ciences and Humanities Council of Canada
Conseil de recherches en sciences humaines du Canada
P.O. Box 1610
Ottawa K1P 6G4

APPLICATION FOR RESEARCH GRANT

Part A

s should read the *Guide for applicants* and *Instructions* carefully before completing the form. Shaded squares are for office use only.

sed for business purposes

Title: Dr.

Surname: Berkes

First name, initials: Fikret

2 Preferred selection committee: Human Ecology Interdisciplinary

3 Indicate the program to which you are applying
☒ Research Grants Program
☐ Other (please specify) _____

4 Year of birth: 19 45

E

Application No.

Department, institute or school

Department: Urban and Environmental Studies

Institution: Brock University

City: St. Catharines, Ont. L2S 3A1

Office telephone: 416/688-5550 Ext. 3291 (area code)

Home telephone: 682-3946 (city and area code)

6 Mailing address (if no institution affiliation)

postal code

Office telephone _____ (area code)

Home telephone _____ (city and area code)

Present occupation or academic rank

Associate Professor

8 Names and appointments of principal co-investigators

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Date of application: Oct. 15, 1985

10 Type of grant requested: ☐ one year ☐ two year ☒ three year

11 Is a research time stipend being requested? Yes ☐ No ☒

Short title of project

Common Property Resources and Their Sustainable Use

13 Discipline or area

Human Ecology; Environment and Resources

Indicate here the amount(s) requested and the planned starting and completion dates of the proposed grant period(s). Indicate also the total amount of the present request and an estimate of total future funding required to complete the project. Please note that each grant period may not exceed 12 months.

Grant period	I	II	III	Total funds requested
Date (month/year)	from summer 86 to summer 87	from summer 1987 to summer 1988	from summer 1988 to summer 1989	from summer 1986 to summer 1989
Amount(s)	$ 23,506	$ 22,046	$ 22,856	$ 68,408

Estimate of total *future* funds to be requested: from _____ to _____ $ _____

University support – The head of the institution or an authorized delegate should sign here to indicate support and willingness to administer funds relating to this project.

Signature _____

Title Dean, Social Sciences

I have been employed full time in a Canadian university since 1973-74 (except in 1977-78)

Applicant's signature _____

Noted by _____
for department, institute or school

17 Suggested assessors (see Instructions)

Names/ranks/addresses:

A) Dr. Milton M.R. Freeman
Boreal Institute for Northern Studies
University of Alberta
Edmonton, Alberta T6G 2E9

B) Dr. Henry A. Regier
Institute for Environmental Studies
University of Toronto
Toronto, Ontario M5S 1A1

Part B

Statement of qualifications and experience

☒ Principal investigator
☐ Co-investigator

N.B.: For each co-investigator pages 2 and 3 should be photocopied, completed and signed.

18
Surname: Berkes
Given names: Fikret
Year of birth: 1945

19 What languages do you
understand? English, Turkish
speak? English, Turkish
read? English, Turkish, French
write? English, Turkish

20
☒ I am a Canadian citizen
☐ I have been a permanent resident (landed immigrant) since
_____ day/month/year

21 Academic and professional experience

Year from	Year to	Institution/organization	Faculty/dept./school	Position/title/rank
1980	present	Brock University	Urban/Env. Studies	Assoc. Prof.
1978	1980	Brock University	Urban/Env. Studies	Asst. Prof.
1977	1978	Concordia University	Interdisc. Studies	Adjunct Asst. Prof.
1974	1977	Brock University	Biology&Env.Studies	Asst. prof.
1973	1974	Carleton University	Sociology & Anthro.	Postdoc Fellow
1972	1973	McGill University	Biology	Teaching Fellow

22 Degrees and graduate studies

Period of study from	Period of study to	Institution/organization: Name of institution	Institution/organization: Discipline	Graduated: Degree	Graduated: Year
1968	1973	McGill University	Marine Science	Ph.D.	1973
1964	1968	McGill University	Science	B.Sc.	1968

23 Academic awards and distinctions

1971, 1972 NRC Postgraduate Scholarship

1973-74 NRC Postdoctorate Fellowship

Statement of qualifications and experience (continued)

Name
Berkes, F.

24 Research areas of special interest in recent years

Common property resources; human ecology; living resources and their conservation/ management; social and environmental impact studies; resource policies.

25 Relevant or significant publications (list not to exceed the space provided on this page)

Berkes, F. in press. Common property resource management and Cree Indian fisheries in subarctic Canada. In: Capturing the Commons, eds. B.J. McCay and J.M. Acheson, U. Arizona Press.

Berkes, F. in press. The common property resource problem and the creation of limited property rights. Human Ecology.

Berkes, F. in press. Marine inshore fishery management in Turkey: Some examples, problems and prospects. Common Property Resource Management Conference. BOSTID/NRC, Wash.,D.C.

Berkes, F. in press. Fishermen and the "tragedy of the commons". Environmental Conservation.

Kislalioglu, M. and F. Berkes 1985. Ecology and Environmental Sciences. Ankara: Environmental Problems Foundation of Turkey. 361 pp. (in Turkish).

Berkes, F. ed. 1985. Environmental impact of major hydroelectric projects in Canada. Special Issue, Bulletin of the Canadian Society of Environmental Biologists, vol. 42, no. 2.

Berkes, F. 1984. Competition between commercial and sport fishermen: an ecological analysis. Human Ecology 12: 413-429.

Berkes, F. 1984. Alternative styles in living resources management: The case of James Bay, Quebec. Environments 16 (3): 114-123.

Berkes, F. and D. Pocock 1983. The Ontario Native Fishing Agreement in perspective, a study in user-group ecology. Environments 15 (3): 17-26.

Berkes, F., G. Perizzolo and D. Pocock 1983. Fishing effort and processing capacity: Resource management implications. Environments 15 (1): 1-8.

