DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1495-B

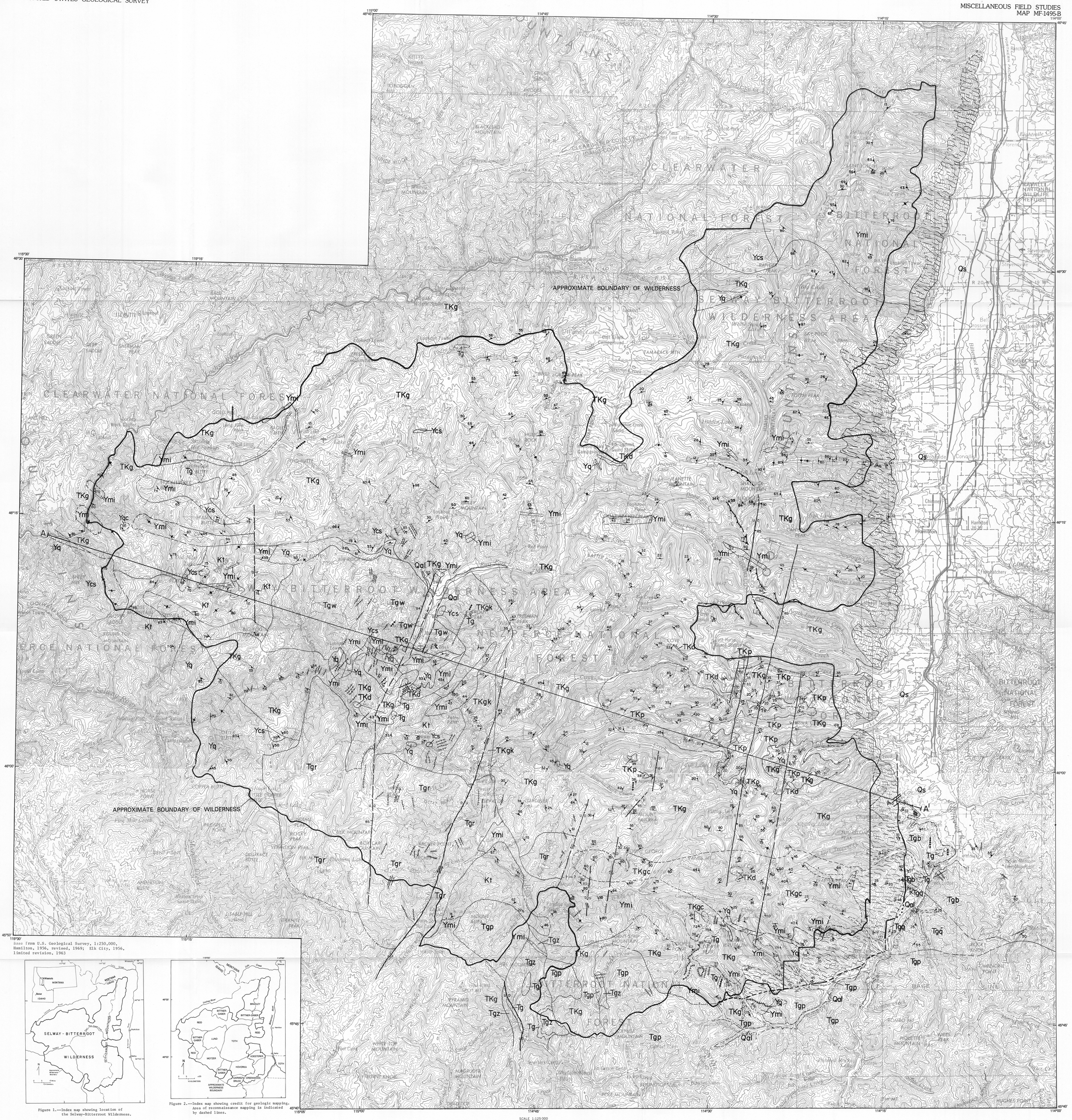
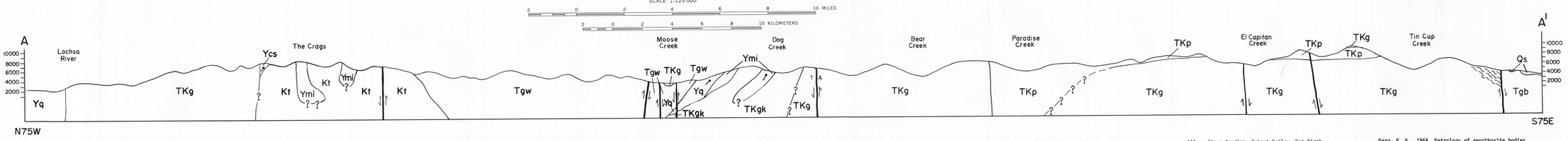


Figure 1.--Index map showing location of the Selway-Bitterroot Wilderness.

