9,500. Top of mountains is over 10,000 feet. Located hunter
field strength indicator. We could detect the pulse signal (a long, slow
camps and will try to check these for possible grizzly bear kills.
"beep, beep") at 1/2 mile when collar and transmitter were around bear's

Packed our gear for elk-hunting trip about 10 P.M. Tried to keep
neck with bear lying immobilized on the ground.
the loads light but we will all have good packs.

Signal was very good but the collar antenna loop was too large to
fit bear snugly. Cut 3" off antenna loop. This changed signal strength and
transmitter had to be re-tuned to get maximum pulse signal. Weather was

cold and it snowed intermittently all morning with heavy gusts of wind. Left No. 40 asleep in sheltered area at about 3 P.M. Took photos.

Maurice and I returned to headquarters and packed for our elk and bighorn sheep hunting trip in the Gallatin. We were about to leave for West Yellowstone to meet Fritz Bell, Derek and Mike Bell when Supt. Garrison phoned and invited Frank, Maurice, and me to supper to meet Mr. McCracken and Mr. Haines (photo man). I managed to make a plausible excuse for Maurice and me. Frank agreed to go as Supt. was not about to accept a flat refusal - this in spite of our previously made plans.

Maurice and I met Fritz and the kids at West Yellowstone at 5:30 P.M.

Maurice and I flew over Teepee, Bacon Rind and Snowslide Creeks and drainages with Al Newly. It was snowing in gusts and visibility was so poor that we had to fly at tree-top level and dodge in and out of the cloud banks in order to see. We saw no elk and only a few isolated trails up Migration Creek where we planned to hunt and we hunted last fall.

Spotted about 40 head of elk to the west of Red Mt. in the Sage Creek drainage. These elk were only 2 or 3 miles west of the Rainbow Camp. Decided it would be too far for us to hunt the first day. These elk were high (9,000 ft.) and in fairly deep snow. Sighted many elk low on Teepee Creek below the snow. Most of these were in the Park. Saw elk on the north side of Snowslide Creek. Returned at dusk after flying an hour. Skimmed over the top of Red Mountain and Earnest Miller Ridge. Saw no sheep or sheep tracks. Saw several moose at about 9,500. Top of mountains is over 10,000 feet. Located hunter camps and will try to check these for possible grizzly bear kills.

Packed our gear for elk-hunting trip about 10 P.M. Tried to keep the loads light but we will all have good packs.

List of Equipment Taken

1. Rifle and ammo. - scope cover
2. Soft pack and tump line
3. Knife, axe, meat bags, saw, stone
4. Bugle
5. Matches, camera, film, exposure meter
6. Hanks of parachute cord
7. Heavy plastic bags
8. Mt. boots and also shoe pacs - shoe grease
9. Small Swede saw
10. Water bag
11. Teepee
12. Tarp tent
13. Gloves, head band, heavy sacks
14. Heavy underwear
15. Nylon parka, down underwear
16. Tape, band-aids
17. 2 Morphine syrettes
18. Aspirin and sodium seconal
19. Extra levis, wool shirt
20. Cup, spoon, plate - cooking gear
21. Down sleeping bag

Major Food Items

1. Pemmican - Hunter sausage
2. Dried fruit
3. Trail raion
4. Dried beef
5. Dried potatoes
6. Candy - chocolate, hard
7. Bacon, eggs, bread, sugar, coffee, tea
8. Salt
9. Onions

Food and Equipment Cached at Camp Site

- 1 Light tarp
- 1 Can salt
- 1 Can beans
- 2 Cans tuna
- 1/2 Lb. coffee
- 1 Small canned ham
- 5 spoons, 6 aluminum plates, skillet
- Cooking pots, 6 cups
- Aluminum foil
- Margarine
- Raisins
- 1 Lb. of sugar

April 17, 1962

Left for Yellowstone.

Saw Mr. Bittinger, manager of the Yellowstone Park Co. and arranged for our summer housing. Use of the Man's Hall at Canyon.

April 18, 1962

GRIZZLY BEAR STUDY

Discussed grizzly bear project with Mr. Garrison and staff. Dr.

A Memorandum of Agreement is to be prepared. Dept. of Interior will contribute \$6,000 per year. We will use this to pay Maurice.

Discussed Elk Migration 1962 and objectives of research. Will require minimum of \$2,500 per year. (See correspondence with Bob Howe).