Berkes, F. 1983. Quantifying the harvest of native subsistence fisheries. In: Resources and Dynamics of the Boreal Zone eds. R.W. Wein et al., ACUNS, Ottawa.

Berkes, F. 1982. Energy subsidies and native domestic fisheries in Fort George, James Bay. Naturaliste Canadien 109: 1011-1019.

Berkes, F. 1982. Preliminary impacts of the James Bay hydroelectric development project, Quebec, on estuarine fish and fisheries. Arctic 35: 524-530.

Berkes, F. 1981. The role of self-regulation in living resources management in the north. In: Renewable Resources and the Economy of the North, ed. M. Freeman, ACUNS/MAB, Ottawa.

Berkes, F. 1981. Some environmental and social impacts of the James Bay hydroelectric project, Canada. Journal of Environmental Management 12: 157-172.

Berkes, F. 1980. The mercury problem: An examination of the scientific basis for policy making. In: Environment and Resources Development: Policy Perspectives for Canada, edited by O.P. Dwivedi. McClelland and Stewart, Toronto.

Berkes, F. 1979. An investigation of Cree Indian domestic fisheries in northern Quebec. Arctic 32: 46-70.

Berkes, F. and C.S. Farkas 1978. Eastern James Bay Cree Indians: changing patterns of wild food use and nutrition. Ecology of Food and Nutrition 7: 155-172.

Berkes, F. 1977. Fishery resource use in a subarctic Indian community. Human Ecology 5: 289-307.

Applicant's signature Fikret Berkes Date of submission Oct. 15, 1985

Summary of project

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A résumé of your research project, suitable for presentation at Council meetings, is required. Please provide a concise statement of the general objectives of the proposed research, indicating clearly the work to be undertaken during the period for which support is requested.

COMMON PROPERTY RESOURCES AND THEIR SUSTAINABLE USE

The conventional wisdom regarding common property resources (CPR) is that they tend to be degraded as more efficient technology and increasing population pressures alter balances that were supposed to exist between the resource and the users. One of the implicit asumptions behind this approach is that CPR are free for all or open-access. Under close scrutiny, however, this assumption does not hold up well. For example, it has been shown that the common grazing lands in medieval Europe were not open-access, and that many of the fish resources utilized by inland and coastal marine fishermen were not open-access, either. Often the local community of users exercises access control over the resource.

My work in the area started in 1975 with the analysis of a small local fishery in the James Bay area. In 1979, work was extended to the Great Lakes fisheries. In 1981-83, additional case studies were developed with SSHRC support in a variety of locations, with the general finding that small-scale fisheries nearly everywhere have their own social controls of access. This finding is important on two counts, and directly leads to the present proposal: 1) There is now a sufficient basis to develop a "theory of common property resources". The focus on small-scale fisheries and how they work has provided a framework for studying local-level management institutions; this permits the analysis of the broader issue of CPR use in general. 2) The new interest in local-level management comes at a time when the old resource management approaches are being questioned and alternatives sought. In particular, the importance of local-level management institutions in the ecologically sustainable use of CPR has been becoming a matter of international/global interest.

The proposed study involves continued work with comparative case studies. Many of these are small-scale fisheries (James Bay, the Great Lakes, northern B.C., Turkey, Jamaica, Barbados, and SE England) and one is a hunting-trapping land use system (James Bay). Now that the general workings of local-level management institutions in these areas are in hand, the new focus will be on (a) how they operate over a period of time, (b) the internal and external factors that act on them, (c) in areas where there has been a change in government management policy (specifically the Great Lakes), the consequences of these changes for CPR use, (d) where there have been co-management arrangements, how these have worked.

The proposed three-year project will permit me to follow changes through time in case studies in which only a "snapshot" exists of the resource use situation. Where the analysis already stretches over a period of time, the new project would permit in-depth studies of particularly relevant aspects of the issue, such as the impact of the hydro project on resource use institutions in James Bay. The first year's plan includes the organization of a symposium/workshop to bring together some of the existing empricial information on CPR use and to identify gaps in theory, as well as visits to a selection of case study areas. The second year's plan includes the preparation of a monograph-length work, with provisions to test specific hypotheses by revisiting some case study areas. Substantive analyses will continue through the second and third years, and so will the follow-up of case studies. In the third year, special attention will be given to activities that might have a policy impact on resource management institutions in Canada and elsewhere.

Part D

Description of project

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Please provide supporting information under the following headings, as appropriate, in such a manner as to permit an informed judgment by qualified assessors. It is recognized that some of the categories will not be applicable to all types of research.

The project: scope, objectives, scholarly significance, theoretical approach or categorical framework, research plans and methods; social relevance or practical importance (where applicable); work already completed, in progress, and to be undertaken.

The research team: roles of all members of the research team (where applicable).

The budget: justification of all proposed expenditures.

Selected documents: see *Guide for Applicants.*

Research time stipend (where applicable): see Part C of the *Guide for Applicants* and Part F of this form.

Project description: not to exceed 15 pages single-spaced (7,500 words) including bibliographical notices.

Scope and Objectives

Resources such as fish, wildlife, rangelands, forests and water are usually commonly owned and utilized; they are often referred to as common property resources. Much of the literature on common property resources assumes that such resources tend to be misused and degraded. The eventual destruction of all commonly owned resources is explained by some in terms of a deterministic model (Hardin 1968). The conventional wisdom in the field of resource management is that these resources can only be conserved by means of externally imposed controls on resource use activities. In recent years, this view is being challenged. Some resource managers and scholars have observed that the cost of enforcing externally imposed controls on resource users is becoming very large. Others have observed that market mechanisms may be substituted in place of governmental controls to ensure conservation; yet others have observed that in many cases of common property resource use, social controls exist within the community of resource users. The current "state of the art" is that some authors are recognizing that more than one solution exists to the problem of common property resources: there could be governmental controls, market mechanism controls and/or social controls (e.g. Regier and Grima 1985).

