

RESOURCE USE CONFLICTS IN THE COASTAL ZONE:  
A CASE STUDY OF FORESTRY/RECREATION  
CONFLICTS IN HOWE SOUND, BRITISH COLUMBIA

by

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#### ABSTRACT

Resource managers have become increasingly concerned with the special problems of allocating resources with efficiency and equity in the coastal zone. This has arisen due to failures of the traditional allocation mechanisms and shifts in the nature of coastal resource demands. As these demands increase, many individuals and groups find that their resource use is either mutually exclusive of, or in some degree of incompatibility with, the uses of other individuals or groups. When traditional allocation mechanisms fail the resulting stress introduced into a system may lead to resource use conflicts.

To improve the resource management and land use planning process, the existing and potential conflicts that give rise to the need for management should be examined. To aid in this direction the thesis offers a conceptual framework of resource use conflict at the local or regional scale. This framework identifies the perceptions and attitudes of different resource consuming groups to conflicting demands as the critical component needed to provide managers with the information with which to formulate policy.

The thesis examines the conflict between recreational boaters and the forest industry that use the resources of

Howe Sound, British Columbia. A mail-back questionnaire of the perceptions and attitudes of the recreational boaters was used to gather the data on conflicts. A total of 72 usable questionnaires were returned and this information was supplemented with over 50 informal interviews and numerous site visits.

The boaters' resource demands on Howe Sound are considered in the context of the area's role as an urban recreational hinterland to Greater Vancouver, and in the context of the existing institutional framework of resource allocations. Howe Sound is seen as an area in transition from an economy based on the primary extraction and processing of resources to an economy reflecting important residential and recreational resources uses. The thesis argues that the existing institutional framework has failed to reflect these changing values towards the land and water base.

The data gathered reveal two major conflicts. The first between boaters and the forest industry is generated by pulp mill effluent discharge, logging debris in the water, and restricted access to the foreshore due to log storage. Equally important, however, is an internal conflict amongst recreationists themselves due to overcrowding in favourite destination sites. This overcrowding was a direct result of a lack of moorage opportunities in other areas of the Sound.

The thesis concludes that these conflicts could be reduced or resolved by the existing institutions and that large scale adjustments in the management framework are not required. The thesis also argues that the research approach of utilizing a conceptual framework of conflict and employing a perception and attitude questionnaire will provide decision makers, managers and planners with a better understanding of resource preferences and demands and will thus lead to more efficient and equitable resource allocations.

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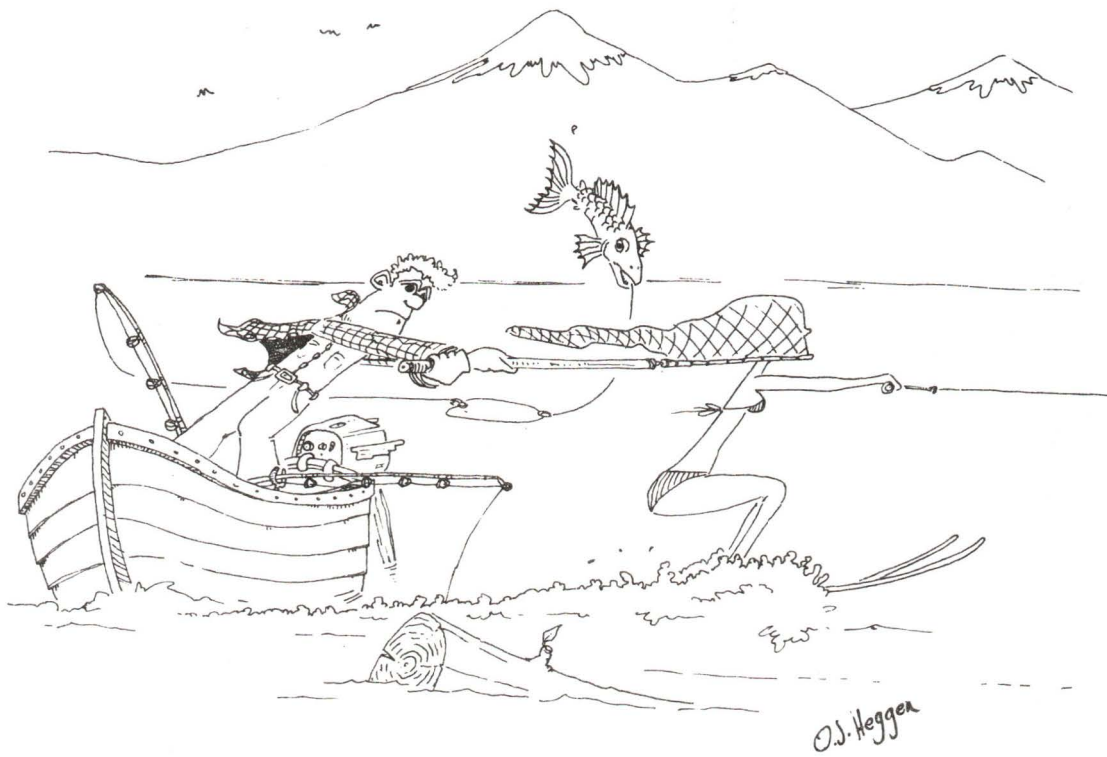
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## CHAPTER 1