Outlined some details that should be in Memorandum of Agreement.

Yellowstone National Park

Observations:

Watched a coyote catch 8 *Microtus* in Gibbon Meadows in 15 minutes time. Mice were under snow. Coyote pounced stiff-legged driving his forefeet through about 6 inches of snow.

Looked over damage done to elk winter range around Eagle Creek. Aspen was stripped and chewed. Counted a number of dead elk and took photos.

May 12, 1962

Left for Yellowstone Park

"Ignatz" had been captured in a trap at Lake.

May 13, 1962

Immobilized and anesthetized Ignatz. Weighed just half what he had in fall of 1961. See data sheets.

Took foot cast and dental cast. Did not have a full set of teeth (permanent).

This was conclusive evidence that orphan bears can make it through the winter. Appeared to be in good shape.

May 14 and 15, 1962

April 17, 1962

Left for Yellowstone.

Saw Mr. Bittering, manager of the Yellowstone Park Co. and arranged for our summer housing. Use of the Men's Hall at Canyon. Also to take notes on grizzlies visiting buffalo and elk carcasses and any kills that might be made.

April 18, 1962

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This was conclusive evidence that orphan bears can make it through the winter. Appeared to be in good shape.

May 14 and 15, 1962

On April 17th to 20th I made a trip to Yellowstone to make housing arrangements for the summer's work. At that time grizzly bears had been sighted. Some of these had been feeding on buffalo that died in late winter and one of them on elk. Apparently most of the grizzlies that were out were about 7 to 10 days. Also to take notes on grizzlies visiting buffalo and visiting the numerous carcasses and feeding on them.

Asked Harry Reynolds, Jr. to release Ignatz at Crystal Creek in about 7 to 10 days. Also to take notes on grizzlies visiting buffalo and elk carcasses and any kills that might be made.

On April 20th en route to Missoula we observed a coyote feeding on mice.

Notes

We watched the coyote for 10 or 15 minutes and during this time he caught 8 mice, pounding on them in the snow hitting them stiff-legged, trap at Lake about May 9th or 10th. He was held in a trap until I arrived on May 12th. On May 13th I processed the bear, making the dental casts and foot casts. The bear weighed exactly 40 pounds, just half of his weight in September.

June 12, 1962

We will hold Ignatz in the trap for 7 to 10 days and then release him at Crystal Creek. We hope that he will not return to Lake until we can arrive the first of June and take care of him if he should cause any trouble along the road.

Arrived in Yellowstone. Met with Mr. Garrison, Glenn Bean and the Construction people and Y.P. Co. and discussed the housing problem.

Mr. Bittinger of Y.P. Co. had promised us the use of the Mess Hall for our summer activities. The construction companies headed by Taggart and Smith have refused to leave the Mess Hall which we turned over to them in the Trout Creek area that he thought was Ingomar but he couldn't confirm the observation. He stopped at Rabbit Creek on May 15th and saw a sow and three large yearlings. I believe the sow was Geraldine. All of them were very tame and we approached within 25 to 30 yards. None of these bears are marked and we should probably mark at least one member of the family this summer.

Bittinger stood by us and after considerable discussion the construction people agreed to turn the Mess Hall over to us. Will be a week at To date no sows with cubs of the year have been sighted by the rangers. It is possible they have not yet come out of hibernation or perhaps We are now quartered in the Winter Keeper's house. This will slow down our work considerably. We saw several yearlings but no black bear with cubs.

June 12, 1962

Went out to Trout Creek with Maurice and got acquainted with the bears. We made a census and noted bears in breeding condition.

Started work on form sheets. Work has now evolved to the point where we can take most of our observations on form sheets. On April 17th to 20th I made a trip to Yellowstone to make housing arrangements for the summer's work. At that time grizzly bears had been sighted. Some of these had been feeding on buffalo that died in late winter and one of them on elk. Apparently most of the grizzlies that were out were visiting the numerous carcasses and feeding on them.

Put all data and notes on Form Sheets from June 13 through rest of season. (See Field Note Books). On April 20th en route to Missoula we observed a coyote feeding on mice. We watched the coyote for 10 or 15 minutes and during this time he caught 8 microtus, pouncing on them in the snow hitting them stiff-legged, grabbing them and then swallowing them whole after chewing them for a few seconds. I have had Maurice Hornsaker keeping a day-to-day record of events since 1959. Because of the press of work I will not keep a journal for the rest of the summer. All basic data have been recorded on prepared form sheets since the start of the study in 1959.