The proposed study is concerned with social controls in the utilization of common property resources, and in particular fishery resources, through the use of a case study approach. In recent years much evidence has accumulated to indicate that the key to management of common property resources is access control. However, the "tragedy of the commons" model of Hardin (1968) and his followers assumes that common property resources are open-access, that is, free to all users. That is simply not true. For example, Cox (1985) showed that the common grazing lands of medieval Europe were not open-access. Berkes (in press a) showed that many of the fish resources utilized by inland and coastal marine fishermen were not open-access but subject to community controls of access. As Regier and Grima (1985) pointed out, the community-based social control of the resource is not intrinsically inferior (or superior) to the usual solution of top-down resource management by centralized government agencies or by market controls. The issue, then, is to seek the appropriate role for local-level management, together with an analysis of its strengths and weaknesses. This is the central issue of the proposed project.

One aspect of this question is how local-level management might fit with market mechanisms such as individually allocated harvest quotas in commercial fishery management. Allocated quotas in combination with license limitation programs are being advocated as the solution to the commons problem (Clark 1981). However, there is not one well illustrated example of a success story of allocated quotas.

A second aspect of this question is how local-level management might fit with central government controls. There is an emerging approach of "co-management" in which government managers and local users work together (e.g. Freeman 1985). There are only a few examples of co-management in Canada, but the findings so far are promising.

Social controls and local-level management involve a diversity of approaches to resource management. They range from fairly simple, flexible arrangements such as the allocation fo the best fishing sites by lottery (Berkes, in press b), to full-fledged common property institutions in which the interactions between the user and the resource (as well as the interactions among the users themselves) are governed by elaborate rules, the very culture of the people concerned (Berkes, in press c). The diversity of social controls is both a problem and a challenge: Many case studies are needed to be able to put together a reasonably cogent picture of local-level common property resource management (McCay and Acheson, in press; BOSTID/NRC, in press). On the other hand, the existence of a wealth of cultural solutions to the question of resource use and conservation is in itself very promising. It is a wealth that has not been tapped much until recently (as the date of the literature so far cited indicates).

The idea of local-level management, while not entirely new, has received widespread interest only recently: "Traditional or local knowledge hass been a greatly neglected resource...Too seldom has environmental planning and conservation involved community and popular participation...Sustainable development to be successfully implemented relies as much on people as it does on scientific methods and techniques. Perhaps more so" (McNeely and Pitt 1985: ix, vii).

The above statements help define the disciplinary scope of the proposed study. Resources are considered in terms of their long-term value, and their development in terms of ecologically sustainable use. Resource use is considered primarily from the point of view of the user. The study is interdisciplinary in scope. It involves an ecological approach to the resource, and a social science approach to the user, having rejected Hardin's (1968) use of deterministic models to the study of human behaviour. Relevant disciplines are anthropology (e.g. McCay and Acheson, in press), human geography, economics and political science (e.g. BOSTID/NRC, in press).

Objectives of the study may be summarized as follows:

(a) To obtain empirical information from a number of case studies of common property resource use, as to the kind and diversity of local-level management that may exist,

(b) To evaluate this information in the context of such information obtained in earlier studies,

(c) To seek the appropriate role(s) for local-level management as part of a comprehensive management plan which may also include market controls and governmental controls,

(d) To study the "ecology" and politics of user-groups' interactions with one another and with the government (e.g. Berkes and Pocock, 1983), and,

(e) To incorporate social concerns into the existing bioeconomic theory of resource management, and to engage in activities which may have an impact on existing resource management policy.

Scholarly Significance and Theoretical Framework

The first formulation of the commons problem and its theory is attributed to Gordon (1954), a fisheries economist, who observed that in an unregulated fishery, profits would dissipate until the values generated from the fishery would be balanced by the costs. Another economist, Olson (1965) is often cited as the first scholar to emphasize the conflict between individual self-interest and the common good: "rational, self-interested individuals will not act to achieve their common or group interests" (Olson 1965: 2). However, Olson was writing about individuals in large groups; for intermediate-sized groups, he was equivocal regarding their potential success in organizing for group interests. The popularizer of the "tragedy of the commons" idea, Hardin's (1968) argument is very similar to Olson's (but there is no reference to Olson). However, Hardin has no qualifications in his argument with respect to group size. Presumably, Hardin's cattlemen who are both the villains and the victims of the "tragedy", could be 3,000 in number or they could be three.

The current formulation of the commons problem has made some headway but not much. The kinds of questions being asked include the group size and the ability to coordinate resource use strategies (after Olson 1965); the importance of mutual trust or mutual promise-keeping among resource users (Runge 1984); the importance of local control of the resource in question (Berkes in press a); conditions conducive for the emergence of user-group organizations or common property institutions (BOSTID/NRC in press; Ostrom in press). Some authors prefer to use the term, "common pool resource", restricting the use of "common property resource" to situations in which common property institutions actually exist (BOSTID/NRC in press; Ostrom in press).

Common Property Resource theory, or what exists of it, cannot be called a very well developed theory. Even the definition of the basic concepts is controversial:

> The mischief to arise from the term "common property" is that many...do not understand the critical distinction between "open-access resources" (res nullius) and "common property resources" (res communes). Open-access is a free-for-all, while common property represents a well defined set of institutional arrangements concerning who may make use of a resource, who may not make use of a resource, and the rules governing how the accepted users shall conduct themselves (Bromley, 1985).

To carry this argument further, property arrangements over natural resources are often thought to be at two extremes: there is either private property or there is a free-for-all. Since a free-for-all will almost certainly result in the degredation of the resource, it is concluded that the solution is to create private property over scarce and valuable resources. But in reality, there is a continuum of resource use systems, from private property to common property to open-access. Only by addressing the reality of such a continuum does it become possible to start analysing the conditions of resource use and misuse which lead to the various management outcomes. As well, the existence of open-access conditions often indicate the failure, for whatever reason, of common property institutions. Thus, it becomes extremely important to study the conditions under which these institutions fail or succeed. To do this, many case studies have to be used systematically: "No genuinely comparative work can be accomplished until scholars have asked similar questions in different empirical settings" (Ostrom in press).