Figure 2.--Index map showing credit for geologic mapping. Area of reconnaissance mapping is indicated by dashed lines.



CORRELATION OF MAP UNITS

Qal	Holocene	QUATERNARY	
Qs	Holocene and Pleistocene		
Tg, Tgr, Tgw, Tgp, Tgz	Eocene	TERTIARY	
Tgb, Tgq	Eocene or Paleocene		
TKd	Paleocene and (or) Upper Cretaceous	TERTIARY AND (OR) CRETACEOUS	
TKg, TKgk, TKgc, TKp			
Kt	Upper to Lower Cretaceous	CRETACEOUS	
Ymi, Ycs	Middle (?) Proterozoic	PROTEROZOIC	
Yq, Yqc			

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qal ALLUVIUM (HOLOCENE)--As much as 15 ft of silt, sand, and gravel in valleys of most streams

Qs ALLUVIUM AND MORAINE, UNDIFFERENTIATED (HOLOCENE AND PLEISTOCENE)--Extensive glacial moraines along the eastern margin of the Bitterroot Mountains that grade eastward into alluvial deposits of the Bitterroot River

HYPABYSSAL AND EPIZONAL INTRUSIVE ROCKS

Ymi RHYODACITE AND RHYOLITE DIKES (EOCENE)--Buff, gray, or lilac dikes of rhyodacite and subordinate rhyolite, typically a few feet thick, and commonly forming conspicuous resistant topographic ribs and walls. Typically porphyritic, containing about 15 percent phenocrysts in a matrix that is variably microcrystalline to cryptocrystalline and commonly displays granophyric and spherulitic devitrification textures. Phenocrysts are euhedral crystals of orthoclase or sanidine (6-7 mm), euhedral laths of plagioclase (5 mm), embayed bipyramidal crystals of quartz (2 mm), and subhedral crystals of biotite and hornblende (2 mm). Rims of plagioclase are found on many phenocrysts of potassium feldspar. Rhyolite dikes may display flow banding, and miarolitic cavities are also found in a few rhyodacite dikes. Dikes of rhyolite and rhyodacite are most abundant within the Eocene plutons

Ycs ANDESITE DIKES (EOCENE)--Narrow vertical dikes of porphyritic andesite that are associated with all lithologic units and are not concentrated in any one area. Dark gray, contain plagioclase and pyroxene phenocrysts (0.5-1.5 mm) and glomerocrysts (1 cm) averaging 15-20 percent of the rock. Groundmass consists of plagioclase, cross-hatched titanium-oxide minerals, and rare biotite and (or) hornblende. Angular xenoliths of andesite are present in one rhyolite dike

Tg SYENOGRANITE (EOCENE)--Small bodies of medium- to coarse-grained syenogranite that are satellite to the Painted Rocks, Running Creek, and Whistling Pig plutons. Characterized by sparse dikes of fine-grained syenogranite

Tgr HORNBLENDE-BIOTITE MONZOGRANITE TO SYENOGRANITE OF THE RUNNING CREEK PLUTON (EOCENE)--Medium- to coarse-grained hornblende-biotite monzogranite in the west, and medium- to coarse-grained hornblende-biotite syenogranite in the east. Capped by roof facies of fine-grained equigranular to porphyritic syenogranite; porphyritic rocks contain quartz phenocrysts and glomerophyric clusters of biotite. Accessory minerals include allanite, apatite, baddeleyite, monazite, sphene, thorite, zircon, iron-titanium-oxide minerals, and rare cassiterite. Fresh rocks are pinkish gray; rocks in the western part of the pluton weather gray, and rocks in the eastern part weather pinkish orange. Abundant miarolitic cavities average 4 cm wide by 4 cm deep by 4 cm high and are as much as 15 cm by 25 cm by 30 cm in size. Cavities are commonly lined with crystals of smoky quartz, microcline, and fluorite