June 11, 1962

Arrived in Yellowstone. Met with Mr. Garrison, Glenn Bean and the Construction people and Y.P. Co. and discussed the housing problem.

100 N. Western Ave.
Chicago, Mr. Bittinger of Y.P. Co. had promised us the use of the Mess Hall for our summer activities. The construction companies headed by Taggart and Smith have refused to leave the Mess Hall which we turned over to them in the fall.

Benton Harbor, Michigan.
The Park Service officials have gotten involved in the situation and instead of forcing Taggart and Smith to find other quarters have been trying to get us to find something else.

New York 10, N.Y.
Bittinger stood by us and after considerable discussion the construction people agreed to turn the Mess Hall over to us. Will be a week at least before we can take possession.

Leve. We are now quartered in the Winter Keeper's house. This will slow down our work considerably.

June 12, 1962

Went out to Trout Creek with Maurice and got acquainted with the bears. We made a census and noted bears in breeding condition.

Started work on form sheets. Work has now evolved to the point where we can take most of our observations on form sheets.

Unpacked and started getting our gear assembled. Did some proof-reading on the flower book.

June 13, 1962

Put all data and notes on Form Sheets from June 13 through rest of season. (See Field Note Books).

I have had Maurice Hornocker keeping a day-to-day record of events since 1959. Because of the press of work I will not keep a journal for the rest of the summer. All basic data have been recorded on prepared form sheets since the start of the study in 1959.

Radio Equipment Catalogues

Allied Electronics Equipment
Allied Radio
100 N. Western Ave.
Chicago, 80, Ill.

Lafayette Radio, Electronics Corp.
P. O. Box 1000
Jamaica 31, N.Y.

Heath Company
Benton Harbor, Michigan.

Equipment Addresses

Catalog Veterinary Instruments and Supplies
Arista Surgical Co.
67 Lexington Ave.
New York 10, N.Y.

Magi-Braid Fly Casting Line

Double Taper

Size HDH - 10.00

" HCH - 12.50 - 30 yds.

" GBG - 15.00

Level Lines

Size F - 3.50

Size G - 3.50

Western Fishing Line Co.
Glendale, Calif.

Estimated wt. for Bear Visitors to Project - 1961
Adult wt. (500 lbs.)

Marcel Bahizi
B. P. 120
Rutshura, Kivu
Republic of Congo
Africa

Congolese Legation
145 E. 49th St.
New York

Breeding History of Sow

Discussed research on gorillas

Interpreter: Bob Ettinger, U.S. Fish and Wildlife Service, Albuquerque, N.M.

Alden Todd (Pen name A. L. Todd)

4827 Chevy Chase Blvd.

Chevy Chase 15, Md.

Abandoned - Greeley Exp.

Founding of Explorers Club 1961

Pentobarbital Sodium mixture - 62.5 cms. of Ringer's Solution to 15.5 gms. of powder.

Sernylan

Mixture: 100 mgs. per 1 cc. of distilled water

For dosage see Form Sheets

Scopolamine: Mixture: 100 mgs. per 1 cc.

Inject 1/100 of a grain with succinylcholine chloride to prevent formation of mucus.

Give intra-muscular injection 10 min. before administering succinylcholine.

(Will prevent formation of mucus in lungs)

1/150 grain for cubs.

Rule of thumb for administering drugs to young animals. (Method of calculating dosage when adult dosage is known.

Estimated wt. for Bear Treated x Adult dose
Adult wt. (500 lbs.)

$$\frac{250}{500} \times \frac{1}{100} \text{ gr.}$$

$$\frac{1}{2} \times \frac{1}{100} = \frac{1}{200} \text{ grain for young}$$

Breeding History of Sow

1. Moe West
Breeding History of Sow
2. Ripped-nose sow
Sow Same for Boars
- No. Name Obs. breeding
2 grizzled cubs With cubs, yearlings, 2-year-olds
4. Sow with 1 cub Condition when trapped 1 black cub.
5. White-faced sow with Combination of light-colored sow and white-faced cubs
- No. Name Breeding Data
1959 -
6. Orange stripes 1960 - Prominent orange streak behind forehead, no light
light head and 1961 -