### INTRODUCTION

#### *1.1 The Coastal Zone*

Resource managers have become increasingly concerned with the special problems of allocating resources with efficiency and equity in the coastal zone. The problems of resource allocation in a coastal province such as British Columbia can be especially acute when it is considered that over 75% of the population lives in close proximity to the coast, and that much of the economic activity is directly tied to the use of coastal resources. At the same time, the coastal zone is experiencing major growth in terms of population, commercial and industrial activities and recreation oriented uses of the resource base. Barker (1974) notes, for example, that during the decade 1961-1971, the population of the southern portion of B.C.'s coastline rose over 60%. This would suggest increasing demands on the limited coastal resources of the region.

In many circumstances these new demands have led to resource use conflicts. As limited resources become increasingly scarce, competition for land and water space in the coastal zone intensifies and undermines the ability of traditional resource allocation mechanisms to make an

efficient and equitable distribution of those resources.

There is much to suggest in the literature that the special nature of the coastal zone has contributed to the failure of these traditional allocation mechanisms (Ferguson, forthcoming).

This concept of resource use conflict can be clarified by adapting Boulding's well-accepted definition of social conflict. In *Conflict and Defense* (1962), he begins by defining competition in its broadest sense as existing "when any potential positions of two behaviour units are mutually incompatible" (p. 4). This is a broader concept than conflict which Boulding defines as "a situation of competition in which the parties are aware of the incompatibility of potential future positions and in which each party wishes to occupy a position that is incompatible with the wishes of the other" (p. 5). [In the context of resource conflict, this definition may be extended to define a situation where two or more parties are competing for the use or exploitation of a particular resource or territory, and where their uses are either mutually exclusive or to some degree incompatible.]

Boulding distinguishes between competition and conflict. He notes that in a conflict situation, both parties are aware of each other and wish to occupy the other's position. These concepts of awareness and desire do not readily help distinguish between resource competition and conflict. In

most resource issues the awareness and desire already exist, and do not appear to help in making a conceptual distinction. Dobriner's (1969) distinction would appear to be more useful. In a conflict situation he contends that accepted normative means (rules) to resolve the conflict have been rejected, while in a situation of competition, these rules are still observed by both parties. "The competitors are struggling to obtain a mutually desired goal, but the struggle is shaped by rules that both agree to observe" (p. 95).

In resource conflicts, then, this distinction can be extended to say that conflict differs from competition in that in a conflict situation, the traditional resource allocation mechanisms, the private market and government institutions have broken down and have failed to provide an efficient and equitable distribution of resources that is acceptable to both parties. In a situation of simple competition, the conflicting resource demands will not have led to a failure of traditional mechanisms, and the existing mechanisms can still provide an acceptable allocation. In the coastal zone, three major factors have caused the failure of allocation mechanisms and therefore led to resource conflict: the failure of the private market, the lack of an appropriate institutional response, and the shifts in the nature of the demand for coastal resources.

## 1.2 Market Failure

Traditionally the private market has been the major mechanism for allocating resources. The causes of market failure however are complex. Sewell (1976) cites three distinct reasons: externalities, common property resources, and the provision of public goods.

Seneca and Tausig (1974) also cite the externalities problem as the most common cause of market failure. Sewell (1976) takes the example of an upstream discharge of effluents that increases costs to the downstream producers, adversely affects fish populations, or impairs outdoor recreation opportunities in the lower reaches of a river. In the coastal zone of British Columbia, effluent discharges from pulp mills create external disbenefits, cause a diverse array of environmental problems and devalue the net benefits of resource use to recreationists. While this failure of producers to internalize all of the costs of their productive process is one that is common to all environmental economics, many authors have revealed how externalities can intensify the impact of market failure in the coastal zone (Bish, Warren, Weschler, Crutchfield & Harrison, 1975; Knetsch, 1971).

