

REGIONAL GEOCHEMICAL SURVEYS IN NEWFOUNDLAND

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INTRODUCTION

The coverage of regional lake sediment surveys in Newfoundland was extended in 1976 by a survey of 3900 km² area on the Burin Peninsula (Fig. 1). The total area covered by lake sediment geochemistry to date (Fig. 2) is approximately 18,000 km². In addition, uranium has been determined on all lake sediment samples collected from the regional surveys done between 1973 and 1976, on stream sediment samples from the Codroy-Bay St. George area and the Burlington Peninsula, and on rock samples from granitoid plutons in eastern Newfoundland.

BURIN PENINSULA SURVEY

Lake centre sediments were collected from 1294 sites in a 3900 km² area on the Burin Peninsula in the month of July, 1976. The samples have been analysed for uranium by neutron activation/delayed neutron counting, and the results released in open file (Davenport *et al.*, 1976). The samples are now being analysed for Cu, Pb, Zn, Co, Ni, Mo, F, Mn, Fe and L.O.I. (an estimate of organic carbon content), and these data will be released on open file during 1977.

URANIUM IN LAKE SEDIMENTS

To assess the uranium potential of other parts of Newfoundland and to stimulate exploration in the province, about 5500 lake sediment samples collected between 1973 and 1975 have been analysed for uranium by neutron activation/delayed neutron counting. The areas sampled include the Great Northern Peninsula, the Bonne Bay-Port au Port area, the Codroy-Bay St. George area, the Avalon Peninsula, and the Burlington Peninsula (Fig. 2). The uranium data from these surveys have been released on open file (Davenport and Butler, 1976 a).

URANIUM IN STREAM SEDIMENTS

Stream sediment samples collected in 1974 from the Codroy-Bay St. George area and the eastern part of the Burlington Peninsula (Fig. 3) have also been analysed for uranium and the data released on open file (Davenport and Butler 1976 b,c). The sample density of the stream sediments in each area was substantially higher than that of the lake sediments, and comparing the two uranium data sets in each area allows an assessment to be made of the usefulness of stream sediment uranium in following up lake sediment uranium data. It appears that in the sedimentary terrain of the Codroy-Bay St. George area, uranium in stream sediments is of limited use in uranium exploration, particularly using total uranium as determined by neutron activation/delayed neutron counting. The frequency distribution of uranium in this area is approximately normally distributed with a small standard deviation; other methods such as analysis of uranium in stream waters or the use of pathfinder elements in stream sediments might prove more useful. On the Burlington Peninsula, however, there is a strong correlation between the uranium distributions in lake and stream sediments, and the stream sediment data offer a means of more closely defining the bedrock sources causing the uranium anomalies in the lake sediments.