Trout Creek - 1960

8. Sow with collared cubs
Unmarked but Recognizable Bears

9. Hitchcock I. Recognizable from Year to Year (male?) with very big, high rump.

Name Characteristics

1. Scarface Left ear missing; massive scars on both sides of head. Large male.
2. Searchest 1st Date Observed Big brown bear, notched right ear (prominent); Left ear slightly notched. Male. Originally had massive scar on chest.
3. Outlip 7/12 Very large male, right lower lip torn, hangs down.
4. Collared pair 7/12 (One is marked). Very prominent light colored collars. Younger bears (3-5-year-olds).
5. Peg Leg 6/19 Young bear (3-4 yr. old) light colored. Decided limp on one hind leg (R. or L.?)
6. Old Mose (White Claw) 6/7 Old appearing male, light colored, very white claws.
7. Shorty Large male, very short and stocky, very massive head. Deep, short body.

Sows with Cubs at Trout Creek - 1960

Trout Creek - 1960

Description of Sow	Arrival	Number	Approximate	Description of Cub
Unmarked but Recognizable Bears				
White-faced sow	II.	Recognizable by family grouping, by pelage color, wounds, etc. (area). (Not permanently recognizable as individuals).		
Grizzled sow				
Ripped-nose sow				
Name			Characteristics	
1. Mae West	10		Slightly built black sow with two black cubs.	
	11		Prominent hump.	
2. Ripped-nose sow			Sow with 2 white-faced cubs.	
3. Grizzled sow with 2 grizzled cubs			No other sow-cub combination similar to this.	
4. Sow with 1 dark cub.			Black sow with 1 black cub.	
5. White-faced sow with white-faced cub			Combination of light-colored sow and white-faced cub.	
6. Orange stripe			Pronounced orange streak behind forelimbs.	
7. face				
8. Sow with collared cubs			Grizzled sow with 2 white-collared cubs.	
9. Hichpockets			Short bodies, fairly large bear (male?) with very big, high rump.	

Name	Characteristics
Notched ear	Large black bear - big scar on left side and notched left ear (Sows with Cubs at Rabbit Creek - 1960 in 1959)

Description of Sow	1st Date Observed	Number of Cubs	Approximate Size	Description of Cub
Large sow (marked)	7/12	1	Very large	Large and dark
Green and red (marked)	7/12	3	Medium	Grizzled cubs
Black sow	7/12	3	"	2 Dark with neckties, one cub lighter
Expired	6/19	3	"	In Old Faithful campground
Sows with Cubs at Rabbit Creek and Old Faithful - 1961				
Light colored	6/7	3	10-15 lbs.	1 - dark ♀
Box (Sylvia) cubs			2-20 lbs.	1 - dark with light collar ♂ 1 - light ♂ runt

Sows with Cubs at Trout Creek - 1960

Description of Sow	Arrival Date	Number of Cubs	Approximate Size	Description of Cub
White-faced sow	June 16	1	Average	White-faced
Grizzled sow	"	2	"	Grizzled - one marked NO. 43
Ripped-nose sow	" 17	2	"	White-faced
Black sow	" 21	1	"	Black cub
Mae	July 1	2	Small	Both black
	" 10	3	Average	2 dark and 1 light
	" 11	2	Very small ($\frac{1}{2}$ size of av. cub)	1-white collar entirely around neck 1-white collar partly around neck

Sows with Cubs at Trout Creek - 1961

Light colored sow	June 10	3	15-20 lbs.	1 light, 1 dark
Grizzled sow	" 17	2	15-20 lbs.	1 dark with distinct collar 1 light with dark patch on ham
Fairly dark with light head and face	" 19	3	Same	All dark, one has light collar

Rabbit Creek - 1960

Unmarked but Recognizable Bears - Recognized from Year to Year

Name	Characteristics
Notcheat	Large black boar - big scar on left side and notched left ear. Scars on both sides of face. (Same in 1959)
Giant boar	Very large dark boar - torn upper lip. Scar over left eye. Large spread between ears.
Earless	Large brownish boar. One ear completely gone, other a nubbin only. Appears to be earless.
Scarneck	Large dark boar - prominent scar on neck - notched left ear.

Rabbit Creek - 1960

Unmarked but Recognizable Bears - Recognized by family groupings, by Pelage, Color, Wounds, etc.
(Not permanently recognizable as individuals)

Sow with 3 cubs 2 Dark cubs, one light. Dark ones have light neckties.