Market failure can also be linked to the common property nature of one-half of the coastal zone--the water component (Harrison, 1973). Because the water component is

a common property, however, no property rights have been designated to an individual that would facilitate transactions on the private market. The land component, however, has distinct property rights that allow some form of adjustment by the market. As with all common property resources, the coastline demonstrates the problem "that when everybody shares the ownership of a resource, there is a strong tendency to overexploitation and general misuse of that resource" (Seneca & Tausig, 1974, p. 70). This overexploitation is what Hardin (1968) has described as the "Tragedy of the Commons." Ross (1973) has demonstrated how this problem of common property resources has caused wide ranging international problems in the transportation of oil on the high seas and in enclosed coastal areas.

The demand for public goods in the coastal zone also represents a major barrier to resource allocation by the private market. Ducsik (1974) notes that as many public uses such as recreation fail to articulate some mode of value expression or price, the shoreline becomes over-committed to capital intensive, industrial or commercial development. He states:

. . . when prices do not exist for products such as clean air (or recreation), markets will tend to over-commit resources to the production of other products, thereby foreclosing the opportunity to allocate some of those resources to more valued (but misrepresented) uses (p. 66).

In many areas of the coastal zone, there is a failure of the market to realize the total social benefits of non-priced

public goods.


The problems of resource allocation for public use are further exemplified by what Coomber and Biswas (1973) note as "environmental intangibles." The authors assert that these intangibles, which range from the social costs of environmental deterioration to the value of the recreation experience must be a part of the decision process in order to "preserve the aesthetic qualities of the environment, to supply the demands of recreation and conservation and to satisfy non-users' option demand" (p. 9). In the coastal zone these intangibles can be considered as "all those components of environmental appreciation, entailing either observation or physical exploitation, which are not directly quantifiable or if quantifiable, cannot be measured by the market mechanism" (p. 1).

### *1.3 Institutional Responses*

In cases where markets fail, the traditional response has been that of direct intervention by governments. Much of the response to coastal problems in the United States has been one of government intervention characterized by the creation of coastal zone management agencies. The report of the Commission on Marine Science Engineering and Resources, *Our Nation and the Sea*, recommended that a "Coastal Zone Management Act be enacted which will provide policy objectives for the coastal zone and authorize federal grants-in-

aid to facilitate the establishment of State Coastal Zone Authorities empowered to manage the coastal waters and adjacent land" (p. 57). This report led to the federal Coastal Zone Management Act (1972). As a result, numerous states passed legislation to create state institutions. In the state of Washington, the response was more immediate and in 1971 the Washington Shorelines Management Act was passed. It required that counties submit coastal land use management plans to the state for approval (Bish et al., 1975).

In Canada, due to the very nature of the federal union, the situation has been different. While a Coastal Zone Commission has been proposed for British Columbia in the form of a private member's bill introduced by Harold Steeves (NDP, Richmond) (Bill 14, 1975), it never went beyond first reading. There appears to be doubt if the U.S. experience can be applied to Canada or even if these approaches are the best solution to the problems in the United States itself. Harrison (1974) argues that resource conflict is not necessarily due to the lack of centralized planning institutions but rather a lack of co-ordination and an absence of decision information between the various levels of government. It must also be questioned if local needs and aspirations can be met by highly centralized planning agencies.



In British Columbia, the complex institutional and jurisdictional framework clearly demonstrate the inadequacy of present institutions to co-ordinate effective and

integrated planning and to reduce or eliminate conflict. Barker (1974) has shown that the "existing legislative framework is a complicated picture of overlapping responsibilities and problems caused by a lack of communication" (p. 50). She cites the numerous agencies involved in shoreline planning and development:

. . . municipalities, regional districts, railroads, port authorities, and the provincial Department of Lands, Forests and Water Resources, the Department of Highways, the Pollution Control Branch, the Department of Municipal Affairs, and the Department of Recreation and Conservation. Superimposed on these agencies are the federal Ministry of Transport, the Minister of State for Urban Affairs, and the Department of the Environment (p. 49).

Added to this list could be the Environment and Land Use Committee, the new provincial Ministry of the Environment, as well as international interests. It should also be noted that numerous groups within each of these departments or agencies will also be involved.

As Barker concludes, the responsibilities of government are extremely fragmented and often result in inter-agency conflicts. It might also appear that many of these agencies are unaware of the special nature of the coastal zone and the tremendous importance of the biological and geo-physical processes that characterize the shoreline. The institutional adjustments that are needed to compensate for the inadequacies of both the market and the existing institutions have not yet been made in Canada and it is still unclear as to what form these adjustments will or should take (Ferguson,

forthcoming). It remains, however, that the existing institutions have failed as an alternative allocation mechanism to the private market.

