ANTIACKHAK NATIONAL MONUMENT AND PRESERVE

END OF SEASON REPORT       9/18/83

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INTRODUCTION

A total of 56 days were spent at Aniakchak this season, 39 of them at Aniakchak Bay and 17 in various backcountry locations. Three trips were made from Katmai headquarters in King Salmon: June 14 to July 4; July 14 to July 30; and August 9 to 29. The old Alaska Packers Association bunkhouse near the mouth of the Aniakchak River was used as base camp and living quarters throughout the season.

Goals for the season were developed with Katmai’s permanent staff and included: (1) Monitoring visitor use and establishing an initial NPS presence within the monument and preserve, (2) Establishing an operational base at the Aniakchak Bay cabin and experimenting with logistics, communications, and equipment, (3) Documenting cabins and other indications of historical use, (4) Gathering information on Aniakchak’s natural resources and backcountry conditions, and (5) Starting and Aniakchak slide file and updating literature and map files.

We made progress on all of these goals, and this report makes recommendations on how future staff can further achieve them. Because it was an initial and exploratory season, it was as important to find out what was feasible, and what was needed, as accomplish specific tasks. We felt the summer a success: a seasonal Aniakchak Ranger Station is logistically possible, can be safely done, and merits strong consideration as an annual field position. The most glaring need of the season was a boat to contact commercial fishermen— who not only enter and use the preserve, but are a wealth of information about it.

A daily journal was kept of our activities, visitor use, backcountry trips and natural resource observations. While informal, it is a detailed account and can be referred to for additional information on the topics covered in this report. Additional items on file include the slide library, black and white photographs, a permanent marked map file, Landsat ground-truthing information, and a species account of bear sightings and behavior.

WORK ACCOMPLISHED

- Established seasonal Aniakchak Ranger Station: repaired cabin, cleaned outside cabin area, established radio communication with Katmai operation, and experimented with equipment such as Weatherport, food storage containers, folbot, and miscellaneous items for remote field stations.

- Monitored and recorded visitor use and commercial fishery operations to the extent possible from the cabin area.
Photographed and documented five cabins/remains within the monument and preserve.

Conducted four backcountry patrols, keeping detailed records of backcountry conditions, hiking routes, safety concerns, and natural resource or management concerns. Did the same with day hikes.

Made and recorded natural resource observations: weather statistics, wildlife sightings, and compiled plant list. Made permanent notations in the Aniakchak copy of Hulten's Flora of Alaska.

Did initial Landsat groundtruthing with labeled slides and descriptions of vegetation types.

Began Aniakchak slide file: compiled over 200 slides in an organized and labeled master file.

Added to and organized literature and map files.

Organized backcountry/ranger station equipment in King Salmon for subsequent remote field stations, and made recommendations for additional equipment needs.

LOGISTICS

If continued as this season, Aniakchak should be considered a largely independent Ranger Station and supplied accordingly. The potential for logistical problems can be lessened with careful planning before departure from King Salmon, and by building flexibility into the schedule. Because of the expenditure of time and energy involved with each trip from King Salmon, we'd suggest two lengthy stays during the season. Air support (with pre-arranged additional food, mail and other necessities) halfway through each stay could serve as a supervisory check-in, and could also be used for backcountry drop-offs.

Transportation: Both the NFS plane and Peninsula Airways were used. Landings in the NFS 206 were done at Aniakchak Bay and Meshik Lake, and have been done in past years in Surprise Lake. The Penn Air Goose was used for our initial drop-off and final pick-up, and was well utilized on both occasions. A Goose load can serve as a good check point for not oversupplying a presently experimental Ranger Station—supplies should be looked at judiciously. Weather delays should be expected especially when relying on the park plane. The Cold Bay Goose should be considered if large, unwieldy items are to be transported because of its cargo doors.

Housing: The cabin at Aniakchak Bay worked well. It is in a protected location, has available water, and is secure against the weather. The loft
provides excellent storage space for food and equipment. The frequency of bears in late June and early July in the immediate cabin vicinity is a disadvantage, as well as most visitor activity being centered on the opposite side of the river.

A Weatherport tent was considered for use at Aniakchak before the cabin was visited, and was set up in King Salmon— it is complete, and a sturdy tent. It would still be a viable option for other areas in Aniakchak, or for Katmai coastal operations.

Housing at King Salmon or Brooks Camp should be recognized as a need for outlying operations when not in the field. The arrangement of first come, first serve— and a lack of a secure place to store personal possessions that does not infringe upon office space— adds an unnecessary element of confusion. A tent frame designated to be shared by all outlying ranger operations would solve the problem.

Communications: Establishing communications with Katmai was overall successful, excluding the King Salmon base set. The quality and consistency of communications should remain a high priority so that equipment on all ends could be relied upon. While HF radio contact is not a panacea for the problems of remote field stations, it could play a critical safety role. Thanks to Loren's diligence in supplying equipment, we had effective contacts, but monitoring is a problem which should be addressed.

We were able to transmit to and receive Nonvianuk on a regular basis, and talked well with Brooks Camp on the occasions tried. Periodic contact with Kenai Fjords and Lake Clark was made, and we received the Anchorage Regional Office and other statewide locations but could not successfully transmit. The base set in King Salmon was not operational. We had contact with the NPS plane on the ground in King Salmon, and from the air at several locations. Contacts were usually best in the evening hours, so a 2100 hrs. check in time was established.

Consistent monitoring on the Katmai end could be approached several ways. While Nonvianuk worked well as far as quality of transmissions, lapse periods exist during Nonvianuk backcountry patrols, and a triangle communication is needed to reach supervisors. The King Salmon base set would have the advantage of increased power, but its noise nuisance is substantial. A half-hour check in time could be experimented with when the set is operational. We would suggest establishing consistent contact with Brooks Camp since evening transmissions worked well, and someone is on duty daily during the summer. HF radio check-ins with Aniakchak and/or other areas could be a "daily duty" of i.e. the campground ranger at Brooks, conducted at about 2100 hrs. A clipboard with itinerary, contacts made, and relevant messages could then be checked by supervisors. Established check-in procedures would eliminate unnecessary traffic. This same system could be used simultaneously by Brooks Camp staff on backcountry patrols with VHF radios.
We used the following HF radio equipment: an SGC radio, a Spilsbury radio (SRX-11A), four antennae, an SGC Portamast kit, and several lengths of coax with attachments.

Radios: Clarity was excellent on the SGC radio, but volume consistently low. The Spilsbury had greater volume and less clarity than the SGC. Both were effective, we preferred the Spilsbury due to volume. Whether or not its greater power makes for more successful transmissions could be tested. Radios were only used at the cabin, we did not consider them an option for the backcountry due to weight.

Antennae/Frequencies: Two portable antennae were briefly experimented with, a "talking-stick" antenna, and an SGC "Vari-Tune" antenna. We did not have a good quality contact with either one and their use is not suggested. We felt that a dipole antenna could be utilized in most situations that an HF radio would be present. Both the dipole and Barker-Williamson ladder antennae were situated on a ridge above the cabin, as far up as the coax would allow. They were oriented E-W, perpendicular to desired contacts. The dipole antenna is 72' long and was supported by 2x4's, the ladder antenna is 180' long and the SGC Portamast kit was effectively used for support.

The ladder antenna is a broad-band antenna that covers all of our frequencies (2-20MHz), while the dipole antenna was out to 6766. Both radios had 6766, 5907.5, and 3340 frequencies, the SGC had 2182 (Coast Guard), and the Spilsbury 3277. The best overall frequency was 5907.5, although the lower ones were not experimented with much. We did have an excellent contact on 3340 with the NPS plane. A change in monitored frequency should consider what the Regional Office uses, and who else uses that channel. Contacts could usually be made on 6766 and channels switched if necessary - even with dipole antenna.

Batteries: The Spilsbury takes 9 D cells, and the SGC 12. Everyready alkaline batteries were used, and we replaced them on both radios to keep a high power reading. We did not have controlled enough conditions to assess the importance of battery strength. We'd estimate three sets of batteries per radio would more than suffice for a field season.

Coax: 200' of coax is recommended for the Aniakchak cabin to reach a good ladder antenna location. Be sure coax attachments match both the radio and other coax.

A few additional hints from talking with Jesse Barr in Anchorage and other radio users:

-The length of the antenna should be in as much of a straight line as possible, but can be tilted up to 30° from horizontal if necessary.
-It is important to have the antenna oriented perpendicular to contacts, and the higher the better.

-Time of day can be more important than weather conditions, so if a particular time works well, use it.

-The different frequencies seem to have varying success from year to year.

Fishermen in the local area monitor CB Channel 6, purchase of a CB radio should be considered. A final suggestion on communications: a brief manual on HF radio use would disseminate acquired information. Use of equipment, check-in procedures, frequency information, and emergency procedures could all be covered. Such a manual would find use in other operations as well.

Safety: We received appropriate general safety warnings at the beginning of the season, and specific safety concerns are mentioned in this report and are behind many of the equipment recommendations.

The concern for safety (weather, bears, possibility of injury, remoteness) influenced numerous activities, and caused a number of changes in plans or delays. This should be strongly reiterated to future seasonal staff. Leaving itineraries of backcountry patrols in King Salmon and at the cabin is recommended. Once consistent communications are established, there should be a pre-determined plan of action if Aniakchak does not check in.

Special attention should be given to firearms: handling, cleaning, and appropriate trouble-shooting. For firearms safety in the field, we found "what if" situations to be helpful for improving our teamwork. Only a few warning shots were used in bear encounters, but our personal choice was to have firearms readily available. A general knowledge of firearms takes on added significance due to the preserve status of the coastal areas.

VISITOR USE AND SERVICES

The majority of use observed occurred from commercial salmon fishermen in Aniakchak Bay. Boats were also observed in Kejulik Bay and entering Amber Bay. While the extent that fishermen come ashore (entering the preserve) was not easily determined from our location, fishing vessels do provide an important means of access for recreational use.

Fishing activity in Aniakchak Bay is concentrated on the south side—from near Elephant Head Point to Aniakchak Lagoon. Out of 39 days spent in the cabin area, fishing boats were seen on 23 days, with low visibility obscuring our view on some occasions. The highest activity was seen during
our first stay (6/14-7/4) where up to 8 seiners were seen a day, and different tenders were intermittently present. In the end of July and the last two weeks of August there was less activity—fewer boats seen, with a maximum of 3 in one day.

These contacts reflect the nature of use:

-7/14: Four ARCO geologists stopped by the King Salmon office, having just completed survey work on the Peninsula, including the Aniakchak area outside the Gates and north side of Aniakchak Bay.

-7/14: Leo Miller, a private geologist, was in King Salmon preparing for an intended month long stay in the caldera. He hiked from Meshik to the caldera, returned to Meshik for his plane, and apparently left the caldera early due to plane damage. Observations from his trip have been solicited by Alan Robinson and will be available on file.

-7/20: Doug Pedersen of Chignik stopped by the cabin area while fishing in the Bay. His knowledge of the region is extensive, as his family has spent a number of years in the preserve area. Several of his father's old cabins were located this summer.