Tgw HORNBLENDE-BIOTITE MONZOGRANITE AND SYENOGRANITE OF THE WHISTLING PIG PLUTON (EOCENE)--Porphyritic, gray monzogranite comprises the northern half of the pluton. Contains phenocrysts of orthoclase (15 percent) and biotite and hornblende (8 percent) in a fine- to medium-grained groundmass. Fine-grained cream-colored syenogranite occurs with common miarolitic cavities is found as dikes a few feet wide and as somewhat larger bodies of irregular shape having no apparent trend, and is usually found along borders of medium- to coarse-grained syenogranite. Medium-grained equigranular hornblende-biotite syenogranite makes up the remaining pluton and is usually highly altered; quartz veining, propylitic alteration, and (or) iron-oxide staining often obliterate the original rock fabric. Grades locally into coarse-grained, pink syenogranite along the north side of the Selway River and along Running Creek.

Radiometric dating by potassium-argon methods on hornblende within the pluton yielded a crystallization age of 51.2±1.0 m.y., and a slightly younger rhyodacite dike crosscutting the pluton gave a similar age of 51.1±1.3 m.y. (Robert J. Fleck, written commun., 1982)

Tgp HORNBLENDE-BIOTITE SYENOGRANITE OF THE PAINTED ROCKS PLUTON (EOCENE)--Pink, medium-grained hornblende-biotite syenogranite of the northern margin of the zoned Rocks pluton, exposed in the southernmost part of the wilderness. Outcrops are sparse, and relatively sparse miarolitic cavities 1-3 mm in diameter

Tgz BIOTITE-HORNBLENDE QUARTZ MONZONITE TO QUARTZ SYENITE (EOCENE)--Light-gray, medium- to coarse-grained biotite-hornblende quartz monzonite to quartz syenite exposed at the northwest corner of the Painted Rocks pluton. Texture is equigranular to seriate. Has weak primary flow foliation defined by aligned biotite and hornblende grains and is commonly sheared and altered to chlorite, epidote, and calcite. Map grade transitional from hornblende-biotite syenogranite of the Painted Rocks pluton (Pawlowski, 1982)

TRANSITIONAL MESOZOIC TO EPIZONAL INTRUSIVE ROCKS

TKgb MUSCOVITE-BIOTITE GRANODIORITE OF THE BURNT RIDGE PLUTON (EOCENE OR PALEOCENE)--Medium-grained, light-gray, equigranular granodiorite containing 35-40 percent anhedral to euhedral quartz grains, 40-50 percent oligoclase, 20 percent microcline, and a total of 3-5 percent biotite and primary muscovite. Primary flow foliation is weakly defined by aligned mica grains, and elongate, cigar-shaped quartz crystals. The western margin contains variable-sized inclusions of fine-grained unit TKg and is in places heavily silicified and sillimanite-bearing

TKgq BIOTITE MONZOGRANITE OF THE PIQUETT CREEK PLUTON (EOCENE OR PALEOCENE)--Pink, strongly porphyritic biotite monzogranite, containing 30-40 percent euhedral, pink biotite, lath-shaped euhedral potassium feldspar phenocrysts 5-6 cm long (as much as 10 cm long) in a medium-grained groundmass generally devoid of potassium feldspar. Quartz (25-30 percent) is subhedral to euhedral and has circular to slightly oval cross sections 5-6 mm in diameter; terminated crystals were noted in a few samples. Oligoclase (30-40 percent) is found as subhedral to euhedral grains 3-4 mm long and biotite (3-5 percent) is in 2 mm subhedral, altered flakes. Primary muscovite is absent, but secondary muscovite is abundant from the alteration of plagioclase. Primary flow foliation is weakly defined by biotite and strongly defined by aligned quartz grains. Phenocrysts are locally flow aligned

MESOZOIC INTRUSIVE ROCKS

TKp HORNBLENDE-BIOTITE GRANODIORITE AND MONZOGRANITE OF THE PARADISE PLUTON (PALEOCENE AND (OR) UPPER CRETACEOUS)--Medium-grained equigranular to porphyritic monzogranite and granodiorite; porphyritic rocks have light-pink potassium feldspar phenocrysts 6 mm long in a medium-grained groundmass. The western part of the pluton is compositionally zoned (Toth, 1983), having a granodiorite rim and monzogranite core. Biotite and hornblende comprise 5-20 percent of the rocks, and hornblende is concentrated in the pluton margins. Muscovite is absent. Sphene and allanite are present in trace amounts to 1 percent and are in grains commonly as large as 2-4 mm across.