#### *1.4 Coastal Resource Demands*

Failure in the private market and institutional structures are accentuated by the shift in the nature of the demand for coastal resources. This factor intensifies the market and institutional failures and creates pressure for adjustment. Coastal resource demands in British Columbia have always been dynamic in nature (Gibson, 1976). However, with rising affluence in Canada, different resource use activities are emerging with new capabilities to pay location rent on the shoreline. Bish et al. (1975) make the distinction between two types of usage: final consumption and intermediate production. Final consumption uses are those whose benefit from the usage of the shoreline is the final consumption benefit. Harrison (1973) cites these uses as "non-commercial activities" that are income expending in nature, such as parks, recreation and summer homes. Intermediate production uses are those production processes whose shoreline location is intermediate to the consumption of the final product. These activities gain a comparative advantage by being located on the shoreline, are income generating in nature and tend to be commercial activities. Such examples as oil refineries, fish processing plants and pulp

mills use the shoreline for production of the final product but not consumption.

It is clear that, due to changing societal factors, such as greater affluence, increased leisure time and demand for outdoor recreation, the use of coastal zone resources is shifting towards consumptive, non-commercial uses. Bish et al. (1975) show that between 1956 and 1971 on Puget Sound, these final consumption activities rose twice as fast as intermediate production activities.

The importance of this trend to coastal zone resource allocation is that "coastal use may therefore be unrelated to the location requirements of traditional coastal activities, and more related to their ability to arbitrate with other activities and to compete for waterfront space" (Harrison, 1973, p. 4). It is possible therefore that traditional uses such as commercial fish docks may be forced to relocate due to competition from another activity with a greater ability to pay economic rent. A good example of this in B.C. is the relocation of industries outside of False Creek in Vancouver where they are being replaced by housing developments and marinas (Gibson, 1976). These types of adjustments are difficult to control or plan with the traditional allocation mechanisms.

The failure then of the private market and traditional institutions and the shift in the nature of the demand for coastal resources has led to misallocations of the resource

base of the coastal zone. It is clear that if this misallocation continues, conflicts over resource use may intensify and reach a critical stage. However, it has been argued (Barker, 1974) that these conflicts have not yet reached that stage. There is therefore an excellent opportunity to take strong initiatives to set new goals, policies and management programs to deal with these conflicts before adjustments become impossible. This is consistent with the desire to move from "crisis reaction planning" that merely responds to conflict to co-ordinated long range planning that attempts to minimize conflicts in the future (Barker, 1974). For example, future conflicts on a region's resources might be avoided by recognizing now that emerging demands will create pressure on that resource, and that the present allocative mechanisms will be inadequate to avoid conflict. Rather than reacting in the future to the problem, resource plans could be instigated in the present that would better serve all potential resource consumers.

An important initiative in this direction is to explore and research the existing conflicts on the B.C. coast. If these are fully comprehended in terms of their causation, magnitude and spatial distribution, decision makers and planners will gain an important insight into future management directions. One area in particular that is little understood but critical is the perceptions and attitudes of the different resource consumers to conflict. There are few

effective existing mechanisms whereby consumers can articulate their dissatisfaction with present allocations or express why they feel one consumer's use is conflicting with theirs and how this might be minimized. This is especially true where their use is not easily priced. It must be discovered if consumers perceive whether any conflict, realized or potential, exists at all. It is also important to know if consumers feel that they can co-exist with other uses, or if a particular use precludes another. Finally it must be understood what resource allocations they perceive as legitimate alternative demands on the coastal resource base. It will be argued in this thesis, that this approach, utilizing the concepts of resource use conflict, is a critical preliminary step towards good environmental management and land use planning.

One of the best examples of the conflict between an intermediate production activity and a final consumptive activity is the conflict between forestry and recreation in Howe Sound. The region is becoming an urban recreational hinterland of the Lower Mainland area and at the same time supports two pulp mills, logging activity, a sawmill and contains extensive log booming areas. It can be argued that problems encountered in Howe Sound are a microcosm of some of the problems to be found on the entire coastline of British Columbia.

This thesis examines the resource use conflicts between forestry and recreational uses of the resources of the coastal zone of Howe Sound. The central hypothesis to be tested is that recreational users of the resource base of Howe Sound perceive a conflict between their activities and those of the forest industry. Other hypotheses to be tested suggest that the central reason for this perceived conflict is the over-competition for resources by recreationists, and that these recreationists distort the true conflicts by blaming industrial uses for the conflicts that are a result of their own activities.