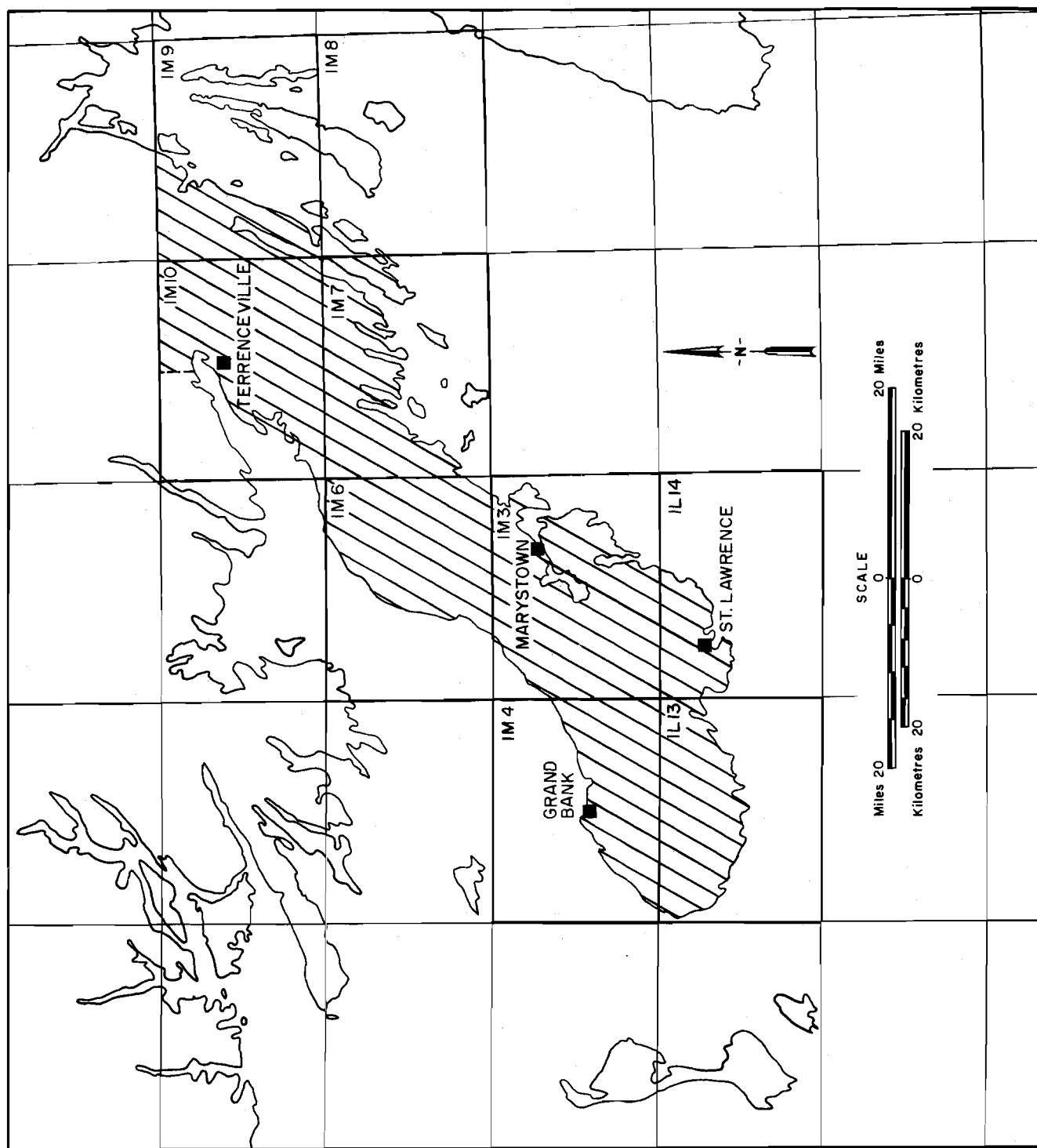


Figure 1. Area covered by geochemical lake sediment survey on the Burin Peninsula

- 1 GREAT NORTHERN PENINSULA AREA
- 2 BONNE BAY-PORT AU PORT AREA
- 3 CODROY-BAY ST. GEORGE AREA
- 4 AVALON PENINSULA AREA
- 5 BURLINGTON PENINSULA AREA
- 6 BURIN PENINSULA AREA



 Lake sediment sampling
 Stream sediment sampling



Figure 2. Location of areas covered by lake and stream sediment sampling in Newfoundland