The pluton is lobe-shaped in the west and has vertical walls, and forms a subhorizontal sheet to the east approximately 5,000 ft thick (sec. A-A') trending N. 40° W. and dipping gently southwest to NE. Southeast of the pluton in the El Capitan and Como Peaks area, the roots of the Paradise pluton crosscut unit TKg for more than 2,500 ft of vertical section and are mapped as TKp

TKd BIOTITE-HORNBLENDE DIORITE, QUARTZ DIORITE, AND TONALITE (PALEOCENE AND (OR) UPPER CRETACEOUS)--Abundant narrow dikes and composite bodies as large as 0.3 mi by 0.3 mi of gray to black diorite, quartz diorite, and tonalite. Fine- to medium-grained equigranular to porphyritic rocks are dominant over porphyritic varieties. Porphyritic diorite has euhedral phenocrysts of plagioclase 2-4 mm long that are locally flow aligned in a dark aphanitic groundmass. In both textural varieties hornblende is dominant over biotite and the latter constitutes 25-40 percent of the rock. Quartz ranges from 0 to 30 percent and plagioclase comprises the remainder of the rock. Accessory minerals are sphene, allanite, apatite, zircon, monazite, and iron-titanium-oxide minerals.

Diorite dikes are too small to show on the geologic map but extend in a dense array from the composite bodies near the Paradise and Cooper Lake plutons. Their maximum extent is 600 ft and they commonly lie within the foliation of the unit they intrude. Composite bodies typically consist of several textural and compositional varieties in complex intrusive relationships with one another is similar to that of the small dikes. The dikes and composite bodies contain angular aphanitic inclusions and xenocrysts of unit TKg; some diorite also is found as isolated inclusions within TKg, suggesting a syndiorite character with unit TKg

TKg MUSCOVITE-BIOTITE GRANODIORITE AND MONZOGRANITE, AND LOCAL RELATED QUARTZ DIORITE, QUARTZ MONZODIORITE, AND SYENOGRANITE (PALEOCENE AND (OR) UPPER CRETACEOUS)--A granitic complex that underlies two thirds of the wilderness. Probably separable into many different phases or plutons, two of which are mapped: a megacryst-feldspar porphyritic variety, unit TKgc, and a complex, anhedral, and thorite pluton at Canyon Lake, unit TKgc.

Unit TKg consists of white to light-gray, slightly porphyritic biotite granodiorite and monzogranite containing subhedral to euhedral feldspar phenocrysts 4-8 mm long in a groundmass of medium-grained subhedral feldspar, anhedral quartz, and biotite; medium-grained equigranular rocks are present in lesser abundance. Biotite constitutes 3-5 percent of the rock and primary muscovite is present in variable amounts rarely exceeding 2 percent. Accessory minerals consist of zircon, apatite, monazite, and iron-oxide minerals.

Primary flow foliation in TKg is weakly defined by biotite and feldspar alignment. At higher elevations, xenoliths, possible autoliths, and schlieren highlight the foliation, and biotite alinement appears much stronger. A mylonitic foliation is intermittently developed in many of the rocks at higher elevations, defined by subgrain development of quartz and recrystallization of biotite and muscovite, and to a lesser degree, recrystallization of feldspar.

Abundant fine-grained equigranular granodiorite to monzogranite dikes crosscut all the plutonic units in TKg and are commonly intruded along foliation planes. Biotite ranges from 5 to 15 percent and primary muscovite is present in trace amounts. Pegmatite dikes show no systematic orientation and are uncommon in unit TKg. They are uniformly coarse-grained, with average grain sizes of 3 to 4 cm. Potassium feldspar dominates over plagioclase, and quartz constitutes the rest of the rock. Biotite and (or) muscovite are rarely present.

Geochronologic studies of several samples from TKg by uranium-lead methods indicate an age of 5214 m.y. for most of the TKg unit (John S. Stacey, oral commun., 1982).