Grizzlies beginning to shed winter coat

Whitecystis full bloom at Canyon

Triglochin maritima Phenology Rabbit Creek

Yellowstone National Park - 1960

Ravens fledging - June 25 - July 8

June 13-17. Yellowstone National Park - full bloom

In full bloom: Eriogonum sub-alpinum
Scarlet Gilia
Polygonum bistortoides
Flax
Lupinus parviflorus
Eriophyllum integrifolium
Heracleum lanatum
Phlox multiflora

Prairie Falcons fledging - July 1 - July 10

Cubs 40 to 50 lbs. - eating on their own.

June 21. Pedicularis maritima - full bloom. Can be confused with P.

Grizzlies mating - June 20 - July 15

Astragalus agrestis - Trout Creek - full bloom.

Ht. season about July.

June 24-28. Salmon flies hatching in Canyon

1st blooming of Everet's thistle
Myosotis
Mertensia ciliata
Phacelia leucophylla

Grizzlies shedding heavily - July 15

July 9 - Salmon flies out in tremendous numbers along Yellowstone River

(July 27 - Salmon flies still out)

July 25 - Fringed gentian

Epilobium - Fireweed

July 3-4. P. Chaemanerion

July 25-30. Yampa at height of flowering

Phenology - Yellowstone National Park - 1961

June 7-10. Grizzly cubs getting 1st molar. Weight 15-20 lbs.

Shooting star in full bloom

Dogtooth violet in full bloom at Canyon

Mt. bluebell - Mertensia ciliata just beginning to bloom

Lomatium sp. (Trout Creek area) in full bloom. Utilized by grizzlies

Trollius laxus full bloom at Canyon

Spring beauty - Claytonia lanceolata about over

Sandhill cranes hatching

June 13-14. Saxafraga rhomboides full bloom Trout Creek

Lomatium sp. still flowering

Phlox multiflora in full bloom

Grizzlies beginning to shed winter coat

White Wyethia full bloom at Canyon

Triglochin maritima blooming - Rabbit Creek

Arrow grass - Podgrass

Used by grizzlies

June 15-17. Valeriana acutiloba in full bloom

June 19-20. Viola adunca - full bloom

Phacelia sericea beginning to bloom

Mertensia ciliata almost at ht. of blooming

Eriogonum subalpinum - blooming

Polygonum bistortoides - full bloom

Potentilla diversifolia - full bloom

Phlox multiflora - still blooming

Green gentian - beginning to bloom

Cerastium arvense - blooming

June 21. Pedicularis Hallii - full bloom. Can be confused with P. groenlandica

Astragalus agrestis - Trout Creek - full bloom.

June 24-28. Salmon flies hatching in Canyon

Myosotis alpestris - full bloom Mt. Washburn

Draba sp. - full bloom Mt. Washburn

Polimonium viscosum - full bloom Mt. Washburn

American pipit with eggs

Geranium viscidum - beginning to bloom

Heracleum lanatum - beginning to bloom

Bald Eagle young well feathered

Penstemon fruticosa - full bloom

Golden aster (Chrysopsis depressa) full bloom

July 3-4. Jackson Hole and South Yellowstone

Helianthella quinquenervis - full bloom.

full bloom on Mt. Washburn July 9.

Great Gray owl leaving nest

Prairie falcons fledging

Arenaria congesta

Senecio serra ? (check) beginning

Blue flax - full bloom

Green gentian - full bloom

Geranium - full bloom

Mt. Hellschick - full bloom

Cliff Swallows nesting

July 10. Golden Eagle young well feathered

Helianthella quinquenervis - in full bloom on Duraven Pass.
Ascutum columbianus - beginning to bloom at Trout Creek.

July 11. High larkspur - beginning to bloom
Helianthus annuus - beginning to bloom
Heracleum lanatum - blooming on banks of Trout Creek - First Bridge.
Lupinus parviflorus - full bloom
Snowbush - blooming
Bedstraw - Coming into bloom along roadsides
Agastache - full bloom
Woodland paintbrush
Fireweed - Just beginning to bloom

July 5 - Yellowstone Park

Fringed gentian beginning to bloom - Firehole R.
Sulphur eriogonum - beginning to bloom

July 22. Yellow Sweet Clover - full bloom

Trumpeter Swan young hatching (check this date with McIntyre)

Plant "Sylvia" was eating along Firehole River in early June and

Blazing Star - beginning to bloom

Sedum stenopetalum - full bloom - Trout Creek . About over in Lamar

July 24. Valley.