These are the elements of an emerging common property resource theory, at least the kind of theory I would like to contribute to. The current resource management paradigm, however, does not deal with these matters at all. But what it does deal with has changed over the years:

> Over the past 30 years, fishery management has progressed through an infatuation with yield-maximization objectives (dominated by biologists), and value-maximization objectives (dominated by economists). The paradigm in the 1980s involves "optimum yield" objectives, and aims to take into account a multitude of goals, including those of biological, economic, social and political nature, necessitating an interdisciplinary approach (Berkes 1984).

A number of authors have been reaching similar conclusions:

> The next key advance in fisheries management will come about when social concerns can be incorporated into existing bioeconomic theory...If theory is to emerge, it will have to be interdisciplinary and should be robust--adaptable to many circumstances (Hanson 1984).

Fisheries management has a well developed theoretical base (e.g. Gulland 1974). Wildlife and forestry management (to name two other common property resources) have borrowed heavily from the field of fisheries. The usual approach, as Freeman (1985) among others, has pointed out, has been the study of single species, as opposed to the study of whole ecosystems. Many ecologists and conservationists now reject this single species approach (Larkin 1977; IUCN 1980). But there is no consensus as to how the single species approach may be modified: More sophisticated number-crunching or a change in emphasis towards social aspects of resource use? On the one hand, some ecologist-managers have been working on multiple species and ecosystem models. Others, on the other hand, are emphasizing the long-term ecological sustainability of management programs (e.g. IUCN 1980). The logical development here in seeking alternative approaches to management is to look at some local-level (and a few perhaps truly "traditional") systems which have emerged by cultural evolution. The McNeely and Pitt (1985) book, which derives from the work of the IUCN, is one such attempt. The contribution of the proposed work will also be in this direction.

In summary, there are two areas in which the proposed study aims to contribute to existing theory.

(a) Incorporating social concerns into the existing bioeconomic theory, not by adding to the complexity of existing models but by showing the relevance of social concerns hitherto ignored by "one-tool managers" (Regier 1981),

(b) Emphasizing the common features of the different kinds of common property resources, and thus working on a theory of common property resources rather than one on fishery resources. Here I am following the lead of Acheson (1975) and McCay (1980) who initially made major contributions to a theory of local-level management of fisheries but later joined forces with others to tackle the larger issue of common property resources in general (McCay and Acheson in press).

Social Relevance and Practical Importance

Management policy for fisheries and other common property resources is at a cross-roads. Old management approaches are being questioned and alternatives are being sought. At the simplest level, some policy-makers are considering local-level management seriously if only because this may reduce the increasingly greater costs of implementing and enforcing governmental regulations for resource management. At a more complex level, policy-makers and managers are seeking operational definitions of "optimum yield management" that takes into account a multitude of considerations. At yet another level, ecologically-oriented managers are taking a serious look at the evidence that some communities have managed successfuly some of their resources over a longer period of time than have scientific managers. Witness the Peruvian anchovy: developed through the 1960s, collapsed in 1972-73 (Clark 1981). Surely, there is room for improvement in this kind of "management". Even hard-nosed bioeconomic theoreticians are seriously exploring resource user systems in which the predominant interaction is cooperation, not competition (Clark 1981).

A major practical objective of my earlier work was to try to convince fisheries managers that local-level internal regulation of resource use does exist in fishing communities, and that government regulations would be more effective and credible if such internal regulation is taken into account. This objective now looks much more reachable than it did only a few years ago. Specifically, I intend to give special attention to activities that might have a policy impact on resource management institutions in Canada and elsewhere. There are three organizations to which I have gained membership through my activities under my last SSHRC-supported project, one national, one bi-national and one international. Each of these organizations is in a position to have some impact on resource policies in their respective spheres:

(a) Canada Man and the Biosphere (MAB) Working Group on Human Ecology of Coastal Areas,

(b) American Fisheries Society (AFS) Native People Fisheries Committee, and

(c) Commission on Ecology, International Union for Conservation of Nature and Natural Resources (IUCN) Working Group on Traditional Ecological Knowledge.

I have made a conscious effort to apply relevant research findings to practical and ongoing management problems. In the case of James Bay, results of previous studies were made available to the joint management committee (government and native representatives) on hunting, fishing and trapping (see letter by Chief Bobbish), and the James Bay Remedial Works Corporation (SOTRAC). In the case of the Great Lakes study, results are being used in the reformulation of fishery management policies and, specifically, by fisheries associations to help argue their case in management discussions. The results of the proposed studies will similarly be made available to the individuals and groups involved, with an effort to apply the findings to current management problems (there are always some).

Research Plans and Methods

The proposed study involves continued work with comparative case studies. Most of these are small-scale fisheries: a native subsistence fishery in Chisasibi, eastern James Bay; commercial fisheries in Lake Erie and Lake Ontario (several fisheries); commercial and subsistence fisheries in northern British Columbia, the Nass River area; the Turkish Aegean and Mediterranean (several fisheries); Jamaica and Barbados; trawl and mixed fisheries in SE England, Folkestone area. One of the case studies involves a hunting-trapping land use system (Chisasibi). Not all of these necessarily need to be followed up. New case studies, although not formally planned, may be developed opportunistically, that is, if I am in the area for a conference or scholarly visits.

Now that the general workings of the local-level management institutions in the above-named areas are in hand, the focus of the proposed project would be on:

(a) How they operate over a period of time, that is, are the arrangements stable or not,

(b) What factors operate on them and affect their stability,

(c) The effect of new government management policies on the local system, and

(d) The success of co-management arrangements, if any.