At the same time the usefulness of the "conflict approach" to resource management will be evaluated to determine its effectiveness as a viable methodology. The conceptual framework that underlies this approach is discussed in Chapter Two which reviews the appropriate literature and relates this approach to resource conflicts in the coastal zone. Chapter Three is a description of the study area and reviews the existing resource use in the region. Chapter Four introduces the methodology of the questionnaire that was used to determine the perceptions and attitudes of the recreational boater to resource conflicts and then examines in detail the results. Chapter Five puts these findings into the context of the significance of Howe Sound as a recreational hinterland of Greater Vancouver and the nature of the institutional setting for recreation plan-

ning. This section illuminates the problems and challenges associated with planning for the needs of the recreational boaters. The concluding chapter summarizes and identifies the implications of the findings of this thesis both in terms of the specific nature of the resource use problems of Howe Sound and in terms of the approaches used in the context of the research.

## CHAPTER 2

### A CONCEPTUAL FRAMEWORK OF RESOURCE USE CONFLICTS AT THE LOCAL OR REGIONAL SCALE

Conflict is an activity that is found almost everywhere. It is found throughout the biological world, where the conflict both of individuals and of species is an important part of the picture. It is found almost everywhere in the world of man, and all of the social sciences study it. Economics studies conflict among economic organizations-firms, unions and so on. Political science studies conflict among states and among subdivisions and departments within larger organizations. Sociology studies conflict within and between families, racial and religious conflict, and conflict within and between groups. Anthropology studies conflict of cultures. Psychology studies conflict within the person. History is largely the record of conflict. Even geography studies the endless war of the sea against the land and of one land form or one land use against another. Conflict is an important part of the specialized study of industrial relations, international relations, or any other relations.

Kenneth E. Boulding,  
*Conflict and Defense* (1962)

#### *2.1 Introduction*

\* The existence of conflicts among men, ideologies, societies and even nation states can perhaps be seen as part of the human historical experience (Boulding, 1962). Beginning at the point where individuals first began to covet their neighbour's wives, cows or territory, conflicts have been a common element of man's development. Conflict can even be viewed as the cause of, or at least the stimulus that has led to the progression of man from a primitive

animal to the development of the intensively technological creature of the twentieth century. Many scholars in political science and sociology have attempted to conceptualize these processes in the formulation of conflict theory. This theory attempts to understand and order these conflicts so that they can be examined, and their role in their societal context can be understood.

In the fields of resource management, environmental management and land use planning, little attempt has been made to utilize the approach provided by conflict theory. Although it is the competition for or conflict over scarce resources that is the basis and *raison d'être* for these fields, the concentration of current research has been on the resolution of conflicts by planning or institutional adjustments, without first conceptualizing the problems in terms of conflict theory. O'Riordan's (1972) review of "Environmental Management," for example, outlines extensively the interests of current research, but the emphasis is on a conceptual framework of the "management" of the environment without first conceptualizing the resource use conflicts that give rise to the need for management.

This approach is dangerous since it may lead to a very narrow research framework. Because the researcher may not have an adequate understanding of the mechanisms of the conflict that gave rise to the need for resolution, the range of alternative solutions considered can become narrowed

considerably. For example, Castle and Rettig's (1972) review of land use conflicts emphasizes a redefinition of property rights, while other authors only consider market solutions (Harlow, 1974; Seneca & Tausig, 1974). Further still, Hargis' (1972) work on "Solution to Conflict in the Coastal Zone" only sees the resolution of resource conflicts in terms of sweeping changes in the institutions and jurisdictional framework of resource management.

J. D. Eyles' (1974) excellent review of "Social Theory and Social Geography" demonstrates how the concept of conflict can be used to provide a broader and more unified conceptual framework for research. After an extensive review of current literature and the theoretical basis of modern social geography, the ideas of conflict, power and inequality are explored in an attempt to provide a new basis for research. Eyles concludes by stating that:

While it is not suggested that these other concepts have been ignored in social or geographic research . . . or that normative structures should be ignored, it was deemed necessary to explore conflict, power and inequality and some of their ramifications . . . at the expense of what appeared to be, for present purposes, less relevant yet perhaps more explicitly spatial phenomena, for example, the impact of planning on spatial systems. But this somewhat aspatial and even discursive approach presents the view of conflict, power and inequality as being rooted in the bedrock of any social and economic system. Because of this and because of the interrelationships of a social system and spatial system, . . . the concepts must make up the core of a social geography rooted in social reality (p. 64).

Eyles expands on this concept of conflict at the root of social systems (and therefore a legitimate starting point

for conceptualization) in his earlier work on "Conflict and Territoriality" (Eyles, 1969). He reviews how territoriality and the possession of territory "provide a new basis for studying behaviour in space, from which we can discover new concepts or perhaps indicate the validity of old ones" (p. 15). Eyles' concepts of territory are analogous to the concept of property rights or a claim to a resource in the study of resource conflicts, and thus his review of stress, threat appraisals and coping strategies may provide a basis for the understanding of resource use conflicts.