TKgk Feldspar-porphyritic muscovite-biotite granodiorite and monzogranite--Pink, porphyritic containing subhedral to euhedral potassium feldspar phenocrysts 3-5 cm long (as much as 8 cm long), muscovite-biotite granodiorite and monzogranite. Feldspars are stained pink, and sericite and chlorite alteration is abundant, especially along joint surfaces. Potassium-feldspar megacrysts may be late-stage, forming from fluids that accompanied introduction of pegmatite fluids late in consolidation of the unit (Lund, 1980). Contact with the western Whistling Pig pluton is sharp, and with the eastern border of unit TKg is gradational over several hundred yards.

TKgc Biotite granodiorite, monzogranite, syenogranite, quartz diorite and quartz monzodiorite of the Canyon Lake pluton--In the west, monzogranite and granodiorite characterized by large, 2-5 cm, euhedral, zonally poikilitic, Carlsbad-twinned potassium-feldspar phenocrysts constituting 15-25 percent of the rock. Groundmass is medium-grained equigranular and consists of subhedral to anhedral oligoclase, biotite, diorite, and minor orthoclase, 1-3 percent granular magnetite as much as 1 mm in size, and sparse primary muscovite. To the east, fine- to medium-grained equigranular monzogranite symplutonically intrudes the porphyritic monzogranite and granodiorite and is most common along the northern contact of the pluton. Dioritic dikes are common in the east and irregular bodies of quartz diorite, granodiorite, syenogranite, quartz monzodiorite, and diorite are exposed in cross-cutting and deformed relationships as 2 mi². In a few outcrops as many as 12 texturally and mineralogically distinct varieties are emplaced consagmatically. Magnetite is abundant along joint surfaces.

In six localities near the southern contact of units TKgc and Ymi, small (1-12 m²) pods of orbicular rocks are exposed. Orbicules are rare in the Paradise and Canyon Lake plutons. Their maximum extent is 600 ft and they commonly lie within the foliation of the unit they intrude. Composite bodies typically consist of several textural and compositional varieties in complex intrusive relationships with one another. Orbicules are similar to that of the small dikes. The dikes and composite bodies contain angular aphanitic inclusions and xenocrysts of unit TKg; some diorite also is found as isolated inclusions within TKg, suggesting a syndiorite character with unit TKg

TKgc Megacryst-feldspar porphyritic variety--Pink, porphyritic, medium- to coarse-grained biotite-hornblende quartz monzonite to quartz syenite exposed at the northwest corner of the Painted Rocks pluton. Texture is equigranular to seriate. Has weak primary flow foliation defined by aligned biotite and hornblende grains and is commonly sheared and altered to chlorite, epidote, and calcite. Map grade transitional from hornblende-biotite syenogranite of the Painted Rocks pluton (Pawlowski, 1982)

Yq QUARTZITE, MICACEOUS QUARTZITE, AND PELITIC SCHIST (PRECAMBRIAN, MIDDLE(?) PROTEROZOIC)--Fine- to medium-grained white quartzite and micaceous granofelsic quartzite, commonly interbedded with pelitic schist. Quartz (31-97 percent) is found as granoblastic grains 2-4 mm across. Muscovite and platy grains parallel to the schistosity and elongate within the schistosity parallel to other mineral lineations. Plagioclase (0-5 percent; An$_{0}$-An$_{40}$) is unzoned and untwinned in 1-mm granoblastic grains and is commonly altered. Microcline (2-5 percent) is associated with muscovite and sillimanite. Pelitic schist (1-5 percent) is lepidoblastic 1-mm-long flakes. Muscovite (0-39 percent) is highly variable in amount and is mostly in 1-mm euhedral grains and subhedral flakes. Sillimanite (2-13 percent) is in only a few of the samples in 1-mm-long prisms parallel to other mineral lineations. Accessory minerals are magnetite, zircon, baddeleyite, thorite, apatite, rutile, and xenotime

Yqc QUARTZ CONGLOMERATE (PRECAMBRIAN, MIDDLE(?) PROTEROZOIC)--Gray, foliated conglomerate containing 20-40 percent elongate pebbles 5 cm long of white quartz; matrix is similar to unit Yq. Pebbles are made of fine-grained polygonalized and streaked-out quartz, and stringers of sillimanite comprise as much as 20 percent of the pebble