The rationale for this approach is as follows. My work on the human ecology of small-scale fisheries started in 1974 in James Bay. In 1979, work was extended to the Great Lakes area. In 1981-83 additional case studies were developed with SSHRC support in a variety of locations. The proposed three-year project will permit me to follow changes through time in case studies in which only a "snapshot" exists of the resource use situation. Where the analysis already stretches over a period of time, the efficacy of longitudinal studies may be judged fom the publications already produced. In such cases, the new project will permit in-depth studies of particularly relevant aspects of the common property issue in each of the case studies.

The proposed project is the logical extension of the previous three-year SSHRC project. The longer-term perspective and the comparative approach of using case studies have worked well in trying to achieve my scholarly and practical objectives. While much of the same case studies as before are to be used in the proposed work, the focus of inquiry keeps evolving, with the result that there is little or no repetition but rather a greater understanding of depth.

In the James Bay case, the focus of studies has already changed several times, from adaptations of the local fishery (Berkes 1977), to regional resource planning (Berkes 1981), to impact assessment of the hydro project (Berkes 1982). The most promising areas now, in the context of common property resources are (a) longer-terms shifts in the resource management system, showing that common property institutions have more resilience than previously suspected in pre-project impact studies, and (b) more detailed work on the Cree cosmology and conservation philosophy behind land use and resource management institutions. Work on both of these areas has already started, the latter one with the cooperation of a self-selected group from the local Cree Trappers Association. The aim of the CTA group is the production of educational material for the benefit of younger potential hunters, and the strengthening of their resource use rights in the face of such threats as the anti-trapping movement.

In the case of Great Lakes area studies, new work will focus on two issues: (a) an evaluation of the quota management system first implemented in 1984, and (b) a study of the shifting balance between the two major user-groups, with recreational fishermen pressuring towards the phasing out of some commercial operations, especially in eastern Lake Ontario.

The British Columbia study is particularly relevant on the question of co-management. The Nishga Indians want the restoration of their traditional control over the salmon of the Nass River basin, and have made some progress with the Federal government (but not with the Provincial government). There is good potential for comparing the James Bay case with the Nass River case, in terms of evaluating co-management models.

There is considerable existing work in Atlantic area studies. Part of the task is to touch base with some of the major scholars (Acheson, McCay, Hanson, others, such as Andersen 1978). There is some very interesting work coming out of France as well (Arzel 1984). A British contact is P.M. Blaikie, School of Development Studies, U.of East Anglia, Norwich, located near the declining fishing area of SE England. Here the issue would be the sustainable re-development, or perhaps, "de-development", of fisheries. In contrast to the British case, Caribbean fisheries case studies have allowed me to explore the economic development aspect of the common property resource question. There is one paper in press (Berkes in press b) and two in preparation based on these case studies. There appears to be an interest in development circles on the topic of sustainable develoment based on locally-appropriate resource use practices (McNeely and Pitt 1985). To continue this work, contacts have been maintained with the University of West Indies (J. Woodley, Marine Lab, Discovery Bay, Jamaica; W. Hunte, Barbados), Bellairs Research Institute (Barbados); A. Akyarli, University of the Aegean/Dokuz Eylul University, Izmir, Turkey, and F. Bingel, Marine Science Institute, Middle East Technical University, Mersin, on the Mediterranean coast of Turkey.

The following information will be collected at these various areas. The first six items refer to the updating of information which already exists. The last four items cover the main focus of the proposed study.

1. Background information on the operation: fish species, fishermen and boat numbers/types by area; equipment used.

2. Socio-economic information on the fishery: Are the boats owner-operated? Organization of unit of production; Is it a "traditional" fishery?

3. Regarding the nature of the common property resource: Is the fishery open-access or not? What social regulation exists, if any?

4. External regulation: What government regulations apply to the fishery? How do these work?

5. What limits the fishery? Fishing equipment? Adverse environment? Processing capacity? Market availability?

6. Status of the fishery: Is the fishery successful or not?

7. How have the above (points 1 to 6) changed over time?

8. What factors have been acting on existing common property institutions? (New developments in the area, such as hydro development in James Bay; changing technology, markets, etc.; new and different user-groups in the area; changes in the organization of the original users themselves,)

9. Impact of changing government policies, such as the impact of new quota management measures in the Great Lake. Changes in the relationships of user-groups as a result of policy changes.

10. Evaluation of any attempts at co-management; joint government-industry management in the Great Lakes, the "Hunting, Fishing and Trapping Coordinating Committee" in James Bay.

To obtain the above information, the following sources and research methods will be used: Meetings with local fishermen, individually or in small groups; meetings with local fishermen's organizations, associations and cooperatives; meetings with fishery scientists and managers; review of available technical literature, reports, government statistics, management circulars; fieldwork with participant observation techniques to obtain first-hand knowledge of the operation, to identify techniques, gear and species utilized. The use of a combination of such approaches has already been tested and shown to be workable. Although the emphasis changes from area to area, the bulk of the research information comes from open-ended interviews to obtain contextual information; questionnaire forms are not used and interviews are not tape-recorded. Low-profile investigation techniques, as opposed to more obtrusive techniques, have been found to be more effective in the long run in this kind of work. Bulk of the information tends to come from master fishermen and available documents, supplemented by participatory fishing.

Regarding ethical guidelines for research with human subjects, all interviews will be done on an informed consent basis; all individual information (and other information not already public) will be kept confidential; notes on any damaging information (illegal fishing etc.) will be deleted from the records. The main data and notes will not be destroyed since they will be needed for the long-term evaluation of resource use. But they will be kept in a safe place accessible to no one but myself and any research assistants who may be dealing with that area. As well, it has been my policy to feed the information back to the users themselves, and also to get their comments on draft papers prior to publication.

Work Already Completed

In terms of fieldwork scheduled for the years 1986-89, scholarly contacts and local arrangements have all been made. Nevertheless, schedules do not always work out exactly as planned, and additional contacts are being developed from time to time. In terms of background work in the subject area of common property resources, I already have some scholarly papers in press (Berkes in press a; b; c). The proposed work would build on these findings.