-8/16 & 8/17: Two seiners, the "Ruby Lynn" (Cordova) and "Ms. Valerie" (Chignik) were in the mouth of the Aniakchak River. Two caribou were harvested over a two day period. This was a recreational trip as a closure on fishing was in effect. Several hours were spent with 9 people aboard. LeRoy Harris, owner of the Ruby Lynn, has fished Aniakchak's waters for 18 years.

-Other recreational users in late August: A party of 4 from Painter Creek lodge (wheel plane # N4985A) landed on the spit at river mouth to sportfish. A three-wheeler was also seen on the beach, originating from the "Anihalator" fishing boat.

Private planes overflew the river mouth area on about half-dozen occasions, heading to or coming from the Aniakchak River valley. Wheel plane tracks were seen on volcanic swaths throughout the monument and preserve. A state plane was seen, as well as Coast Guard and several different helicopters. Painter Creek apparently sportfishes other areas such as Main Creek, and they could become a more regular user in upcoming years. Use of the monument and preserve is obviously greater than these limited contacts would indicate. The Aniakchak Bay cabin showed signs of use during a recent hunting season when we arrived, and the Kejulik Bay cabins had been used during the winter of 1983. Impact of a hunting camp were seen in the North Fork drainage. A report on subsistence activities in the Aniakchak area done in 1977 indicated caribou and moose taken from the preserve. Comments from ADF&G Subsistence confirm additional hunting activity in the Aniakchak area this season from Chignik.
Some concerns that arose in our minds as a result of contacts were: What tactic to take among old-timers of the area re resource violations such as dumping garbage and feeding bears? Should enforcement of state fish and game regulations be a high priority in the preserve at this time? If so, what type of support will seasonal staff receive from NPS and ADF&G if laws are enforced? Future seasonal staff should keep in mind that many of the visitors to Aniakchak have been utilizing the area for a number of years, and are not accustomed to seeing a uniformed presence there.

Visitor Services: Charter transportation can be arranged with Peninsula Airways in King Salmon. Their current prices are: Goose (maximum of 9 people) is $380/hr. plus 8% tax, Widgeon (maximum 5 people) is $280/hr. Charter prices are for the trip from King Salmon and return, so a minimum of two hours flight time would usually be in effect. Other charter options and prices should be investigated to provide visitors with information on transportation alternatives.

Several suggestions on visitor use and services: - Contact Fish and Game during the summer months to get information on closures, catches, and information relevant to commercial fishing operations. - Eventually a handout oriented at the consumptive user of the preserve could address resource management concerns such as bears, and would reinforce direct contacts. - A more detailed informational for visitor inquiries would be desirable.

CABINING

We located and documented five cabin sites within the monument and preserve, and are aware of at least six additional cabins or remains. Locations are marked on the permanent Aniakchak map file. Black and white photos are available for three of the cabins, and sketches are in the daily journal. Continued documentation should occur, and contacting residents of Chignik would add valuable historic information about these sites.

Alaska Packers Association Bunkhouse: Our base of operations for the Aniakchak "Ranger Station". Located 2/10 of a mile east of the Aniakchak River mouth, and 200' inland from high tide. According to Tuten, 1977, the cabin was built in 1917. Inscriptions on the walls indicate that this bunkhouse was used seasonally from the 1920's to 1940's. One penciled record read: "May 11 to Sept. 30, 1927-132 days in camp".

Constructed with a sheet metal exterior and with half the tongue and groove paneling intact inside, the cabin was functional against the weather. Buildings surrounding the cabin include a wood and sheet metal shack 20' away, and a small sheet metal shed and four barabara remains 300' to the west. Adjacent to the cabin a small creek ran continuously through the summer.
Changes made to the cabin: constructed three makeshift doors, covered three windows with frame and plastic, made an enclosed kitchen area outside, replaced some of the rotten floor boards, patched two holes in the roof, replaced a rusted bunk with a wooden frame for bed or table/ladder, and cleaned up debris outside the cabin.

Alaska Packers Association Bunkhouse Cabin

Kejulik Bay Cabins: Located on the eastern banks of the lagoon—where the North Fork River enters Kejulik Bay. There are six structures in various stages of collapse. The designation "□ Cabin" on the topo map is misplaced as the cabins are on the south side of the creek. Father Hubbard used these cabins as a base camp in the 1930's.

The main cabin is still in good condition and has recently been used. Two bed frames, stove and lantern, fuel cache, chairs and clothes were seen inside. There was also signs of recent trapping activity—stretching boards, sawdust and bones. A small barn-shaped building, possibly an old generator shed, and the skeleton of a small building are the only other structures still standing. A large building and two smaller houses have collapsed into debris. An application for a native allotment is on file for this site.
Alec Pedersen's Cabins: Located along the NW corner of Aniakchak Lagoon. According to a USFWS Cabin Survey, these structures were built in 1934, and occupied intermittently from 1934-49. These cabins have not seen use for some time—roofs have collapsed and only a few solid walls remain completely upright.
Alec Pedersen's mid-Aniakchak River Cabin: Located 6/10 of a mile SW of where Albert Johnson Creek enters the Aniakchak River. Difficult to find, as completely collapsed and partially overgrown. This sod, wood and sheet metal structure has not been used for years. A trap, AVGas cans, and miscellaneous other items were under a collapsed roof and around the area. A color slide is on file.

Tent frame floor, SW shore Surprise Lake, Aniakchak Caldera: Located in the first vegetated cove along the south shore of Surprise Lake. All that remains of the tent frame is a wooden floor, scattered scraps of wood and old cans. Presumably built and used by Ben Guild in 1973. A color slide is on file.

Additional cabins/remains which were not visited:

-Aniakchak Lagoon Cannery. Marked on Sutwik Island C-5 quadrangle. According to Tuten, 1977, "Aniakchak Clam Cannery is a pile of wood and machine parts in the grass along the coastline. The boiler still remains but should be protected from theft. The remains from the automobile used to transport the clams is also a part of the rubble and the frame is still somewhat intact."

-South shore Aniakchak Bay. Also marked on C-5 quadrangle. Apparently this structure no longer standing.

-Main Creek, Amber Bay. About one mile upriver. Tuten reports a trapper's cabin "at the head of Amber Bay."

-Main Creek, Amber Bay. About 2&3/4 mile upstream from mouth on NW side, where a small stream enters Main Creek. Marked on D-5 quadrangle.

-Alec Pedersen's upper Aniakchak River cabin. Reportedly located about 1/10 mile west of Aniakchak River, and 1&3/4 mile downstream from Hidden Creek. In July, four of us searched for this cabin site with no success.

-Cabin used by Guide Lee Holen. Specific location not known, in the Cinder River drainage. One rough map showed location at T36S, R53 W, Section 17.

BACKCOUNTRY TRAVEL

Overall, the hiking terrain within the monument and preserve is good. Low tundra expanses mixed with volcanic sands predominate inland, and there is alpine tundra above the 500' level. Well defined game trails can often be used for stretches over a mile long. Alder patches were encountered, but usually could be penetrated or skirted without much trouble. (Not always). The lower elevations in particular have marshy areas that are walkable but slow, these areas are usually easily predicted from the topographic maps. In general, we found staying high to our advantage in order to avoid alders and small drainages.
Our main backcountry concerns were the possibility of bear encounters and inclement weather—wind, rain and fog. Bears were seen along the major river systems, beginning at the river mouths in late June and early July, and concentrating along the upper stretches in August. On dayhikes and overnights a shotgun or revolver was carried for personal protection. On one occasion a warning shot was fired to deter a bear from coming close to our campsite. In other instances we were able to alter our route to avoid confrontations. With proper raingear and equipment, weather concerns stemmed from routefinding in near white-out conditions, which we experienced on several occasions. Routefinding is otherwise easy, with prominent peaks to orient with.

Choice of campsites should consider adequate wind protection and avoiding bear trails. Potability of water was not a problem. River crossings were not done often—we did cross the mouth of the Aniakchak River at low tide, but upriver crossings could be dangerous. Wading across the North Fork and Meshik Rivers proved easy at locations attempted, and Main Creek looked crossable at the mouth during low tide.

We experimented with a Folbot double kayak along the coastline at Aniakchak Bay and up the Aniakchak River. Paddling upriver was laborious. On calm days or those with light west winds, kayak travel in the Bay was feasible and enjoyable; with east winds travel is limited to a few protected coves. Use of a kayak should remain recreational.

Fortunately, we experienced no problems with animals getting into our food. Food storage is tricky in tundra; we usually divided food into several caches and wrapped them well in plastic. Not only bears, but wolves, foxes, and wolverines could all be attracted to campsites.

Recommended future backcountry patrols include a float trip of the Meshik River, and a trip from Meshik to the caldera. Both of these have been done by private individuals or other agencies.

The following map shows backcountry routes and day hikes. The four backcountry patrols done over the season are summarized on the following pages.
Aniakchak Caldera Log

7/14/63 - 7/22/63

This was a government trip including members of the Fire Chief planning team (Alan Robinson, Barrett, Van, Holman, Light, and J. Morris, Superintendent of Katmai/Aniakchak; Ken, Paul, Bill, and Al). We left Nisutlin Bay via Penn Goya on 7/14 and after an hour flight arrived at King Salmon in the evening. Three nights were spent in the caldera, while the

aircraft and two at the Aniakchak Bay camp. On 7/16, we flew up onto 7/22 via Penn Air Widgeon and a lot of equipment. We remained at the cabin until the end of the week. With the weather and equipment, we flew from King Salmon to the caldera with almost no load; on the 7/22 pick-up a lot of equipment was left for a later pick-up. The permanent map file shows points of Aniakchak and details on the river.

Caldera (7/14-7/17)

Our campsite for three nights was on the south shore of Surprise Lake. Two day hikes were taken, the highlights were:

7/15: About an eight mile round trip hike was taken to the believed 1931 eruption site on the west side of the caldera. Weather was overcast with light rain part of the day. We stopped at the warm springs on west end of Surprise Lake, showing orange coloration, prolific algal growth, and recorded temperatures of 63° and 69°F. Climbed across the lava flows (sections 3 & 4) and found the "doughnut cone" seen on section 4 of the map. Ground temperatures in this region were recorded to 130°F. Continued to the 1931 eruption crater, which has a covering of vegetation on the bottom, and warmer than ambient air temperatures at its rim. Returned to Surprise Lake on a fairly direct route across the caldera floor.

7/16: Hiked SE from Surprise Lake, planning to explore the east side of caldera and ascend Vent Mtn., but a low cloud ceiling and rain dissuaded the climb. We explored the lake on the east edge of the caldera which was fed by a waterfall, was dotted with icebergs, and had an above ground outlet. Continued upstream from the lake, and then headed back towards Surprise Lake via the beginning section of the Aniakchak River. In section 19, east of Vent Mtn., an impressive small lake fills a depression shown on the map. Remains of a tent frame were found in the first major cove when travelling SE-NW along the shore of Surprise Lake.