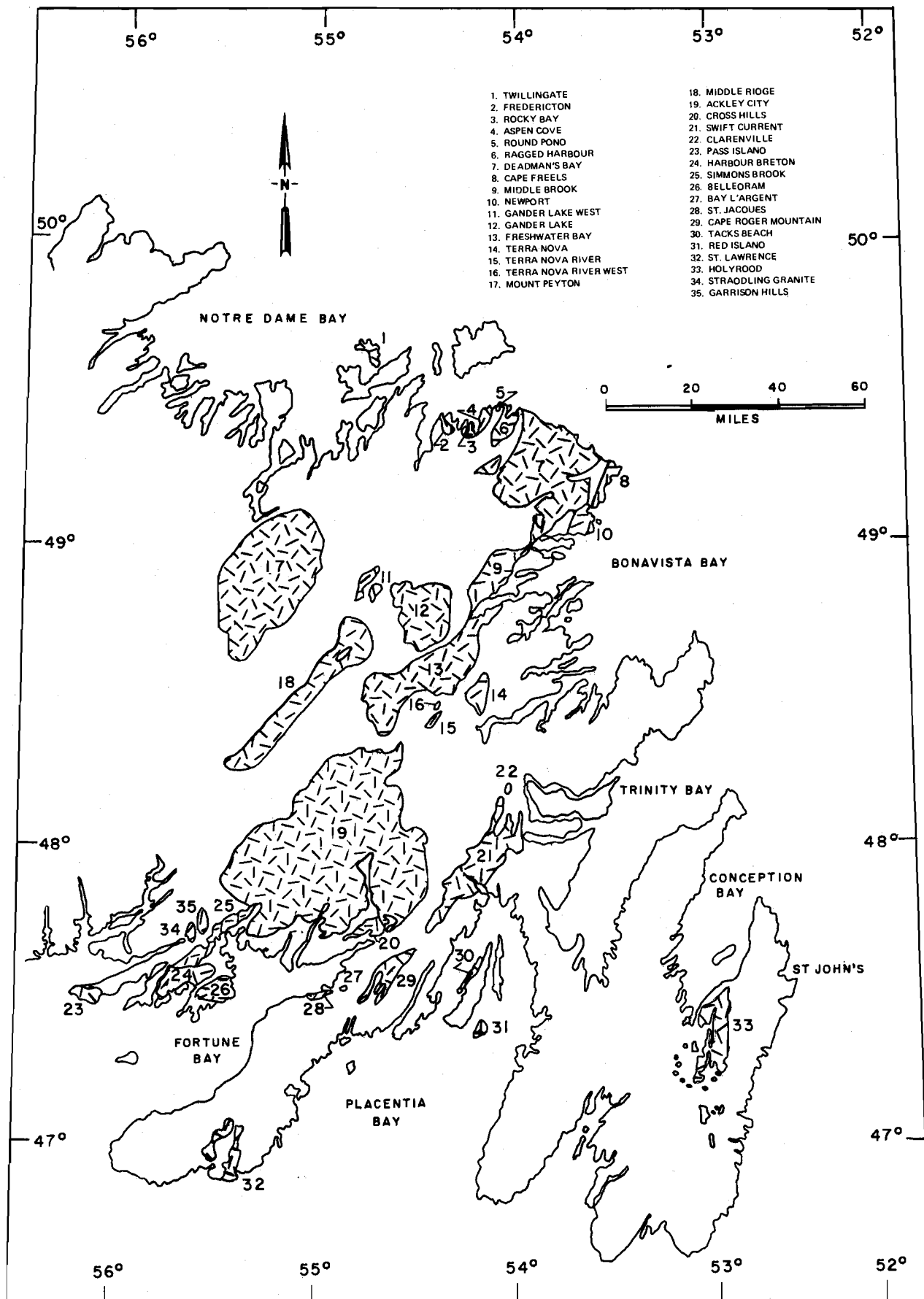


Figure 3. Location map of plutons sampled in regional study of granitoid rocks (after Strong *et al.*, 1974).

URANIUM IN GRANITOID ROCKS

In view of the current interest and activity in uranium exploration in Canada, it was considered opportune to investigate the uranium distribution in the granitoid rocks of eastern Newfoundland. samples of which were available from a previous investigation of the geochemistry of these rocks by Strong *et al.* (1974). The two main objectives were (1) to determine whether there is any empirical relationship between the uranium content of the granitic rocks and known uranium mineralization associated with the granites (e.g., the St. Lawrence Granite), and (2) to allow an evaluation of the degree of correspondence between uranium in lake sediments and in bedrock. The uranium data from 1019 rock samples will be released as an open file in 1977.

REFERENCES

Davenport, P.H. and Butler, A.J.

- 1976a: The distribution of uranium in lake sediment in western Newfoundland and the Avalon and Burlington Peninsulas; Dept. of Mines and Energy, Min. Dev. Div., Open File Nfld. 904.

Davenport, P.H. and Butler, A.J.

- 1976b: Uranium distribution in stream sediment in the Codroy-Bay St. George area, Newfoundland; Nfld. Dept. of Mines and Energy, Min. Dev. Div., Open File Nfld. 906.

Davenport, P.H. and Butler, A.J.

- 1976c: Uranium distribution in stream sediments on the eastern part of the Burlington Peninsula, Newfoundland; Nfld. Dept. of Mines and Energy, Min. Dev. Div., Open File Nfld. 945.

Davenport, P.H., Butler, A.J., and Dibbon, D.

- 1976: Uranium distribution in lake sediments on the Burin Peninsula, Newfoundland; Nfld. Dept. of Mines and Energy, Min. Dev. Div., Open File Nfld. 944.

Strong, D.F., Dickson, W.L., O'Driscoll, C.F., and Kean, B.F.

- 1974: Geochemistry of eastern Newfoundland granitoid rocks; Nfld. Dept. of Mines and Energy, Min. Dev. Div., Report 74-3.