A major piece of work has already been started on the conservation philosophy of Chisasibi Cree hunters-fishermen. There have already been several versions of a draft report which becomes successively more complete as the members of the cooperating Cree Trappers Association working group add to the draft. Recently completed work with a Max Bell Foundation grant on the synthesis of ecosystem research in the Great Lakes is likely to result in the production of a major monograph on the subject, co-authored by the team of Ontario scholars who undertook the project. The emphasis in this study is "ecosystem rehabilitation"; common property resources and their sustainable re-development is also a major theme. The 1983 sabbatical project in Turkey supported by the UNDP resulted in the production of a scholarly text on ecology and environment in Turkish. Among other things, the book argues the need for the sustainable use of natural resources, and sets the basis for new research, in Turkey, on coastal fishery resources.

Status of the present SSHRC budget:

My current SSHRC grant (1983-86) has not yet been exhausted, and will not have been exhausted by April 1986. It will probably last until summer 1986 at which time I plan to start on the new project, if the application is successful. The remaining funds may run out faster if a proposed SSHRC postdoctoral fellow is also successful in his application and comes to work with me. In this case, I plan to make available to him part of my remaining travel and subsistence budget to enable him to undertake fieldwork in the Great Lakes area.

As well, I am scheduled to organize and chair a workshop/symposium on "Ecology and the Management of Common Property Resources" at the Fourth International Congress of Ecology, August 1986, Syracuse, New York. This will bring together some of the existing empirical information on common property resource ecology, and help identify gaps in theory. As such, it is very much a part of the first year's plan of work. A second relevant conference is on Fisheries Co-management, co-organized with Dr. E. Pinkerton, UBC. Funds from SSHRC will be sought to bring together a small group in spring 1986 at Vancouver.

Schedule of Work to be Done and the Budget

The budget is calculated on the basis of the following schedule of activities.

(a) Chisasibi, James Bay: Three or four trips per year, one week per trip, for each of the three years.

(b) Great Lakes area: Excluding work done by the research assistants, 15 days of fieldwork in each of the three years, based primarily in three areas, eastern Lake Erie (Port Stanley), western Lake Erie (Wheatley), and eastern Lake Ontario (Picton).

(c) Turkey, south and west coasts: One trip of 20 days (four locations) in each of the two years of the study out of three.

(d) Caribbean area (Jamaica, Barbados and possibly other): One trip of 10 days in each of two years of the study out of three.

(e) Northern British Columbia: One trip of 20 days in the Prince Rupert area, several locations,one out of three years.

(f) Atlantic area (SE England, possibly Canadian maritimes or France): One trip of 14 days, one out of three years.

Some flexibility exists in the plan in case arrangements do not work out and other opportunities become available. Such flexibility would of course be subject to budgetary limits and SSHRC consent.

Assistants will be employed in the Great Lakes studies only. A total of 45 days of field work and 30 days of subsistence is allocated to assistants (not every day of field work will entail full overnight costs). The research assistant will follow up on day to day changes in the fishery management regime in Ontario's Great Lakes. This can be covered by part-time work. The student assistant will work on specific but related areas. Technical assistant will be employed for data processing, preparing maps and figures. An average of $1,500 per year is allocated for this purpose, on a contract basis, for three years. Only the James Bay area work requires a specific allocation for equipment expenses for field work. The phone budget is substantial, but the savings in terms of time and travel expenses are also substantial. This budget was calculated on the basis of $40-50 per month (which is the current cost). The photocopy budget reflects the cost of xeroxing, say, 20 copies of five 50-page papers or reports (20 X 5 X 50 X 6¢ = $300) per year. It would also include the cost of copying reports and scholarly papers needed for research and not readily available through the library system.

No other research support is currently available for the years 1986-89. However, attempts will be made to find additional support, especially to help with the expenses involved in James Bay and Great Lakes area studies. Projected future costs have not been entered. The direction of the work in 1986-89 will determine future plans. It may be expected that future work will be on some aspect of common property resources, involving new questions that may emerge, using perhaps one or more of the case study areas in the present proposal. If so, future costs may be on the order of the present costs plus support for possible graduate or PDF-level researchers.

Research Permission: Foreign Countries and Native Peoples

Jamaica and Barbados: Authorization for research is not a formal requirement in this area. Arrangements have already been made with local research and educational institutions (details given above).

Turkey: Authorization for research is not a formal requirement in this area. Arrangements have already been made with local research and educational institutions (details given above).

Northern British Columbia: Work will be done in the fishing port of Prince Rupert, and in government offices. No work is planned on native reservations.

James Bay: A letter of permission from Chief James Bobbish of Chisasibi is attached. This is permission for ongoing research in the area, and the Band Council specifies its rights to cancel this permit at any time.

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Part E

Project budget

28 Summary budget – If more than one year is requested, an itemized budget must be included for each 12-month period. Those requesting a second and/or third year of support are asked to photocopy and complete pages 7 and 8 of the application form.

	Grant period I	Grant period II	Grant period III	Projected future costs
Period to be covered by this and anticipated future requests	from summer 86 to summer 87	from summer 87 to summer 88	from summer 88 to summer 89	from to
Summary of amounts requested per period	$	$	$	$
Personnel costs	8,440	8,440	8,440	
Transportation	5,486	4,986	5,436	
Subsistence	6,360	5,400	5,760	
Technical services	1,500	1,500	1,500	
Research equipment, supplies and materials	1,720	1,720	1,720	
Research time stipend				
principal investigator				
co-investigator(s)				
Other				
Total costs	23,506	22,046	22,856	
Total funds available from other sources — Do not include personal income.	--	--	--	
Grant requested	$ 23,506	$ 22,046	$ 22,856	$

29 Other support — Please indicate below any other granting bodies from whom you have requested or plan to request funds for this research.

Organization and title of project	Amount requested	Present status of request
	none	

30 Other Council support — Please indicate below any other Council programs to which you are applying or intend to apply in the near future in connection with this research project.