Caribou, a porcupine, shorebirds, eagles, and snow buntings were all seen in the caldera, as well as tracks of bears, fox, and wolf. Surprise Lake, and the marshy area southeast of it, had the mildest evidence. While cloud ceilings were generally low, and fog was experienced, we did not have strong winds. Some small patches of snow remained on the caldera floor.
Hiking conditions are generally good in the caldera due to the compacted ash. Lava flows and the marshy areas around Surprise Lake are more time-consuming. Snow cover/wet conditions earlier in the season might make travel more difficult. To enter the caldera through the Gates, the talus slope on the south side of the river is recommended. Potential safety hazards include rock or snow slides near the caldera perimeter, adverse weather conditions, and the possible presence of bears.

Several protected campsites could be found on the south shore of the lake. With access, protection, and water availability all considered, these coves make desirable campsite locations, and are likely starting points for river trips. These same areas are just getting vegetation established, however, and if visitor use increases the impact on vegetation should be addressed. At this time, impacts warranting corrective resource management action were not seen in the caldera.

Aniakchak River (7/17-7/20)

Four days were spent floating the length of the river. Two Avon boats were used: a Redshank (12'), used for three people and gear; and an Adventurer (13'), used for four people and gear. Kevin Appar was in charge of float trip logistics, and he is given credit for most of the river assessment given here, information on the maps, and equipment recommendations.

Overall, the river is demanding and may require lining or portaging in several locations. Nonetheless, its appeal is strong - floating from inside of a volcano to the Pacific is exciting, and all members of the party were impressed with the diversity of terrain, wildlife, and the unknowns involved.

Information given to recreational users should include the safety hazards involved with running any river, and the visitor should understand that those hazards can be greatly magnified by the remoteness of Aniakchak and the lack of emergency services.

7/17: Left Surprise Lake at 0915 hours, and reached the beginning of the river 45 minutes later. The first mile out of the lake (section 7), the river is smooth and easy, but once it enters the Gates section the river becomes fast, shallow, narrow and rocky. After scouting the Gates (section 8), we portaged all gear from both boats around this section. The talus slope on the south side of the river is negotiable by foot, the north side is much steeper. We lined the Redshank through, and four of us rafted the Adventurer, wrapping it once. At the eastern end of section 8 there are three large boulders spaced across the river which both boats were portaged around. Kevin's assessment of this section: Class III, and Class IV in the area of the three boulders. Recorded river temperature was 49oF, and dippers and harlequin ducks were seen in the fast flowing water.

Once through the Gates the river basin widens but the river remains
rocky and shallow. The next three miles were maneuvered through. Into about mile six (section 13), the river takes on a different character, and a narrow gorge with sections of deep water is encountered. A vertical wall on the north side is followed by a chute where the Adventurer took in water, and the Redshank hit a submerged rock at the base of the wall—and proceeded through the chute with the front pontoon deflated. Two of us in the Redshank personally experienced the 49° water. The Adventurer had stopped a short ways downstream, and people and boats regrouped after shuttling one person from the north side of the river. Camp was made, and Kevin spent most of the evening repairing a large hole in the Redshank. This area of the river merits careful consideration.

7/18: Another four to five miles floated. Waiting for the Redshank patch to dry, we didn't start on the river until about noon. Went through sections 19 and 20 without problems as the river becomes less rocky and a channel begins to deepen. Scouted the river about ½ mile before Hidden Creek enters (sections 29/32), and pulled out for a careful scouting of the entire Hidden Creek area. Large volcanic rocks in the river and forming its banks make this part of the river unique, and scenic. A view of Pinnacle Mtn. appears and the river valley opens up. Just after Hidden Creek both boats were pulled out, and a laborious portage was done on the south side of the river via the tundra high above. Camp was made above the river about three-quarters of a mile from Hidden Creek. Extreme caution prevailed here due to an already damaged boat, though it was felt the Adventurer without gear could have been run through. Our less than essential supplies were seriously questioned on this day.

7/19: We lowered boats and gear from the tundra to the river below, across from a small lake at southern end of section 32. Proceeded with no further portaging or lining to section 15 near Mystery Creek. We climbed Knoll 835 (section 10) for a good view of Pinnacle Mtn. and Meshik Lake. After this knoll, the river becomes shallow and braided for about one and one-half miles, and we grounded out a number of times. Caribou, and six bears were seen in this general area, and salmon in the river. The main channel returns downstream and the river becomes a meandering Class I.

7/20: The last 0-10 miles of river floated, arriving at Aniakchak Bay in late afternoon. Bald eagles, whistling swans, and numerous ducks seen during this relaxing day. The Redshank required pumping often as the patch from two days ago was not holding well. The only cautionary note is to avoid low tide if possible at the mouth of the river, as the last mile is tidal and shallow. We half floated, half walked this last stretch. Rafted out of the river mouth and into the Bay, and pulled up in front of the "Ranger Station".
Two other float trips of the river are known of: a 1973 government trip, and a 1982 National Geographic trip accompanied by two guides and two NPS rangers. Both were done in mid-July after spending a few days in the caldera. The 1973 trip (as described in Alaska's Kodiak Island-Sheikof Straight Region: A History) covered similar distances as did each day, and seemingly had difficulties in the same locations. Sections of the Gates were portaged, and boats were lined at "two pillars" (probably Hidden Creek). Other problems arose during the trip, although exact locations not known: paddles were broken, at least one large hole was put in raft, and a "vertical rock face" caused collapse of one raft.

The 1982 trip used a Redshank (for two people) and an Aron Professional with oars (four people). According to Bud Rice, one of the guides, the Aron Professional was found to be unworky in the upper sections of the river, while NPS staff were satisfied with the maneuverability of the Redshank. Again, the Gates and Hidden Creek were mentioned as the difficult spots—both boats were run through Hidden Creek, however, with a lightened load on the Professional. A report of that trip is on file.

Additional Notes and Recommendations:

-There are excellent day hiking opportunities along the river, the Lava Creek drainage and towards Meshik Lake looked particularly appealing.

-Based on vegetation along the riverbank, we had average to slightly above average water level on our trip.

-River crossings can probably be safely attempted at the river mouth at low tide, in the braided section (sections 13 & 14) about half-way downriver, and possibly below the Gates. A deeper channel and stronger current prevail in other areas.

-Extra days due to weather or mishaps should be planned for.

-Travelling light without sacrificing essentials is strongly recommended due to shallow water and the possibility of portaging.

Equipment Recommendations:

-Extra rope for lining boats.

-Extensive patching materials (speedy stitcher was essential).

-Boot boots.

-Spare paddles and life vests.

-Proper personal gear for a challenging float trip in potentially bad weather.

-Boat choice: The Redshank and Adventurer are both good options, but the load of people and gear should be limited. Kevin felt the Adventurer with rowing frame could have been used on all but the Gates section. The experience level of participants should play into boat choice.
Meshik Lake - Kejulik Bay - Aniakchak Bay

8/9/83 - 8/15/83

On 8/9 we were dropped off by Dave Morris in the NPS plane at Meshik Lake, after stopping at Aniakchak Bay to drop off supplies at the cabin. 8/9 and 8/10 were spent at Meshik Lake, and on 8/11 and 8/12 we hiked to the Kejulik Bay cabin—staying there through 8/13. On the 14th we hiked towards Aniakchak Lagoon, and we returned to the "Ranger Station" on the evening of the fifteenth. The purpose of this trip was to explore the Meshik Lake area, assess the hiking conditions to Kejulik and Aniakchak Bays, and document the cabins at Kejulik Bay and Aniakchak Lagoon.

The Meshik Lake region may prove to be a drop-off point for hiking trips into the caldera, for raft trips down the Meshik River, and for hunting parties. A good campsite exists on a 50' knoll along the SW shore of the lake, offering wind protection, access to water, and view of Pinnacle Mtn. and the Meshik River valley. During this time of year there is a heavy concentration of bears along the upper Meshik and North Fork drainages.

8/9: Arriving at 1230 hrs., we made camp on a 50' knoll on SW shore. The alder thickets on the knoll would offer protection if winds were strong. Meshik Lake shows a brown coloration, is sedimented, and was seen to be shallow along the western and southern edges anyway. The lake shore is composed of marsh vegetation, mud, sand, and assorted volcanic rocks. Nine bears were observed on our first afternoon, one came within 400' of our tent site and was deterred from approaching closer with one warning shot from the revolver. In late afternoon and evening, explored the lakeshore and knoll to west of our campsite.

8/10: A wolf visited at 0430 hrs. rattling one of our cups, it circled the tent site several times then left the area. We day hiked to the west of Meshik Lake and up Cub Creek for a view of the Garden Wall and the rim of the caldera. Hiking conditions were easy with long sandy swaths and crowberry tundra. We avoided travelling close to the Meshik River due to the high numbers of bears feeding on chum and sockeye salmon. The creek draining Meshik Lake is only a small tributary (1'depth and 5' wide) of the Meshik River, which is about 15' wide and just over knee deep, and has its headwaters NW of Pinnacle Mtn. A number of caribou were seen during the day. Hiking along the terrace of Cub Creek offers spectacular views of cascading waterfalls, the sharp ridgeline of the Garden Wall, and the snowy summit of Aniakchak Peak. About a 9 mile round-trip hike from our campsite; skies were overcast.

Beginning at Meshik Lake, a viable hiking route into Aniakchak caldera might involve: hiking up the Cub Creek drainage (or possibly Meshik River), continuing due North to the Aniakchak River then entering the Gates along the south side of the river. This would be about a 13 mile hike from Meshik Lake to Surprise Lake.
8/11: Hiked from Meshik Lake to the north fork of Knoll "275" about 8 miles at 6/hr. The entire hike was done in about one day. Could have been accomplished in one day if we were more experienced hikers. Activity along the upper North Fork was very minimal. Except for a two mile section of river to the south (sections 35 and 36), hiking conditions were very flat. Some light rain in early afternoon. Slight wind, NW winds in late afternoon.

8/12: Hunted from the north fork of Aniakchak River to Aniakchak Lagoon. About 6 miles total. Hunted parallel to the north fork of the river, then continued up the lagoon. In easy four mile walk to the mouth of the lagoon. At the mouth of the lagoon, the river is about 100 feet wide. A gullup was found on the right bank. (There are a number of gullups to the right bank on the lagoon). Gullup was well stocked, with some used and some unused. Explored the mouth of the lagoon and was unable to see any suitable location for the night. Overcast with a few hours of light rain.

8/13: In morning took a hike west along Kejulik Bay beach, in afternoon documented the numerous structures at the lagoon. Compared to Aniakchak Bay beach, that of Kejulik Bay drops off very gradually creating a large tidal flat at low tide. We crossed the North Fork River within several hours of low tide, half a mile upstream from the river. The river is very shallow. Float plane landings might be tricky around the lagoon and at its mouth, due to the shallowess and the beneficial effects of high tide are short-lived. One seiner was seen in the distance close to shore, and another was heard in same direction during the evening. An active eagle nest with two young is located on a rocky spire a mile south of the cabins. The sun was out for a few hours, and spectacular cloud patterns all day.