Ycs CALC-SILICATE GNEISS (PRECAMBRIAN, MIDDLE(?) PROTEROZOIC)--Banded, light-green gneiss consisting of saccroidal layers 2-4 cm thick of anhedral diopside, quartz, microcline, and plagioclase, alternating with 1-2 cm thick layers of fine-grained biotite, quartz, plagioclase or hornblende, microcline, and sphene. Quartz (0-52 percent) is in irregularly granoblastic grains 1 mm across or in partially elongate, flattened grains. Plagioclase (An$_{0}$ to An$_{40}$, 26-28 percent) occurs in granoblastic unzoned grains 1 mm across and partly as elongate plates. Biotite (0-24 percent) occurs in 1-mm-long grains and in grain clusters. Microcline is sparse and generally associated with diopside, or more rarely, hornblende. Hornblende (11-16 percent) is found as lineated prisms 2 mm long. Sphene occurs as an accessory mineral in hornblende-bearing bands

Ymi METASEDIMENTARY ROCKS, UNDIVIDED (PRECAMBRIAN, MIDDLE(?) PROTEROZOIC)--Migmatitic gneiss, granofelsic aphanitic schist and gneiss, smaller amounts of amphibolite and biotite quartzite, and sparse calc-silicate gneiss (Lund, 1981). Migmatitically intruded by 20-35 percent granitic rocks, primarily of unit TKg, but also of unit Kt, pegmatite, and aplite. Migmatites are both lit-par-lit style and strongly disharmonic and deformed. In the west, migmatite is partially developed at boundaries between tonalite and monzogranite and granodiorite of the Paradise pluton. In the central and eastern portion of the wilderness may also define pluton boundaries

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a geological survey of the Selway-Bitterroot Wilderness in the Clearwater National Forest, Idaho County, Idaho; the Bitterroot National Forest, Ravalli County, Montana, and Idaho County, Idaho; the Lolo National Forest, Missoula and Ravalli Counties, Montana; and the Nez Perce National Forest, Idaho County, Idaho. The Selway-Bitterroot Wilderness was established as a primitive area by the U.S. Forest Service in 1932, received wilderness classification in 1964, and became a part of the National Wilderness Preservation System with the passage of the Wilderness Act of 1964. To the southwest, the Magruder Corridor (105,600 acres) was added to the wilderness on July 23, 1981, by passage of Public Law 96-312 and is not included in this report.

INTRODUCTION

The Selway-Bitterroot Wilderness covers about 1.25 million acres in east-central Idaho and western Montana (fig. 1). The wilderness lies astride the Bitterroot Range, which forms the boundary between Idaho and Montana, and includes large portions of the drainages of the Selway, Lochsa, and Bitterroot Rivers. Elevations range from 1,600 ft on the Selway River at the northwest boundary to 10,157 ft at Trapper Peak in the Bitterroot Mountains. Cities within 30 mi of the wilderness include Missoula, Hamilton, and Salmon on the east, and Orofino and Grangeville on the west. Access to trailheads near the edge of the wilderness is limited to dirt roads.

This study was conducted as part of a mineral resource appraisal of the Selway-Bitterroot Wilderness. Work on this study was started in 1976, and more detailed sampling and mapping was carried out from 1978 to 1981.

PREVIOUS WORK

Early reconnaissance studies of the wilderness include work by Lindgren (1900, 1904) and Ross (1950) who focused their studies along the eastern border of the wilderness in Montana. Other more recent studies have also been concentrated along the northeastern and eastern margins due to the easier accessibility. Anderson (1959) and Cheney (1972) studied the geology of Bass Creek Canyon; Berg (1964) worked on the petrology of anorthosite bodies in Bass Creek, Kootenai Creek, and Big Creek; Chase (1961) mapped the geology in Lower Swathmore Creek and later studied the regional geology of the northeastern part of the wilderness (Chase, 1968); Groff (1954) mapped the geology in Kootenai Creek; Nold (1968) mapped the geology of the northeastern part of the wilderness (Nold, 1972). Chase's work; and Weaver's (1972) mapped the geology in the Lolo Peak area. Geochronologic studies of the northeastern part of the wilderness were carried out by Ferguson (1975), Chase and others (1978), and Bickford and others (1981). Lund (1980) mapped the Whistling Pig pluton in the central part of the wilderness. Motzer (1981) studied the Running Creek pluton in the southern part of the wilderness, and Wiswall (1979) studied the geology adjacent to Motzer's work near Paradise Guard Station. A reconnaissance study by Greenwood and Morrison (1973) is the only previous study of the entire wilderness.