Program	Amount requested	Present status of request
SSHRC Occasional Scholarly Conferences,"Fishery Co-management" Vancouver, spring 1986, jointly with Dr. E. Pinkerton, Dept. of Anthro., UBC	about $7,000	to be submitted Oct. 30, 1985

Project budget (continued)
Grant period I ☒ II ☐ III ☐

(each grant period not to exceed 12 months)

31 Personnel costs — **Clear justification for a research time stipend and/or for the hiring of all personnel must be presented in the project description.**

	Number, monthly rate and period of employment	Amount claimed
Research assistants	One, part-time (2d/wk) $500/mo X 8 mo	4,000
Student assistants		
graduate		
undergraduate	One, 2 X $1,000/mo	2,000
	8 X $ 305/mo	2,440
Clerks/stenographers/typists		
Technicians		
Others		
Research time stipend for private scholars (including fringe benefits)		
principal investigator		
co-investigator		
	Total	8,440

32 Transportation — Identify person(s) for whom a transportation allowance is requested and list the place(s) to be visited. Where air service is available, economy fare is allowable, but charter flights should be arranged where possible. **Justification must be presented in the project description.**

Name(s)	Destination	Mode of transport	Basis of calculation	Amount claimed
F. Berkes	James Bay	airfare	3 trips X $650	1,950
F. Berkes	Great Lakes	car	6 trips X 400km per trip X 16¢/km	384
Assistants	Great Lakes	car	18 trips X 400km per trip X 16¢/km	1,152
F. Berkes	Turkey	airfare&local	$1100+$100local	1,200
~~F. Berkes~~	~~Prince Rupert, B.C.~~	~~airfare&local~~	~~$500+$300local~~	~~800~~
			Total	5,486

33 Subsistence — Identify person(s) for whom subsistence is claimed and indicate duration of visit in each location. Specify per diem amounts claimed in accordance with current allowable rates. **Justification must be presented in the project description.** A subsistence allowance may not be claimed for more than four months per period of 12 months.

Name(s)	Location	Number of days	Basis of calculation	Amount claimed
F. Berkes	James Bay	21	106 days X $60/d (not more than 14d in any one location/trip	
	Great Lakes	15		
	Turkey	20		
	B.C.	20		
Assistants	Great Lakes	30		
			Total	6,360

Project budget (continued)
Grant period I ☒ II ☐ III ☐

34 Technical services — This may include the cost of technical consultation, surveys or other services to be contracted out. Full details should be presented in the project description.

Type of service	Basis of cost	Amount claimed
Technician, draftsman, data analyst	Contract basis Computer costs covered by Brock University	1,500
	Total	

35 Research equipment, supplies and materials

Item	Basis of cost	Amount claimed
Rental of fishing equipment (James Bay)	$40 per fishing day X 18 d	720
Telephone	$40-50 of LD calls/mo	500
Photocopy, maps, supplies, etc.		500
	Total	1,720

36

Other expenditures (specify)	Basis of cost	Amount claimed
	Total	23,706

Project budget (continued)
Grant period I ☐ II ☒ III ☐

(each grant period not to exceed 12 months)

31 Personnel costs — **Clear justification for a research time stipend and/or for the hiring of all personnel must be presented in the project description.**

	Number, monthly rate and period of employment	Amount claimed
Research assistants	One, part-time (2d/wk) $500/mo X 8 mo	4,000
Student assistants		
graduate		
undergraduate	One, 2 X $1,000/mo	2,000
	8 X 305/mo	2,440
Clerks/stenographers/typists		
Technicians		
Others		
Research time stipend for private scholars (including fringe benefits)		
principal investigator		
co-investigator		
	Total	8,440

32 Transportation — Identify person(s) for whom a transportation allowance is requested and list the place(s) to be visited. Where air service is available, economy fare is allowable, but charter flights should be arranged where possible. **Justification must be presented in the project description.**

Name(s)	Destination	Mode of transport	Basis of calculation	Amount claimed
F. Berkes	James Bay	airfare	3 tripsX$650	1,950
F. Berkes	Great Lakes	car	6 tripsX400km per tripX16¢/km	384
Assistants	Great Lakes	car	18 tripsX400km per tripX16¢/km	1,152
F. Berkes	SE England	airfare&local	$600 + $200	800
F. Berkes	Jamaica	airfare&local	$600 + $100	700
			Total	4,986

33 Subsistence — Identify person(s) for whom subsistence is claimed and indicate duration of visit in each location. Specify per diem amounts claimed in accordance with current allowable rates. **Justification must be presented in the project description.** A subsistence allowance may not be claimed for more than four months per period of 12 months.

Name(s)	Location	Number of days	Basis of calculation	Amount claimed
F. Berkes	James Bay	21	90 days X $60/d (not more than 14d in any one location/trip	
F. Berkes	Great Lakes	15		
F. Berkes	England	14		
F. Berkes	Jamaica	10		
Assistants	Great Lakes	30		
			Total	5,400

Project budget (continued)
Grant period I ☐ II ☒ III ☐

34 Technical services — This may include the cost of technical consultation, surveys or other services to be contracted out. Full details should be presented in the project description.