8/14: Covering 3½ miles, we hiked from Kejulik Bay northeast to Knoll "1755", camping on mile north of the summit. We took our way through shoulder-high grasses and alders for the first mile. Above the 600' level, there is alpine tundra and rocky crag. Ends rains and winds all afternoon with visibility less than 150' at times with travel slow. We traveled with compass to "1755" summit, but over by the wind for several hours below the summit. During a break in the fog during the evening we scouted for a suitable way to descend towards Aniakchak Lagoon the next day, and found a suitable campsite at 2100 hrs. NW winds continued all evening. With favorable weather conditions the traverse from Kejulik to Aniakchak Bay could be direct and relatively easy, and despite exhaustion we felt would warrant careful attention, however, there are steep dropoffs the drainage east of Knoll 1755 is especially rugged.

8/15: Hiked from ridge near Knoll "1755" to Aniakchak Bay cabin. About 9½ miles, and about seven hours with short breaks. From here we climbed down a scree slope, alpine tundra, and through the middle of the grasses before reaching the flatlands west of Aniakchak Lagoon. About 1600' below
Game trails were followed across moist tundra and marshes to the lagoon. Found Alec Pedersen's old cabin on the NW shore of the lagoon, and explored and photographed. Crossed the northern section of Aniakchak Lagoon at low tide with no water. Cut diagonally from the lagoon to the ocean beach, and returned to the mouth of the Aniakchak River—seeing both a bear and red fox en route. Waded across the river 4/10 of a mile from the mouth, and returned to the cabin.

**Lower Aniakchak River Kayak Trip**

*6/21-6/24*

Beginning at the mouth of the river, we spent two days kayaking upriver, one day hiking inland, and one day kayaking back to the cabin. During these four days there was nearly constant east wind, and rain and low visibility were the norm. The first 1½ mile upriver from the bay is braided and shallow with an alternating narrow channel. The river bottom is sandy and continually shifting. We learned the hard way the advantage of travelling this lower stretch of the river at high tide—grounding out and towing the kayak was difficult. Beginning about three miles inland the river channel was three to five feet deep in spots.

We paddled six miles upriver in two less than full days. Four active bald eagle nests were seen along the north shore of the river. On 6/22 and 6/23 we camped along the banks of the river west of Cape Horn in section 19. On 6/23 we dayhiked to an old cabin site 4-5 miles to the west. The terrain in this area is a mixture of long expanses of black volcanic sands, moist and dry tundra and occasional marsh. AV gas cans and wheel plane tracks were seen on the barren areas. The Aniakchak River rose several inches during the continual rains, with pumice stones and alder branches carried downstream. Floating back downriver on 6/24 was accomplished in six hours with several exploratory stops on land.

**Amber Bay**

*7/26-7/28*

Hiking North from the cabin we camped for two nights on the summit of Knoll "913" overlooking Amber Bay. On 7/27 we dayhiked to Main Creek, after being fogged in all night and morning atop the knoll. Bear, moose, caribou, swans, eagles, wolverine tracks, sea otters and harbor seals were all seen during the duration of the trip. Two bears were observed crossing Main Creek and heading up the West Creek drainage. West Creek is less than 20 feet wide and less than 2 feet deep. At high tide a small boat could probably travel at least two miles up Main Creek. At low tide in the bay, a number of reefs and rocks were seen—powerboat travel might be tricky. Returned to cabin in afternoon sun on 7/28.

This was the second time we had been in this area between the two days—dotted with numerous small marshes and ponds, and bisected by a creek, it is a lush area well utilized by wildlife.
NATURAL RESOURCES

One goal for the summer was to begin inventorying Aniakchak's natural resources—weather, unique physical environments, vegetative communities, and flora and fauna records. Our preference was to gather detailed information as we found no published biological information specific to Aniakchak. Hopefully such information can assist future resource management decisions, while data on i.e. range extensions could be of interest to people statewide looking at particular species. The fish, bird and mammal lists were compiled from field sightings and any uncertainties in identification are indicated.

We were continually impressed with Aniakchak's undisturbed habitats and the richness of species present. There were only a few concerns that arose regarding natural resources, this in itself a rarity among federal lands. The continued monitoring of Aniakchak's unpeopled aspects certainly can only be of benefit in the long run.

Some observations that warrant mention and perhaps eventual management action:

-Bears. The concentration of bears around the mouth of the Aniakchak River in late June and early July was high—and somewhat puzzling. That at least some fishermen feed bears is of concern as bear behavior could be (and probably already is) altered. Whether or not the high number of bears was a result commercial fishing activity should be further looked at. The location of the "Ranger Station" is also a concern at this time of year.

-Garbage. One would not attempt a clean up of debris on coastal beaches, but flagrant littering close to shore is disturbing. The garbage remaining at scattered old camps and cabins is relatively minor and is still perhaps of "historic interest".

-Marine mammal populations are not necessarily of direct NPS concern at this time, but are an integral part of the coastal ecosystem and should at least be looked at enough to identify possible concerns.

Harvesting of caribou, moose and bear in the preserve was not monitored much as we were present for only the beginning weeks of caribou season. Observed activity can be seen in Visitor Use. Gaining additional information on hunting activity in the preserve should be tackled.
Weather:

Aniakshak's weather is typical of the Alaskan Peninsula, with a scarcity of cloudless days. Weather records were kept daily and can be seen in the Appendix. The average 10:00 a.m. temperature recorded at Aniakshak Bay was 52°F in June, 59°F in July, and 58°F in August. Maximum recorded temperature was 65°F. East winds predominated in June, July had both east and west winds, whereas the 10:00 a.m. winds in August had mostly west winds. General storms with small, rolling swell were measured only during the summer.

Weather conditions can vary considerably from one to inland, and over several hour periods the cloud ceiling and wind may shift dramatically.

Of note for future NFS operations and visitor use is the effect weather can have on access to and from King Salmon, and the hardships added to backcountry travel. Including the NFS planning team trip, seven pick-ups and drop-offs occurred, with a total of five days of weather delay. A number of instances of changed plans or delays resulted on backcountry trips due to weather. With appropriate flexibility in travel time, and the proper equipment and concern for safety, the greatest effect from the weather on lengthy stays by NFS staff is simply growing weary of it. Visitors should be informed on the potential for inclement weather conditions and resultant safety hazards such as hypothermia.

Recording equipment used included a small weather kit, and rain gauge and soil/water thermometers. The anemometer included in the weather kit was probably not terribly accurate, and windspeeds were usually measured in locations that did not reflect the windspeeds of more open terrain. Maximum/minimum thermometers are available and could be used in future seasons.

Fish:

The following fish species were positively identified.

-Chum Salmon. Beginning in late June, chum salmon were washed up on the shore of Aniakshak Bay and River. In one tidal period, over 20 dead/dying fish were found—these were subsequently fed on by bears. These salmon were still fresh and may have been a result of commercial fishing operations in the Bay. Several more active fish were caught with spinning gear.

Spawning chums were seen in the Aniakshak River 21-24 July, in the upper Meshik River, and along the North Fork River in mid-August.

-Sockeye salmon. Jaw bones were found along the shore of Surprise Lake. Spawning sockeyes were seen in the Meshik River below the outlet of Meshik Lake in mid-August. While fish had been caught in Aniakshak Bay, we did not positively identify them in the Aniakshak River.
-Silver Salmon. Beginning on 17 August until our departure on 29 August, silvers were seen and caught in the mouth of the Aniakchak River. Most measured 27", and fifty-percent still had sea lice present.

-Dolly Varden Char. Dead and partially eaten fish were seen washed up on the beach. An 18" fish was caught in the lower Aniakchak River.

-Starry Flounder. Common in the sandy bottom at the mouth of Aniakchak River. One measured at 19".

-Cod sp. The partial remains of cod were found washed ashore particularly in June. Numerous cod were reported caught in fishermens' nets.

-Sculpin sp. A few fish found washed ashore. See photo in slide file.

ADFG is sending stream surveys of the major rivers and creeks for our files. Otherwise local fishermen can be good sources of information. A few interesting things picked up from phone conversations with Kodiak and Cold Bay ADFG: Sockeye salmon have been documented in Surprise Lake and Albert Johnson Creek. In the Meshik River drainage, Kings, Sockeyes and Chums spawn at the same time, segregating into separate streams. A late (October) run of Sockeyes has been observed in Meshik Lake. Also, a Painter Creek guide reported fishing for steelhead in Main Creek in October.

Because we did not have a continuous presence during the season, observations on the timing of salmon runs were not made. The absence of expected species should not be considered at all conclusive.

Mammals:

Nine species of land mammals were observed within the monument and preserve, with an additional three species considered present from tracks or other sign. Three marine mammals were identified to species, while two were uncertain beyond the family level.

-Shrew (Sorex sp.). Three dead specimens found from sea level to 900'. From size, coloration and range, all three were probably S. cinereus.

-Jumping Mouse (Zapus sp.). One dead specimen measured 3 1/2" body, and 5 1/2" tail, probably a Meadow Jumping Mouse, Z. hudsonius.

-Arctic Ground Squirrel (Spermophilus parryii). Ground squirrels were seen and heard throughout the monument and preserve. Sightings ranged from sea level to alpine tundra.

-Porcupine (Erethizon dorsatum). One porcupine was seen on the southern edge of Surprise Lake, near a gully with tall shrub vegetation. Photo in file.
Beaver (Castor canadensis). Distinctive "tail-slip" and lodges were seen in the river. Not listed in some areas.

Moose (Alces alces). Aniakchak River, between Aniakchak and Aniakchak Lagoon. A total of 7 tracks and sign were at the mouth of the river.

Barren Ground Caribou. One to two adult caribou were seen in the eastern end of Meshik Lake and most of Aniakchak River. Not common for caribou.

River Otter (Lutra canadensis). One otter seen in the river in August; no sightings.

Wolverine (Gulo gulo). No sightings, but tracks and a musk odor at cabin area throughout the summer. A few other tracks seen in other locations.

Red Fox (Vulpes vulpes). Observed at mouth of Aniakchak River and Bay beach, at Kejulik Bay Lagoon, and in Aniakchak River valley. Tracks common around cabin. At least 2 different individuals seen at river mouth. Sightings occurred most frequently at low tide along shore.

Wolf (Canis lupus). One wolf seen at Meshik Lake. Tracks seen in caldara, along Aniakchak River, and on beach of Aniakchak Bay.

Brown Bear (Ursus arctos). About 45 sightings over the summer, many from a distance. The mouth of the Aniakchak River was heavily utilized by bears from third week in June until at least early July. Bears most commonly observed feeding on washed up salmon at low tide. Scavenging the shore in this area was not a norm, rather than actively fishing in the river. Bear observations dwindled in late July and August, with only one observed during the last two weeks in August in this area. In the Meshik River and North Fork drainages, bear sightings were mild in late August. In July, six bears were observed in a shallow, breaking caldara about halfway up the Aniakchak River.

Bears observed in June and early July at the mouth of Aniakchak River had a definite "lack of concern" at the presence, and in several instances approached in our direction. See special report for more detail.