ACKNOWLEDGMENTS

The following geologists have contributed to this project over the last 4 years: Enid Bittner-Gaber, Richard Bradley, Robert Bruce, Larry Garmezy, William Greenwood, Dirk Hovorka, Mary Ellen Koesterer, Karen Lund, William Motzer, and Rolland Reid. Their contributions have included geochemical sampling and geologic mapping, along with more detailed petrological and structural studies, and most of this report is based on their work.

Figure 1 shows the area of mapping responsibility for each geologist. Bert Coxe, Terry Hayden, Steve Ludington, Feng HaoSeng, Warren Rehn, and Wang Ching-Pi also contributed to sampling and mapping. Those who served as field assistants also made worthy contributions, often serving temporarily as geologists; they include: Debra Ackerman, Cathy Allen, Steve Azadian, Robert Bailey, Dan Birch, Bethany Bye, Debra Callahan, Darcy Campbell, Gregg Campbell, Eban Goodsteth, Sherri Lozon, Grant Meyer, Barry Moffet, Holly Morris, Mike Pawlowski, Casey Schmidt, Jeanne Scott, Din Seaver, Carl Sims, Gary Sims, Mary Anne Smith, and Bob Wheaton.

I am especially grateful to Feng HaoSeng of the People's Republic of China who worked on the project in remote sensing applications in 1981. The quality of this report was improved by the exchange of information between a scientist of the People's Republic of China and scientists of the U.S. Geological Survey.

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GENERAL GEOLOGY

The Selway-Bitterroot Wilderness is mostly underlain by intrusive rocks of Cretaceous to Tertiary age. These rocks comprise much of the northern part of the Idaho batholith, entitled the Bitterroot lobe, and show a strong similarity in age and petrology to other major batholiths in western North America. The granitic rocks intrude highly metamorphosed Precambrian sedimentary rocks which underlie less than 10 percent of the wilderness area. The metasedimentary rocks on the western border of the wilderness have been deformed at least four times, first probably in the Precambrian and three later times related to different stages of batholith emplacement.

Upper Cretaceous and (or) Paleocene muscovite-biotite granodiorite and monzogranite plutons form the major part of the wilderness. They intrude Cretaceous hornblende-biotite tonalite and quartz diorite plutons on the western and southern borders of the wilderness. Complex migmatite terrane sometimes separates the tonalite from granodiorite and monzogranite plutons. The migmatites consist of Precambrian metasedimentary rocks intruded both lit-par-lit and in a random fashion by the granitic plutons. Large, Eocene subalkalic epizonal plutons intrude the granodiorite and monzogranite plutons on the south and southwest sides of the wilderness. Rhyolitic to andesitic tuff and flow deposits possibly related to the Eocene plutons are preserved in two places in down-dropped fault blocks and locally overlie parts of the Eocene pluton on the south side of the wilderness (K. I. Lund, written commun., 1982).

Granitic rocks in this report are classified according to the outlines of the International Union of Geological Sciences (Streckeisen, 1973).

CORRELATIONS

Metasedimentary rocks border the western and northern parts of the wilderness and also are found as large septa and migmatites throughout the wilderness. A thick sequence is exposed along the Selway and Lochsa Rivers. Three broadly defined units are present: calc-silicate gneiss, pelitic schist, and quartzite and biotite quartzite. Greenwood and Morrison (1973) and Nold (1968) tentatively correlated the calc-silicate gneiss to the Wallace Formation, the pelitic schist to the Ravalli Group, and the quartzite to the Prichard Formation, all of the Belt Supergroup. These correlations may hold, but there is no information within the wilderness itself to suggest a consistent stratigraphic sequence as opposed to lateral stratigraphic sequences. Some of the rocks in the western part of the wilderness may be older than the Belt, as suggested by Armstrong (1975) and Jack E. Harrison (oral commun., 1982).

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RECONNAISSANCE GEOLOGIC MAP OF THE SELWAY-BITTERROOT WILDERNESS, IDAHO COUNTY, IDAHO, AND MISSOULA AND RAVALLI COUNTIES, MONTANA

By
Margo I. Toth

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