Type of service	Basis of cost	Amount claimed
Technician, draftsman, data analyst	Contract basis	1,500
	Total	

35 Research equipment, supplies and materials

Item	Basis of cost	Amount claimed
Rental of fishing equipment (James Bay)	$40 per fishing day X 18 d	720
Telephone	$40-50 of LD calls/mo	500
Photocopy, maps, supplies, etc.		500
	Total	1,720

36

Other expenditures (specify)	Basis of cost	Amount claimed
	Total	22,046

Project budget (continued)
Grant period I ☐ II ☐ III ☒

(each grant period not to exceed 12 months)

31 Personnel costs — **Clear justification for a research time stipend and/or for the hiring of all personnel must be presented in the project description.**

	Number, monthly rate and period of employment	Amount claimed
Research assistants	One, part-time (2d/wk) $500/mo X 8 mo	4,000
Student assistants		
graduate		
undergraduate	One, 2 X $1,000/mo	2,000
	8 X 305/mo	2,440
Clerks/stenographers/typists		
Technicians		
Others		
Research time stipend for private scholars (including fringe benefits)		
principal investigator		
co-investigator		
	Total	8,440

32 Transportation — Identify person(s) for whom a transportation allowance is requested and list the place(s) to be visited. Where air service is available, economy fare is allowable, but charter flights should be arranged where possible. **Justification must be presented in the project description.**

Name(s)	Destination	Mode of transport	Basis of calculation	Amount claimed
F. Berkes	James Bay	airfare	3 tripsX $650	1,950
F. Berkes	Great Lakes	car	6 tripsX 400km per tripX16¢/km	384
Assistants	Great Lakes	car	18 tripsX 400km per tripX16¢/km	1,152
F. Berkes	Turkey	airfare+local	$1100 + $100	1,200
F. Berkes	Barbados	airfare+local	$650 + $100	750
			Total	5,436

33 Subsistence — Identify person(s) for whom subsistence is claimed and indicate duration of visit in each location. Specify per diem amounts claimed in accordance with current allowable rates. **Justification must be presented in the project description.** A subsistence allowance may not be claimed for more than four months per period of 12 months.

Name(s)	Location	Number of days	Basis of calculation	Amount claimed
F. Berkes	James Bay	21	96 d	
F. Berkes	Great Lakes	15	X	
F. Berkes	Turkey	20	$60/d	
F. Berkes	Barbados	10	(not more	
Assistants	Great Lakes	30	than 14d in any one location/ trip)	
			Total	5,760

Project budget (continued)
Grant period I ☐ II ☐ III ☑

34 Technical services — This may include the cost of technical consultation, surveys or other services to be contracted out. Full details should be presented in the project description.

Type of service	Basis of cost	Amount claimed
Technician, draftsman, data analyst	Contract basis	1,500
	Total	1,500

35 Research equipment, supplies and materials

Item	Basis of cost	Amount claimed
Rental of fishing equipment (James Bay)	$40 per fishing day X 18 d	720
Telephone	$40-50 of LD calls/mo	500
Photocopy, maps, supplies, etc.		500
	Total	1,720

36

Other expenditures (specify)	Basis of cost	Amount claimed
	Total	22,856

Chisasibi Band Council

Chisasibi, Quebec

May 26, 1983

TO WHOM IT MAY CONCERN:

RE: Fikret Berkes
Fisheries Research.

Dear Sir/Madam:

This letter pertains to Fisheries Research that has previously been done and the need for the continuation of such research. This work has been done by Dr. Fikret Berkes and by this letter, the Chisasibi Band Council gives permission to Dr. Fikret Berkes to continue the fishery study for the 1983-86 period. The Band Council reserves the right to cancel this permission at any given time.

The past work of Dr. Fikret Berkes has been used by the Cree Regional Authority and the Chisasibi (Fort George) Band Council as well as the Co-ordinating Committee on Hunting, Fishing and Trapping.

Yours sincerely,

CHISASIBI BAND COUNCIL

Chief James Bobbish

JB/rm

P.O. BOX 150 • CHISASIBI, QUEBEC • J0M 1E0 • (819) 855-2878

Part G

Research grant application checklist

39 Please check the appropriate boxes on the right indicating that the necessary information and/or materials are included with your application. Each applicant is responsible for ensuring that the application is complete.

Name of Applicant	included	not applicable
1. All information on page 1 including applicant's signature and departmental and university signatures.	✓	
2. Project summary (page 4).	✓	
3. Project description not exceeding 15 pages (7,500 words single-spaced), including a bibliography of all references cited.	✓	
4. Eight copies of all questionnaires and research instruments.		✓
5. Progress report from previous grant if the present request is for renewal of support *(Guide*, paragraph 124).		✓
6. Curricula vitarum for principal investigator and all co-investigators. Pages 2 and 3 must be duplicated if necessary, completed, signed and dated.	✓	
7. New applicants are encouraged to provide eight copies of an article or paper as a sample of their previous work.		✓
8. Detailed budget for each year of support requested (pages 7 and 8 should be duplicated if necessary and completed).	✓	
9. Details of research time stipend if requested (page 9 must be duplicated if necessary, completed, signed and dated).		✓
10. Details of qualifications, tasks and responsibilities for all personnel to be hired. Student status should be indicated *(Guide*, paragraphs 33-40).	✓	
11. Number of hours to be worked per month, hourly and monthly rate of pay and period of employment for all personnel.	✓	
12. Detailed justification for any travel and subsistence requested *(Guide*, paragraphs 62-72).	✓	
13. Detailed justification for any consultation expenses requested *(Guide*, paragraph 61).		✓
14. Details of computer costs: hours/rates, etc. *(Guide*, paragraphs 78-79) as well as other technical services (paragraph 73).	✓	
15. Detailed justification for any equipment purchase or rental including statement from university confirming that such equipment is not available for loan *(Guide*, paragraphs 80-82); plus explanation of costs for supplies, duplication.		✓
16. For all research involving human subjects, the certificate of ethical approval must be completed and submitted with the applications. Please note that this includes experiments, interviews, observation and access to any personal information *(Guide*, paragraphs 52-54). ☒ to come	✓	
17. For projects involving a) survey research, or b) preparation of research tools such as bibliographies and concordances, the relevant Council Guidelines have been consulted and the appropriate information provided *(Guide*, Part C).		✓
18. Proof of citizenship.		✓

Please note that if your research involves native peoples, travel to foreign countries, or access to institutions or controlled sources of information, the Council will release funds only on receipt of evidence that the appropriate authorizations have been obtained, where this is a formal requirement. Since obtaining such permission is often a lengthy process, applicants are advised to seek the necessary authorization as early as possible.