Sea Otter (Enhydra lutris). One otter off the coast throughout the summer months. Common in Aniakchak Bay, especially with young observed. Not listed in some areas.

Northern Sea Lion (Eumetopias jubatus). Seen only one or two occasions. In early July four were close to the end of Aniakchak Bay, apparently feeding on salmon. Several seen on foreshore.
-Harbor Seal (Phoca vitulina). Seen in all three coastal bays, and at least 2/10 mile up the Aniakchak River. Observations were usually of solitary individuals, but 12 seen together hauled out on rocks at east end of Aniakchak Bay. Fewer seals were seen in August.

-Whales, Dolphins and Porpoises (Order Cetacea).

-Two dolphins or porpoises were seen 1/2 mile offshore from a kayak. Only dark fins and upper bodies could be noted. Several members of this family are possibilities.

-What was believed to be a whale was observed several times in Aniakchak Bay over a several day period.

Birds:

-Seventy-three species of birds were recorded between 14 June and 29 August. The majority of sightings occurred at Aniakchak Bay, and most were of summer residents. Beginning in mid-August fall migrants began to appear.

-Of particular interest were: Six Bald Eagle nests, each with two young; three pairs of Tundra Swans—yet no cygnets observed; one Peregrine Falcon sighting; and the arrival of Emperor Geese on 22 August. On 27 June we found 23 Red-faced Cormorants, 6 Pelagic Cormorants, 3 Black-legged Kittiwakes and 1 Common Merganser dead along a two mile stretch of beach at Aniakchak Bay. Other coastal areas on the Peninsula apparently experienced a high seabird mortality as well.

-On the following list, species marked with an asterisk showed signs of breeding activity.

-Common Loon (Gavia immer): Recorded twice, two adults on 8/25 and one immature on 8/19. North cove, Aniakchak Bay.

-Arctic Loon (Gavia arctica): Two individuals seen on 6/17, Aniakchak Bay.

-*Red-throated Loon (Gavia stellata): Common, six along lower Aniakchak River on 6/22; six on Aniakchak Bay 6/25; one on Suprise Lake; Twelve, including immatures on Meshik Lake.

-Red-necked Grebe (Podiceps grisegena): One sighting of two individuals on 8/19 close to shore, Aniakchak Bay.

-Double-crested Cormorant (Phalacrocorax auritus): Uncommon, sightings occurred between 6/14-6/16, Aniakchak Bay.

-Pelagic Cormorant (Phalacrocorax pelagicus): Very common, especially during June and August. Over 50 on 6/30, 6 dead on the beach on 9/27, and a raft of 70+ on 8/26, Aniakchak Bay.
Red-faced Cormorant (*Phalacrocorax urile*): Common, especially during July, Aniakchak Bay. 23 found dead on the beach, 6/27.

Tundra Swan (*Cygnus columbianus*): Uncommon, 3 pairs observed, south side Aniakchak River ½ mile from the mouth, Meshik Lake, and on the ponds between Aniakchak and Amber Bay. 6 sightings of individuals and small groups during June and August.

Emperor Goose (*Chen canagica*): Recorded every day between 8/22-8/28. At low tide congregations occurred on the reefs outside the cabin and along the sand banks on both sides of the Aniakchak River. Immatures present with adults.

Mallard (*Anas platyrhynchos*): One on 8/23, three on 8/25, females only. North cove Aniakchak Bay.

Green-winged Teal (*Anas crecca*): Three sightings, 1 male along the Aniakchak River on 6/24, 4 females on Meshik Lake on 8/11, 1 female Aniakchak Bay on 8/23.

Greater Scaup (*Aythya marila*): Two females together on 8/29, mouth of Aniakchak River.

Barrow's Goldeneye (*Bucephala islandica*): Recorded once, one male and one female together on Suprise Lake, 7/15.

Harlequin Duck (*Histrionicus histrionicus*): Common along the mid to upper portions of the Aniakchak River. 5 females on 7/17, 9 males and 6 females on 7/18, 35 counted on 7/19, 20 females on 7/20.

White-winged Scoter (*Melanitta fusca*): On 8/23 over 50 females were counted north cove, Aniakchak Bay.

Surf Scoter (*Melanitta perspicillata*): Observed twice, one male 7/21, on Aniakchak Bay. Two males on 8/15, Kejulik Bay.

Black Scoter (*Melanitta nigra*): Two individuals on 6/19 and 6/30, Aniakchak Bay, both were males.

*Common Merganser (*Mergus merganser*): Very common, seen throughout the summer. 12 males & 9 females on 6/15. 9 males & 14 females on 7/3. Probable nest, south side Aniakchak River and juveniles observed on 8/23, Aniakchak Bay.

Red-breasted Merganser (*Mergus serrator*): Recorded once on 6/15, a large flock of males and females at the mouth of the Aniakchak River.

Northern Harrier (*Circus cyaneus*): Recorded once on 8/23. A female was seen flying over the tundra between Aniakchak and Amber Bay.

Rough-legged Hawk (*Buteo lagopus*): Uncommon, five sightings. On 6/18 watched an individual land twice above an old nest platform. On 7/26 & 7/27 one seen perched, then continually circled along the cliffs of knoll "913". This bird travelled above an unidentified buteo that when observed from above had a banded tail, the terminal band wider than the others. The call was similar to a Rough-legged.
Bald Eagle (Haliaeetus leucocephalus): Common, rarely would a day pass without a Bald Eagle sighting. Six active nests were found, each containing two fledglings. Four nests along the lower Aniakchak River, one at Amber Bay and one at Kekulik Bay. The exact locations are marked on the permanent Aniakchak map file. Pairs of Bald Eagles were also seen within Aniakchak Caldera, on the cliffs along the north end of Lushuk Lake, and at Aniakchak Lagoon. Fledglings were observed until 8/21 on the first nest at the mouth of the Aniakchak River.

Peregrine Falcon (Falco peregrinus): One sighting on 8/24. We observed a dark individual soaring along the north side cliffs above the mouth of the Aniakchak River, it chased a Rough-legged Hawk, circled and flew down river, then continuing south along the beach, scattering hundreds of Black-legged Kittiwakes.

W*Willow Ptarmigan (Lagopus lagopus): Uncommon, males were seen amongst alder shrubs 6/23 and 8/9. Family groups were seen on 8/10 & 8/11 at Mshik Lake and on 8/14 north of Kekulik Bay.

Rock Ptarmigan (Lagopus mutus): Only one positive identification on 7/26 on knoll "913" southwest of Amber Bay.

Sandhill Crane (Grus canadensis): Common beginning 8/16 until 8/27 with flocks of up to 25 seen flying overhead. Almost daily 15-20 would land ½ mile east of the cabin on the beach.

American Black Oystercatcher (Haematopus bachmani): Common during June along the reefs at the mouth of Aniakchak Bay, no sightings during July or August.

Semipalmated Plover (Charadrius semipalmatus): Common throughout the summer. Two pairs feigning when we approached on 6/27 and 7/14. 8 seen within Aniakchak Caldera.

Whimbrel (Numenius phaeopus): Recorded 5 times between 6/25 and 7/21. Numbers ranged from 4 to 12 individuals along the reefs and beaches at Aniakchak Bay.

Spotted Sandpiper (Actitis macularia): Uncommon between mid to lower portions of the Aniakchak River. 9 individuals were observed between 7/19 and 7/29.

Wandering Tattler (Heteroscelus incanus): Suprisingly common beginning 7/22 foraging at low tide within one mile of the mouth of Aniakchak River. Present through 8/24 with a maximum count of 7 on 7/24. 3 were seen along the south-west side of Amber Bay.

Greater Yellowlegs (Tringa melanoleuca): Three sightings; on 6/19 and 6/22 along the mid portions of the Aniakchak River, and on 8/9 at Mshik Lake.

Dowitcher sp. (Limnodromus sp.): Three seen together on 6/23 in tundra marshes 7 miles inland. One was near a recently broken egg.
Ruddy Turnstone (*Arenaria interpres*): Two were seen on 8/23 along the rocky beaches northeast of Aniakchak Bay. Half-way into their winter plumages.

Black Turnstone (*Arenaria melanoccephala*): One flock of 8 seen on 8/23 along the rocky beaches northeast of Aniakchak Bay. Summer plumage still present.

*Rock Sandpiper (*Calidris ptilocnemis*): Uncommon, 2 seen feigning on 7/16 Aniakchak Caldera, 18 at Kejulik Bay on 8/12, and 23 at Aniakchak Bay on 8/20 half-way into their winter plumage.

Least Sandpiper (*Calidris minutilla*): Three sightings with up to 15 individuals during August, near Kejulik Bay and Meshik Lake.


Red-necked (Northern) Phalarope (*Phalaropus lobatus*): Three sightings, 1 male on 6/23 7 miles inland, 1 male on 8/9 along the shoreline of Meshik Lake, 1 immature on 8/23 in a tidal pool northeast of Aniakchak Bay.

Common Snipe (*Gallinago gallinago*): Common June, July, August amongst moist tundra.

Parasitic Jaeger (*Stercorarius parasiticus*): Uncommon during June and August along coastal areas and Meshik Lake. Half were dark phased individuals.

Long-tailed Jaeger (*Stercorarius longicaudus*): Two sightings at Meshik Lake. One on 8/9, two on 8/11. During August numerous Jaegers were seen on Aniakchak Bay chasing kirtiawkes, but we were unable to identify to species.

Glaucous-winged Gull (*Larus glaucescens*): Abundant along coastal regions, also seen at Meshik Lake. Only one seen flying over Surprise Lake on 7/16.

Mew Gull (*Larus canus*): Common. Flocks of 20-30 were common around Meshik Lake, and Kejulik, Amber and Aniakchak Bays.

Bonaparte's Gull (*Larus philadelphia*): One individual seen on 7/15 flying over Surprise Lake.

Black-legged Kittiwake (*Rissa tridactyla*): Abundant throughout the preserve. Over 250 individuals seen at the mouth of the Aniakchak River on a number of occasions.

*Arctic tern (*Sterna paradisaea*): Common. Nest with 3 eggs found on spit south side of Aniakchak River on 6/27. Immature seen at Meshik Lake on 8/11.

Pigeon Guillemot (Cepphus columba): Landed June 24 through August, Aniakchak Bay.

Horned Puffin (Fratercula corniculata): Over 100 seen on 8/16.

Red-throated loon (Gavia stellata): Individuals seen along the bay from June through August.

Goldeneye (Bucephala clangula): Individuals seen along the bay in July and August.

Scaup (Aythya marila): Its present in the mid-sections of the bay.

Black-billed magpie (Pica hudsonia): Individuals seen throughout the summer. We observed it a little on 7/22 along the North Fork River.

Common Raven (Corvus corax): Uncommon. Individuals and pairs were observed in each region we visited.

Black-capped Chickadee (Parus atricapillus): Uncommon. Seen and heard on three occasions in alders. Two seen behind the cabin on 8/22.

American Dipper (Cinclus mexicanus): Common along the upper ten miles of the Aniakchak River. One observed with food material on 7/17.