This chapter attempts to utilize and apply the concept of conflict, as defined in Chapter One, to provide a conceptual framework for the examination of resource use conflicts as an approach to resource management and regional planning. The emphasis of the chapter is on conflicts at a local or regional scale rather than at a global or international scale as these wider scales have been dealt with to a certain extent in some of the literature on geopolitics and political geography. The framework provided may also have implications for conflict research on the international scale as many international conflicts are not in themselves political or ideological, but rather stem from a conflict over the control of particular resources.

## 2.2 A Preliminary Conceptual Framework

With the definition of conflict from Chapter One in mind, a preliminary conceptual framework of resource use conflict can be developed (Figure 2.1). This framework traces the process of conflict beginning with an expression of a demand by two or more potential resource consumers for a particular resource. If consumer demands are not met, the stress caused may lead to one of four major types of conflict. Depending on the amount of stress involved, the property rights of the consumers and the power that they hold, each consumer will respond to the conflict either by ending their own consumption or by some form of reaction (called a negative response in Figure 2.1). This will lead to the pressure on a resolution mechanism such as the private market or a government institution, to adjust or respond to the conflict.

These resolution mechanisms in resource use conflicts are generally long range in perspective and do not necessarily provide immediate solutions. The short term solutions are usually provided by the judicial system or by some form of government adjudication. For example, a conflict may temporarily be relieved by a court injunction that delays a particular development. The long term resolution mechanisms that are of more interest to resource managers and planners are identified here as market solutions, direct government