Fireweed - beginning

Cirsium foliosum - beginning at Trout Creek

Geranium - full bloom

Bedstraw - beginning to bloom

Goldenrod (Salidago sp.) - beginning

Oct. 1. Paintbrush - beginning

Senecio serra - beginning (check sp.)

Trifolium repens (common clover) - full bloom - Cascade Creek

Moonflower - full bloom

Yampa - just beginning - being eaten by grizzlies

Rosa sp. - blooming

Lupinus parviflorus - full bloom

Eriogonum subalpinum - full bloom

Penstemon cyaneus - full bloom

Campanula rotundifolia - beginning - Canyon

Penstemon procerus - full bloom

July 6

Elk calves losing spots.

Adults fully shed

Moose calves moving about - Adults bringing them into the open parks and meadows.

Suim (?) sp.

July 9

Pyrola chlorantha - full bloom - Specimen Ridge

Juncos fledging

Male deer fawns - still spotted.

July 10.

Helianthella quinquenervis - in full bloom on Dunraven Pass.
Aconitum columbianus - beginning to bloom at Trout Creek.

July 11.

Claytonia chamissoi - blooming on banks of Trout Creek - First Bridge.
Delphinium occidentale var cuculanum beginning to bloom at Trout Creek

Trifolium pratense - full bloom along roadsides

Trifolium repens - Ditto

Helianthus annuus

Ripe strawberries

Age	Wt.	Sex
-----	-----	-----

2-yr-old	175	19
----------	-----	----

July 15-20.

Yearling	No capture -	
and cub	Lost 3 darts.	

Chaenactis douglasii - full bloom - Firehole R.

Cub	70	15
Yearling	No capture -	
Creek	Lost 1 dart	

July 22.

Helianthus nuttallii

Plant "Sylvia" was eating along Firehole River in early June and late May.

(Translocated)

Cub	60	9
Cub	100	-
Cub a		
Cub c		

July 24.

Cub	85	9
Adult	520	✓

Fringed gentian - full bloom at Trout Creek

Grizzly cubs weighing 40-50 lbs.

Oct. 1.

Grizzlies eating bulblets of Melica spectabilis - Cascade Creek

1	(Sylvia)	Cub	215	✓
1	(Sylvia)	Sow	225	✓

6/15/61

2	(Sylvia)	Sow	225	1. prod. 9/15/61
3	(Only 1 dart struck cub)	Cub	18	✓

1960 Shooting Record

Trout Creek and Other Areas

Date	No. Darts	Age	Capture		Sex
			Wt.		
6/29	2	2-yr-old	175		1♀
7/7	5	Yearling	No capture	-	
7/9	1	and cub	Lost 4 darts.		
7/12	1	Cub	70		1♂
7/26	1	Cub-Rabbit	No capture	-	
7/30	1	Creek	Lost 1 dart		
8/1	7	Cub	60		♀
8/1		Cub a	100		-
8/1		Cub b			
8/1		Cub c			
9/1	1	Cub	85		♀
9/1	1	Adult	520		♂

1961 Shooting Record

Trout Creek and Other Areas

6/8/62	2	Cub	20		♀
	1	Cub	20		♂
	1	Cub	215		♂
	1	(Sylvia) Sow	225		♀
6/15/61	2	(Sylvia) Sow	225		♀
	3	(Only 1 dart struck cub)	18		♂

1960 Trapping Record

Trout Creek

Date	Trap	No. Traps	Capture
6/24	Culverts	2	2 (1 escaped)
6/25	"	2	2
6/26	"	2	2
6/29	"	2	3
7/1	"	2	1
7/5	"	2	2
7/11	"	2	2
7/13	"	1	1
7/14	"	2	1
	(82.7% success as of 7/14)		
7/26	"	2	2
7/2-7	"	1	1
7/29	"	1	1
	(90.4% success as of 7/29)		
8/3	"	2	0
8/4	"	2	2
8/5	"	2	1
8/11	"	2	2
8/18	"	1	0
8/19	"	1	1
8/22	"	2	3

1960 Trapping Record

Trout Creek

6/16	"	1	1 yearling
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