Winter wren (Troglodytes troglodytes): One sighting on 8/26 in the alders behind the cabin, Aniakchak Bay.

American Robin (Turdus migratorius): One sighting on 6/17 perched on top of an alder, approx. 2 miles northwest of the Aniakchak Bay cabin.

Hermit Thrush (Catharus guttatus): Common throughout the preserve June, July, and August.

Grey-cheeked Thrush (Catharus minimus): In June. Sightings and song occurred along the mid sections of the Aniakchak River 6/22 to 6/24.

Water fowl (Anima ater): Common in alpine areas during June, one was observed with food material on 6/22. Six were seen in Aniakchak Caldera, and flocks were common along the coast in late August.

Northern Shrike (Lanius excubitor): Uncommon, 0 of wings, inland. Two immatures were seen on 8/9 at Bobak Lake.

Yellow Warbler (Dendroica petechia): Early on 8/1 to 8/4. Individuals were seen and heard behind the Aniakchak Bay cabin.
Wilson's Warbler (Wilsonia pusilla): Common along Aniakchak and Kajulik Bays, banks of the lower Aniakchak River and around Meshik Lake.

Grey-crowned Rosy Finch (Leucosticte tephrocotis): One sighting on 8/15. Six together on ridge "1755" between Kajulik and Aniakchak Bay.

Redpoll sp. (Carduelis sp.): Uncommon. Flocks were seen and heard throughout our stay. Present in Aniakchak Caldera.


Fox Sparrow (Passerella iliaca): Uncommon. Individuals seen and heard between 6/16 and 6/21, 2 seen at Kajulik Bay on 8/12. 8 adults and 2 imm. present on 8/23, Aniakchak Bay.

*Lapland Longspur (Calcarius lapponicus): Uncommon. A nest with 6 eggs found on the tundra between Aniakchak and Amber Bays. Individuals seen in Aniakchak Caldera.

*Snow Bunting (Plectrophenax nivalis): Common in alpine tundra areas. Nesting behavior along the east wall in Aniakchak Caldera. Two dead juveniles found on 7/16 in the caldera.
VEGETATION

This summer we keyed out and recorded 121 plant species. The dates found and location are logged in the Aniakchak copy of Flora of Alaska. Future documentation should occur within the western and northwestern areas of monument and preserve, along with a more detailed study of Aniakchak caldera. An Aniakchak herbarium should be initiated in following seasons. June is an excellent collecting time along the coastal regions, and mid-July for alpine areas.

Unique observations include: Lady slipper orchid (C. guttatum) abundant on grassy slopes behind Aniakchak Bay cabin—Hulten lists as "rare in Alaska"; and the Arctic poppy (P. alaskum) showed a unique orange-tipped variety growing on black volcanic sands. Numerous species showed range extensions as described by Hulten.

Beginning on the coast at the Aniakchak Bay cabin and heading up to Knoll "1481" (NW 2 miles), the following vegetation types are traversed: sandy beach; grasses and forbs; willow and alder shrub; moist and alpine tundra; then rocky gravel outcroppings above the 1000' level. Tundra ponds and marshes are seen below. These same plant communities were found throughout the monument and preserve. The exposed volcanic soils seen in the caldera—and elsewhere—offer an excellent opportunity to observe primary plant succession.

The following plant list gives scientific and common names, dates flowering, and habitat. "AC" denotes plants recorded within Aniakchak caldera.

EQUISETACEAE (Horsetail Family)
Equisetum fluviatile (Horsetail) August Shallow marshes Grasses/tundra AC
Equisetum arvense Abundant

OPHIOGLOSSACEAE (Adder's Tounge Family)
Botrychium lunaria (Moonwort) 6/29 Moist tundra

THELYPTERIDACEAE (Marsh Fern Family)
Thelypteris phegopteris Common understory w/willow shrub

ASPIDIACEAE (Shield Fern Family)
Dryopteris dilatata Common Grassy slopes

GRAMINEAE (Grass Family) Many additional species were present
Phleum commutatum (Mt. Timothy) July Alpine tundra AC
Calamagrostis canadensis (Bluejoint) Abundant Coastal & inland 40% cover
Elymus arenarius mollis (Lyne grass) Common Sandy Beaches, Pioneer
on exposed volcanic soils AC
CYPERACEAE (Sedge Family)
Eriophorum angustifolium (Cottongrass) August Moist tundra AC
Carex macrocephala Common w/Elymus Sandy beach
LILIACEAE (Lily Family)
Fritillaria camschatcensis Common June Low shrub
Streptopus amplexifolius Fruits present 8/15 Willow shrub

ORCHIDACEAE (Orchid Family)
Cypridium guttatum (Lady Slipper) June Very common, grassy slopes behind the cabin. Hulten lists as "rare in Alaska". Reported by R. Root (1975) along the north side of Meshik Lake.
Platanthera dilatata Suprise Lake July Wet meadows AC

SALICACEAE (Willow Family) Many additional species present.
Salix reticulata Common Tundra AC
Salix roundifolia Common Alpine tundra
Salix arctica crassijulis Seeds in Aug. Moist tundra AC

BETULACEAE (Birch Family)
Betula nana exilis (Dwarf Birch) Common tundra plant w/ Empetrum
Alnus crispa sinuata (Sitka Alder) Abundant "tall" alder to 8ft.

URTICACEAE (Nettle Family)
Urtica gracilis One thicker round August Disturbed area

POLYGONACEAE (Buckwheat Family)
Rumex fenestratus Seeds by 8/15 Common Stream banks
Oxystilum (Mt. Sorrel) July Rock outcroppings AC
Polygonum viviparum July Marsh edges

CHENOPODIACEAE (Goosefoot Family)
Atriplex alaskensis August Sandy beaches

GARYOPHYLLACEAE (Pink Family)
Stellaria humifusa (Chickweed) June Coastal rocky slopes
Honkenya peploides major Abundant June 15 Sandy Beaches
Silex acaulis (Moss Campion) June & July Rocky slopes AC

RANUNCULACEAE (Crowfoot Family)
Actaea rubra arguta (Ranaberry) Fruits on 8/21 Coastal low shrub
Aconitum delphinifolium (Monkshood) Late July Moist tundra

PAPAVERACEAE (Poppy Family)
Papaver alaskanum (Arctic Poppy) June & July Uncommon on volcanic soils. An orange-tipped variety was found along the lower Aniakchak River. Within the Caldera, all yellow. AC

CRUCIFERAE (Mustard Family)
Cakile edentula californica Aug. 23 Sandy beach, Aniakchak Bay. Range extension: Hulten's map shows it's SW limit to Kodiak Island.
<table>
<thead>
<tr>
<th>Species</th>
<th>Common Name</th>
<th>Flower Month</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Arabis lyrata</em> (Rock Cress)</td>
<td>Common</td>
<td>June</td>
<td>Low shrubs &amp; rock slopes</td>
</tr>
<tr>
<td><strong>CRASSULACEAE (Stonecrop Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Sedum rosea</em> intergrifolium (Roseroot)</td>
<td></td>
<td>June &amp; July</td>
<td>Common, many habitats AC</td>
</tr>
<tr>
<td><strong>SAXIFRAGACEAE (Saxifrage Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Saxifraga serpyllifolia</em> Uncommon</td>
<td></td>
<td>June &amp; July</td>
<td>Rock outcappings AC</td>
</tr>
<tr>
<td><em>Saxifraga hirculus</em> (Bog Saxifrage)</td>
<td></td>
<td>July Common</td>
<td>Moist tundra</td>
</tr>
<tr>
<td><em>Saxifraga flagellaris setigera</em> Common</td>
<td></td>
<td>June &amp; July</td>
<td>Rock outcappings AC</td>
</tr>
<tr>
<td><em>Saxifraga bronialis</em> Funstonii Common</td>
<td></td>
<td>July</td>
<td>Gravel exposures AC</td>
</tr>
<tr>
<td><em>Saxifraga pumila</em> Uncommon</td>
<td></td>
<td>July</td>
<td>Stream banks AC</td>
</tr>
<tr>
<td><em>Heuchera glabra</em> Common</td>
<td></td>
<td>Late July</td>
<td>Shaded rock crevices</td>
</tr>
<tr>
<td><em>Chrysoplenium Wrightii</em> Uncommon</td>
<td></td>
<td>July</td>
<td>Scree slopes above 500' AC</td>
</tr>
<tr>
<td><em>Parnassia palustris neogaea</em> Uncommon</td>
<td></td>
<td>August</td>
<td>Moist tundra. Range extension, Hulten's map shows southern limit near Becharof Lake.</td>
</tr>
<tr>
<td><strong>ROSACEAE (Rose Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Spiraea Beauverdiana</em> Two patches</td>
<td></td>
<td>July 27</td>
<td>Margins of alders</td>
</tr>
<tr>
<td><em>Leptkea pectinata</em> Uncommon</td>
<td></td>
<td>July &amp; Aug.</td>
<td>Scree slopes, above 900' AC</td>
</tr>
<tr>
<td><em>Rubus chamaemorus</em> Uncommon</td>
<td></td>
<td>July</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><em>Rubus atticus stellatus</em> Uncommon</td>
<td></td>
<td>June &amp; July</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><em>Rubus spectabilis</em> Two locations</td>
<td></td>
<td>June fts.</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><em>Potentilla palustris</em> Common</td>
<td></td>
<td>June</td>
<td>Rocky cliffs AC</td>
</tr>
<tr>
<td><em>Potentilla villosa</em> Abundant</td>
<td></td>
<td>June &amp; July</td>
<td>Rocky slopes</td>
</tr>
<tr>
<td><em>Potentilla Egedii grandis</em> Common</td>
<td></td>
<td>June</td>
<td>Coastal tundra</td>
</tr>
<tr>
<td><em>Geum Rossii</em> Common</td>
<td></td>
<td>July</td>
<td>Rocky slopes</td>
</tr>
<tr>
<td><em>Dryas octopetala</em> (Possible hybrid)</td>
<td></td>
<td>June</td>
<td>Common, tundra AC</td>
</tr>
<tr>
<td><em>Dryas integrifolia</em> Common</td>
<td></td>
<td>July</td>
<td>Tundra</td>
</tr>
<tr>
<td><em>Sanguisorba stipulata</em> Common</td>
<td></td>
<td>Late July</td>
<td>Moor beaco AC</td>
</tr>
<tr>
<td><strong>LEGUMINOSAE (Pea Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lupinus nootkatensis</em> Abundant</td>
<td></td>
<td>June</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><em>Astragalus alpinus alpinus</em> Uncommon</td>
<td></td>
<td>June</td>
<td>Rocky slopes above 800'</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Range extension: Hulten's map shows southern limit north of Katmai, and one collection site south of Aniakchak.</td>
</tr>
<tr>
<td><strong>GERANIACEAE (Geranium Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Geranium erianthum</em> Abundant</td>
<td></td>
<td>June-August</td>
<td>Low shrubs &amp; tundra AC</td>
</tr>
<tr>
<td><strong>VIOLACEAE (Violet Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Viola Langsdorffii</em> Uncommon</td>
<td></td>
<td>June &amp; July</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><em>Viola epipsila repens</em> One specimen</td>
<td></td>
<td>June 29</td>
<td>Moist tundra AC</td>
</tr>
<tr>
<td><strong>ONAGRACEAE (Evening Primrose Family)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Epilobium angustifolium</em> (Fireweed)</td>
<td></td>
<td>July Abundant</td>
<td>Tall Grasses</td>
</tr>
<tr>
<td><em>Epilobium latifolium</em> (River Beauty)</td>
<td></td>
<td>July Common</td>
<td>River banks, rocky slopes AC</td>
</tr>
<tr>
<td><em>Epilobium leptocarpum</em> Uncommon</td>
<td></td>
<td>August</td>
<td>Creek drainages</td>
</tr>
</tbody>
</table>
UMBELLIFERAE (Parsley Family)