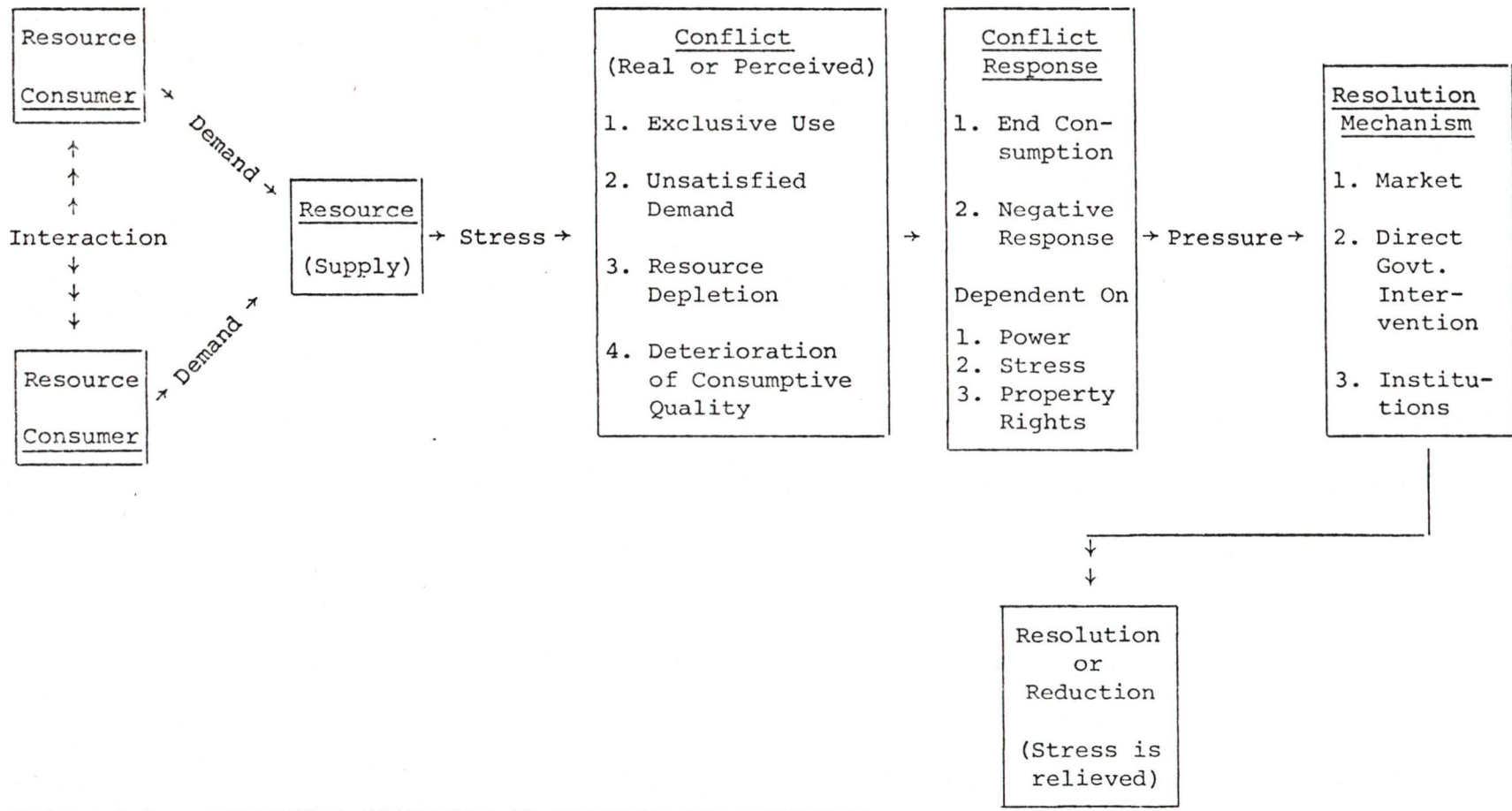


FIGURE 2.1. CONCEPTUAL FRAMEWORK OF RESOURCE USE CONFLICTS

intervention (zoning, restrictive legislation) and institutional adjustments. These mechanisms can be considered as successfully resolving the conflict when the stress that created the conflict is relieved or when both consuming groups have had their demands satisfied.

It must be emphasized that it is entirely possible that many existing and emerging conflicts cannot be resolved, and that either one or more of the consumers may not be satisfied. In a case such as this, the unsatisfied consumer may continue to fight for further adjustment for a long period of time and may only abandon his fight when his energy or interest wanes or he loses his power. The unsatisfied consumer may also lie dormant until some change occurs in the system (such as the election of a government more responsive to him) and then re-open his conflict and push for a more satisfactory resolution. Certain conflicts then may exist for a long time if stress is insufficient to force some form of conflict response.

A further important point is that not all conflicts are inherently bad by nature. The process of conflict and resolution may be the means by which society evolves and changes to adapt to new values and ideologies (Wright, 1951; Boulding, 1962). The bargaining and trade-offs that take place in a resolution situation probably provide for much more effective long term solutions than a sudden revolution in the whole pattern of resource consumption. This can

perhaps best be illustrated by a step-by-step examination of the conceptual framework outlined in Figure 2.1.

### *2.3 Resource Demand and Supply*

As stated previously, conflicts over resources and territory are not new to mankind. Castle and Rettig (1972, p. 207) note that, "Property rights and law have long encompassed land resources. This reflects the realization that a systematic basis is needed to resolve conflicts in the use of land. But it is not the conflicts as such that are new, rather it is the intensity, the nature, and the source of conflicts that deserve attention on the contemporary scene." The authors note the increasing utilization of land for consumptive purposes (recreation or aesthetic appreciation) over the more traditional productive purposes (farming, mining or forestry). This has led to a much more intensive pressure on what were once over-abundant land resources that are also feeling the pressures of the population explosion. Other effects such as rising affluence, increased leisure time and vastly improved mobility due to technological improvements in transportation have also contributed to this increased pressure on the land. North America's limitless resources have now very quickly become, in economists' terms, "scarce."

*land.*

*NT*

Ross and Marts (1975) have also demonstrated the impacts that changing environmental attitudes (societal values) have

*NT*

\* | on resource demands and development programs, especially those constructed over time. The authors note that decisions based on the environmental attitudes at one particular point in time were the major causes of a large scale resource conflict in the Skagit Valley. In this case the values of society in the 1920's were projected onto land use decisions in the 1970's resulting in resource use conflict.

\* | In many cases the effect of this increasing pressure on resources is that some of the demands of some consumers are not being met. This is the process then that leads to conflict, as stress is introduced into the situation. Eyles (1969) notes that this stress leads to conflict when a person reacts to the stimulus that is causing the stress. In discussing territory, Eyles notes that this reaction is normally hostility if an individual feels that his territory is threatened. Different types of conflict response will be discussed later in this chapter.

#### 2.4 *A Typology of Resource Conflicts*

It is important to note that not all resource conflicts have the same causes and this will have important implications in terms of the responses to that conflict. A typology is developed in the conceptual framework that divides conflicts into four major types: exclusive use, unsatisfied demand, resource depletion, and deterioration of consumptive quality. Each conflict type is not distinct, however, and

in fact, a particular situation may be a combination of several types but the present typology is useful for clarification.

1. Exclusive use conflicts can be considered as those where one consuming group's use excludes another. A good example might be the building of a port in an estuary where ecologically important wetlands are lost forever. In this case a bird-watching society that visited the estuary will never again be able to use the resource as the establishment of the port may have filled or dredged all those areas frequented by wildlife. The response of the excluded group will be dependent on the reversibility of the project or the possibilities for restoration of the resource. For example, the conflict caused by the temporary closing of a forested area to use by hikers will be resolved when the area is re-opened to recreationists.