- Cicutia mackenzieana Common July & August Creek drainages, marshes
- Ligusticum scoticum Common June Rock outcroppings
- Conioselinum chinense Abundant August Moist tundra
- Angelica lucida Abundant June Low shrubs AC
- Heracleum lanatum Abundant June Large specimens Grasslands AC

CORNACEAE (Dogwood Family)

- Cornus canadensis Uncommon June Tundra

PYROLEACEAE (Wintergreen Family)

- Pyrola asarifolia purpurea Uncommon June & July Moist tundra AC

EMPETRACEAE (Crowberry Family)

- Empetrum nigrum Abundant The common groundcover for tundra AC

ERICACEAE (Heath Family)

- Ledum palustre decumbens Common June Moist tundra
- Rhododendron caucasicum Common June & July Tundra & rock crevices AC
- Loiseleuria procumbens Uncommon June Exposed rocky slopes AC
- Andromeda polifolia Uncommon June Ponds
- Arctostaphylos uva-ursi Uncommon June Alpine tundra
- Arctostaphylos alpina Uncommon Fruits in Aug. Alpine tundra
- Vaccinium vitis-idaea Uncommon June Moist tundra
- Vaccinium uliginosum Common Fruits in Aug. Tundra AC

DIAPENSIACEAE (Diapensia Family)

- Diapensia lapponica obvoluta Uncommon June Alpine tundra

PRIMULACEAE (Primrose Family)

- Primula cumatuloides saxifragifolia Two specimens, June Creekbanks
- Androsace chamaejsame Lehmanniana Common June Alpine tundra
- Trientalis europaea artica Common June Moist tundra

PLUMBAGINACEAE (Leadwort Family)

- Armeria maritima arctica Not abundant but widely distributed, June.
  Moist tundra. Hulten lists as "rare inland", specimens round 6 miles up the Ailikchak River.

GENTIANACEAE (Gentian Family)

- Gentiana algida Uncommon July & Aug. See slopes & alpine tundra
- Swertia perennis Common July Moist tundra

Range extension: Hulten's map shows southern limit to Kodiak Island and a
one location south of Ailikchak.

APOCYNACEAE (Dogbane Family)

- Menanthes trifoliata Common June Ponds

POLEMONIACEAE (Polemonium Family)

- Polemonium acutilobum Abundant June-August Low shrubs
- Polemonium boreale boreale Uncommon June & July Rock outcroppings AC
  White and purple varieties.
### BORAGINACEAE (Borage Family)

- **Plagiobothrys orientalis** Common August 9 Shoreline, Meshik Lake
- **Myosotis alpestris asiatica** Common June Rocky bluffs & tundra

### SCROPHULARIACEAE (Figwort Family)

- **Mimulus guttatus** Common July Steam banks
- **Lagotis glauca glauca** Uncommon June Alpine tundra
- **Castilleja unalascensis** Common inland August Low shrub
- **Kuphusia mollis** Uncommon August Kock crevices
- **Rhinanthus minor borealis** Abundant July Moist tundra
- **Pedicularis verticillata** Common July Moist tundra AC
- **Pedicularis parviflora Pannellii** Uncommon June Pond
- **Pedicularis capitata** Uncommon June Alpine tundra AC
- **Pedicularis Kanei Kanei** Common June & July Alpine tundra AC

### PLANTAGINACEAE (Plaintain Family)

- **Plantago maritima juncoideis** Common July River banks, coastal

### RUBIACEAE (Madder Family)

- **Galium triflorum** Uncommon June Tall grasses

### CAPRIFOLIACEAE (Honeysuckle Family)

- **Sambucus racemosa pubens** Common June fls, Aug. fruits Willow shrub

### VALERIANACEAE (Valerian Family)

- **Valeriana capitata** Common June Moist tundra

### CAMPANULACEAE (Bluebell Family)

- **Campanula lasiocarpa lasiocarpa** Common July & Aug. Alpine tundra AC

### COMPOSITAE (Composite Family)

- **Solidago multiradiata** Uncommon June Moist tundra
- **Solidago lepida** Abundant Late Aug. Willow shrub
- **Aster sibiricus** Common August Alpine tundra
- **Erigeron peregrinus peregrinus** One specimen June Moist tundra
- **Antennaria monocephala monocephala** Uncommon July Alpine tundra AC
- **Achillea borealis** Abundant June Willow shrub
- **Chrysanthemum arcticum arcticum** Uncommon June Rocky river banks
- **Artemisia globularia** Common June & July Scree slopes AC
- **Artemisia Telesii elatior** Uncommon August Creek banks
- **Artemisia arctica arctica** Common June & July Moist tundra AC
- **Artemisia retasites trigidus** Uncommon June Moist tundra AC
- **Arnica Lessingii Lessingii** Common June & July Moist tundra AC
- **Senecio resedifolius** Uncommon August Rock outcropings
- **Senecio pseudo-Arnica** Abundant July Sandy beaches
LANDSAT GROUNDTURTHING

Using color xeroxes of the Landsat cover maps, a cursory
groundtruthing was done of the Aniakchak region. Kathy Jope and
Elaine Rideout of DSC had suggested looking for any gross errors in
the maps, as well as documenting vegetative types of determined
locations with slides. Slides taken specifically for Landsat are sat
aside in the slide file, with a description including location, species
present and cover map category. The locations are also marked on a
1:250,000 map.

Categories and associations found are listed on the following page.
A User's Guide for Bristol Bay Land Cover Maps was used as reference.
Several of the categories/associations were confusing due to species
overlap, and the great variety of vegetative types within a small area.
Categories 6, 7, 12, 13, & 14 were particularly difficult to sort out
and were not considered closely - a more detailed study would be needed.

Although generally accurate, a few things were noted which could
be a function of how the maps were made. The Aniakchak River is shown on
the cover maps as marsh/wet bog, and sometimes cannot be distinguished
at all from surrounding vegetative types. Meshik Lake is shown as
"deep, clear water", although at least the western part of it is shallow
and murky. While not necessarily an error, the small changes in vegetation
noted in the field were not reflected on the cover maps.

Of special interest in the monument and preserve were low-lying
barren areas - a series of which parallels the Aniakchak River east of
Meshik Lake. These correctly show up as "Barren" and are volcanic/sandy swaths with some scattered pioneer vegetation that are interspersed with
the tundra.

Having the color xeroxes available in the field was beneficial
for this very preliminary work. An added plus was their use in planning
backcountry travel routes - i.e. avoiding alder!
<table>
<thead>
<tr>
<th>#</th>
<th>Cover Map Category</th>
<th>Associations Found</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deep Clear Water</td>
<td>--</td>
<td>Meshik Lake?</td>
</tr>
<tr>
<td>2</td>
<td>Shallow Sedimented Water</td>
<td>--</td>
<td>Aniakchak Lagoon- tidal South of Surprise Lake- marshy</td>
</tr>
<tr>
<td>4</td>
<td>Barren</td>
<td>--</td>
<td>Rocky summits Barren volcanic swaths</td>
</tr>
<tr>
<td>6</td>
<td>Marsh/Very Wet Bog</td>
<td>Fresh Herb Marsh Wet sedge-herb meadow tundra?</td>
<td>Associations uncertain.</td>
</tr>
<tr>
<td>7</td>
<td>Wet Bog/ Wet Meadow</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Misc. Deciduous</td>
<td>Open low willow</td>
<td>Interspersed with closed shrub/graminoid</td>
</tr>
<tr>
<td>11</td>
<td>Closed Shrub/Graminoid</td>
<td>Open tall alder-willow</td>
<td>Common.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tall bluejoint grass-herb</td>
<td>Common along coast.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coastal ryegrass-herb</td>
<td>Kejulik and Aniakchak Bays-coastal strips.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open tall alder?</td>
<td>Possibly west of Aniakchak Lagoon.?</td>
</tr>
<tr>
<td>12</td>
<td>Open Low Shrub/Mesic</td>
<td>Open low willow Dryas lichen mat and cushion tundra?</td>
<td>Summits?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erickaceious mat and cushion tundra?</td>
<td>West of Meshik Lake?</td>
</tr>
<tr>
<td>13</td>
<td>Open Low Shrub</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
RECOMMENDATIONS AND EQUIPMENT

Winter Projects (1983-84):

-Duplicate existing slide library for staff use and interpretive programs, and ensure safe storage of master file.

-Organize and catalogue library materials.

-Contact Chignik residents to share historical and biological information, to let NPS interest and presence be known, and to gain insight into local concerns.

-Prepare an informational for potential recreational users.

-Identify native allotments and non-NPS lands and transfer boundaries onto permanent map file.

-Compile information for future seasonal staff on hunting/fishing regulations: commercial and sportfishing restrictions and regulations, location of regulatory markers, and applicable federal laws such as Marine Mammals Protection Act.

Equipment Purchases (1983-84):

-Patrol boat with motor and appropriate operational and safety features. Comparing notes with Lake Clark's coastal patrol operation would be valuable.

-Waterproof shotgun case.

-CB Radio.

-Small Kerosun or Coleman heater if not available from Katmai operation.

-Waterproof equipment bags- i.e. Bill's bags, and assorted phoenix bags if not available for Aniakchak use.

-Additional snap-lid drums for food storage containers- need would depend on the extent cabin is relied upon for storage.

-Flare gun or similar device for alerting fishermen or aircraft in emergency.

-Field identification guides for Aniakchak use: birds, mammals, animal tracks, fish, marine life. May be duplicates of some of these available from Katmai's library.
Suggested field work (1984):

-Continue to contact commercial fishermen, hunters, and recreational users. We'd suggest a coastal presence during late May-early July, and mid-August through mid-September.

-Continue improvements to "Ranger Station": construct outhouse or latrine; replace critical rotten floorboards; finish waterproofing roof and walls.

-Devise a boat storage area.

-Perform backcountry patrols in some of following locations: coastal boat patrols to contact users and document fisheries and cabins; a float trip of Meshik River; hike from Meshik into Aniakchak Caldera.

-Continue resource file collection: biological data, cabin documentation, herbarium, add to slide file.

-Experiment with equipment: assess patrol boat use, continue working on effective radio communication.

Equipment brought to cabin on 6/14 Goose:

NPS:

- Hanson weatherport tent, 15' x 12'
- 6 snap lid metal drums for food storage, various sizes up to 30 gallons.
- Wooden box kits, 3 1/8' x 1 1/8'.
- 3 large sheets plywood, 8 1/2' x 7' planks, misc. scrap wood
- Tool box, nails, tin snips, shovels, broom.
- Visqueen, compactor bags, plastic bags.
- Shotgun and revolver, cleaning kit, ammunition.
- SGC radio, 2 sets batteries, coax, dipole and portable antennae.
- Old Coleman stove and lantern.
- 15 gallons blazo.
- Camera, film, spotting scope.
- WE 24 tent, thermarests, bivouc sacs, survival suits, 4 sleeping bags.
- 2 lifevests, phoenix bags.
- 2 plastic water containers, cooking equipment.
- 2 boxes of misc. gear: rope, flares, maps weather kit, sealants.
- 2 metal chairs, 2 cots, an aluminum folding table.
- Books and notebooks- CFR, state regulations, identification books.
Personal:
- 17' folding double kayak
- Tripod, camera equipment, binoculars
- Backpacks, daypacks, "Bill's bags" each.
- Hipboots, hiking boots, and knee-high rubber boots (strongly suggested).
- Several boxes of food and personal items.
- Fishing gear.

Additional items brought over the summer:
- Kerosun heater and 15 gallons JP fuel.
- New coleman stove, oven and lantern.
- Ladder antenna, Spilsbury radio, portamast kit, additional coax.
- 4 additional boxes of food.
- Rain gauge.

Items left at cabin at end of season:
- 2 chairs, 1 cot, shovel, broom, aluminum table.
- Old coleman stove—works but inefficient.
- 2 wooden boxes, one with odds and ends inside.
- Map on wall and note to visitors.
- Misc. pieces of wood and small pieces plywood.
- 5 gallons kerosene and @4 gallons blazo: in shed north of cabin.
- Aviation gas: 10 gallons cached @ river mouth.

Suggested additional items to go to cabin:
- First Aid kit.
- Fire extinguisher.
- Materials for continued cabin work and possible outhouse construction.
- High-low thermometers, wind gauge.
<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Temperature °F</th>
<th>Wind</th>
<th>Cloud Cover</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/15</td>
<td>Aniakchak Bay Cabin</td>
<td>53</td>
<td>0-5 E/SE</td>
<td>40% cumulus-high, mostly sunny, brief p.m.</td>
<td>Clear all day.</td>
</tr>
<tr>
<td>6/16</td>
<td>&quot;</td>
<td>58</td>
<td>0-10 W</td>
<td></td>
<td>Light rain, afternoon.</td>
</tr>
<tr>
<td>6/17</td>
<td>&quot;</td>
<td>54</td>
<td>0-10 E/SE</td>
<td></td>
<td>Light rain, afternoon.</td>
</tr>
<tr>
<td>6/18</td>
<td>&quot;</td>
<td>48</td>
<td>5-10 E</td>
<td>Overcast 1500'</td>
<td>Light rain, afternoon.</td>
</tr>
<tr>
<td>6/19</td>
<td>&quot;</td>
<td>51</td>
<td>5-15 E</td>
<td>Fug overcast 0-1000'</td>
<td>Intermittent rain, wind and rain all day.</td>
</tr>
<tr>
<td>6/20</td>
<td>&quot;</td>
<td>46</td>
<td>5-15 E</td>
<td>Gusts to 30+</td>
<td>Fug overcast 0-500'</td>
</tr>
<tr>
<td>6/21</td>
<td>Aniakchak River</td>
<td>54</td>
<td>5-15 E</td>
<td>Overcast 5000'</td>
<td>Occasional drizzle.</td>
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<tr>
<td>6/22</td>
<td>T39 S R52 W S33</td>
<td>47</td>
<td>5-15 E</td>
<td>Gusts to 35-40</td>
<td>Overcast 100-1000'</td>
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<tr>
<td>6/23</td>
<td>Aniakchak Bay cabin</td>
<td>51</td>
<td>5-20 E</td>
<td>Overcast 50-400'</td>
<td>Rain all day, visibility 1-2 miles, river rose 2-3&quot;</td>
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<tr>
<td>6/24</td>
<td>&quot;</td>
<td>51</td>
<td>5-10 E</td>
<td>Overcast 2500'</td>
<td>Cloudy toward day, rain p.m.</td>
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<tr>
<td>6/25</td>
<td>&quot;</td>
<td>48</td>
<td>5-15 E</td>
<td>Gusts to 20+</td>
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<tr>
<td>6/26</td>
<td>&quot;</td>
<td>48</td>
<td>0-10 E</td>
<td>Foggy</td>
<td>Rain beginning after 1800 hrs</td>
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<tr>
<td>6/27</td>
<td>&quot;</td>
<td>53</td>
<td>0-5 E</td>
<td></td>
<td>Sunny afternoon, heavy rains &amp; wind in p.m.</td>
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<tr>
<td>6/28</td>
<td>&quot;</td>
<td>51</td>
<td>5-10 E/SE</td>
<td>30% cumulus, lenticular high, 2000'</td>
<td>Sunny afternoon, drizzling.</td>
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<tr>
<td>6/29</td>
<td>&quot;</td>
<td>51</td>
<td>5-10 E/SE</td>
<td>30% overcast</td>
<td>Clear to E and S, overcast in a.m., foggy afternoon.</td>
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<tr>
<td>Date</td>
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<td>Temperature °F</td>
<td>Wind</td>
<td>Cloud Cover</td>
<td>Comments</td>
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<tr>
<td>6/30</td>
<td>Aniakchak Bay cabin</td>
<td>53 (1900 hrs)</td>
<td>0-5</td>
<td>E/SE</td>
<td>25% cumulus</td>
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<td>Overcast in a.m.</td>
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<td>57</td>
<td>0-5</td>
<td>E/SE</td>
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<td>&quot;</td>
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<tr>
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<td>&quot;</td>
<td>60</td>
<td>0-3</td>
<td>W</td>
<td>75% Cumulus 3000 ft.</td>
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<td>&quot;</td>
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<td>0-5</td>
<td>W</td>
<td>High overcast</td>
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<td>7/14</td>
<td>Surprise Lake</td>
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<td>Aniakchak Caldera</td>
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<td>No rain.</td>
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<td></td>
<td>1000 Feet</td>
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<td>7/15</td>
<td>&quot;</td>
<td>55 (1830 hrs)</td>
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<td>&quot;</td>
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<td>Overcast 1520 ft.</td>
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<td>Infrequent drizzle</td>
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<tr>
<td>7/18</td>
<td>Aniakchak River</td>
<td>50 (1130 hrs)</td>
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<tr>
<td>7/19</td>
<td>Aniakchak River</td>
<td>56</td>
<td>0-5</td>
<td>W</td>
<td>75% overcast, cumulus refract.</td>
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<td>T39S R 53W S15</td>
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<td>Rain and lowered ceiling in evening</td>
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<tr>
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<td>Aniakchak Bay</td>
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<td>Ceiling lifted during day.</td>
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<td>7/20</td>
<td>&quot;</td>
<td>56</td>
<td>0-5</td>
<td>W</td>
<td>Overcast, 3000 ft.</td>
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<td>55</td>
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<td>Morning rain</td>
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<td>7/22</td>
<td>&quot;</td>
<td>54</td>
<td>0-10</td>
<td>E/SE</td>
<td>Variable</td>
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<tr>
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<td>&quot;</td>
<td>50</td>
<td>5-15</td>
<td>E/SE</td>
<td>Overcast, &lt;2000 ft.</td>
</tr>
<tr>
<td>7/24</td>
<td>&quot;</td>
<td>51</td>
<td>5-10</td>
<td>E</td>
<td>Fog</td>
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Weather Observations Aniakchak 1983
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<tr>
<th>Date</th>
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<th>Temperature °F</th>
<th>Wind</th>
<th>Cloud Cover</th>
<th>Comments</th>
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<td>7/25</td>
<td>Aniakchak Bay Cabin</td>
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<td>Hill '013'</td>
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<td>T395 R526 S13</td>
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<td>In the clouds at 900 feet in evening.</td>
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<td>Temp. 60° in afternoon. Beautiful day!</td>
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<td>58</td>
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<td>Overcast</td>
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<td>0-5 W</td>
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<td>Mednik lake</td>
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<td>Windy winds in morning.</td>
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<td>North fork drainage T40 S R 53 W 57</td>
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<td>8/12</td>
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<td>Overcast</td>
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<td>Rainy in afternoon.</td>
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<td>600</td>
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<td>All abnormal.</td>
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<td>Aniakchak Bay Cabin</td>
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<td>Partly sunny afternoon.</td>
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<td>56</td>
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<td>km/hour</td>
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<tr>
<td>Date</td>
<td>Location</td>
<td>Temperature °F</td>
<td>Wind</td>
<td>Cloud Cover</td>
<td>Comments</td>
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<td>Light rain afternoon</td>
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<td>Stratus 3000'</td>
<td>Rain beginning afternoon</td>
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<td>Calm</td>
<td>Clear</td>
<td>Morning rain</td>
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<td>60</td>
<td>5-10 W</td>
<td>Clear</td>
<td>Overcast in morning, cloudy wisps</td>
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<td>10 - 15 W</td>
<td>Scattered cumulus 3000'</td>
<td>Periodic strong winds</td>
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<td>60% scattered cumulus 3000'</td>
<td>60% in mid-afternoon, west winds variable but calm after</td>
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<td>Overcast</td>
<td>Light rain</td>
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<td>8/24</td>
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<td>58</td>
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<td>20% cumulus 3500'</td>
<td>Morning 90% cumulus</td>
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<td>Beautiful day</td>
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<td>Clear</td>
<td>High clouds to west</td>
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<tr>
<td>8/28</td>
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<td>59</td>
<td>0 - 5 E</td>
<td>Overcast 500 - 2500'</td>
<td>Sun in a.m.</td>
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<td>8/29</td>
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<td>62</td>
<td>0 - 5 W</td>
<td>Partially overcast</td>
<td>Sun in a.m.</td>
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</tbody>
</table>
Kejulik Bay - August 1983
Compare with photo in Alaskan Odyssey by Father Hubbard, taken when he visited the cabins in the 1930's.

Aniakchak Bay looking South, Cape Kumlik in the distance - August 1983
Compare with photo in 1931 National Geographic magazine, page 324.
Looking East, Aniakchak Bay to the right.

Collapsed barabaras in the foreground.

Alaska Packers Association Bunkhouse Cabin
East wall inside A.P.A. Cabin

Western corner of A.P.A. Cabin
Meshik Lake and Pinnacle Mtn.

Campsite on 50' knoll, SW shore of Meshik Lake
Main Cabin, Kejulik Bay

Interior of main Cabin
Shed, Kejulik Bay

Collapsed buildings, Kejulik Bay
Small shed, Kejulik Bay

KEJULIK BAY CABINS

13 AUGUST 1983