An excluded group may still continue to pressure for a more satisfactory resolution even when there are no possibilities for the recovery of a resource. For example, a bird-watching society may press the port development authority for compensation either in terms of monetary reimbursement or a moratorium on further development in estuaries. In many cases, though, this type of conflict is often most easily resolved (although least satisfactorily) as the excluded group may simply realize that the resource is gone and turn their attention elsewhere.

2. A conflict of the unsatisfied demand type is somewhat different. In this case one or both consuming groups' demand for a resource remains either wholly or partially unsatisfied. This may often be the case in the competition for residential or recreational land on the foreshore, where a developer may get part of a piece of land, and a regional parks board another piece. For each consumer, only part of their demand has been satisfied and another part remains unsatisfied. The response in this case is often to attempt to exclude the other consumer or to gain property rights to that resource. A slightly different example would be the competition for timber rights by two logging companies where one will try to exclude the other by either buying out the competitor or by bidding a higher price for the timber rights.

This type of conflict results most often when some preliminary trade-off or bargaining has already taken place and, depending on the nature of the resource, it offers the most possibilities for further adjustment. A good example of this dynamic evolution is the conversion of agricultural land to residential purposes. As the demand for residential land may be more powerful in terms of its ability to pay economic rent for the resource, more and more farmland may be continually lost to residential subdivision.

3. The resource depletion conflict is closely related to the previous type. In this situation one consuming group

*to find a solution may get k*

continually depletes a resource over time so that another consuming group can only partially utilize the resource. Thus, as in the previous case, one group's demand will be unsatisfied. This type of conflict occurs most often when the same resource is being used for two different types of consumption. A good example is the conflict between commercial and sport fisheries. The activities of the commercial fleet may deplete the resource to the point where the sport fisherman may no longer catch enough fish to make it worthwhile to continue. Responses to this type of conflict will again be dependent on the power of each consuming group to restrict or prohibit the other group's consumption pattern.

4. The final type of conflict is the situation where one group's consumption of a resource causes a deterioration in the quality of another group's consumption. For example, the recreational use of a water body may deteriorate if the effluents from a pulp mill in the vicinity begin to affect the quality of the recreation resource. This type of conflict occurs most frequently in cases of environmental spillovers or with the existence of extensive externalities created in the production process. It can be resolved by the introduction of pollution control legislation that forces a producer to internalize the costs of his productive process. (This situation is different from the resource depletion situation in that resource depletion conflict refers to a decline of the quantity of the resource while

this situation refers to the quality of the resource. )

The difference between real and perceived conflicts is a further distinction that should be made when differentiating between types of conflict. This distinction becomes most important when an attempt is made to measure the actual conflict. In many cases it is often assumed that a conflict exists just because two consuming groups appear to be in opposition. As this may not be the case, perhaps the most useful measure is to examine the responses of the consumers themselves. The problem with this behavioural measure is that a consuming group may perceive themselves to be in conflict when in fact no real conflict exists. The most acceptable solution to this dilemma is to accept that perceived conflicts will elicit the same responses as real ones as the consumer will not himself make this distinction. Therefore, the pressure put on the resolution mechanism will be similar if the conflict is either real or perceived.

It can be seen, then, that conflicts can be caused by many different factors and often a strict typology may be somewhat limited. The actual causes of a conflict, real or perceived, will be a mix of many factors and thus the typology presented here should be considered as only a guide to the identification of conflicts. Any given situation may include elements of all four types of conflict.

### 2.5 Conflict Responses

The response of a consumer to conflict is perhaps the most important factor in determining the resolution mechanism and the possibilities for satisfactory resolution. Eyles views the response as a result of what he terms "threat appraisal." He states that this threat appraisal will be "based on various cognitions such as learning, perception and judgment, and is dependent on motivational characteristics, belief concerning environmental transactions and intellectual resources" (Eyles, 1969, p. 12). Once the threat has been appraised, the consumer will be motivated to respond in many different ways. This response will be dependent upon the degree of stress put on the consumer (how much he feels is at stake) and if he feels genuinely threatened. The response will also depend upon the power of the consumer, or more directly stated, his ability to challenge the other consumer in a legitimate manner.

In addition to conditioning the response, the power of a consumer (if he has enough of it) can directly affect the final outcome of the conflict. If an individual consumer is challenging a large corporation, the immense power of the corporate body may stop the conflict from proceeding to the resolution stage, and the corporation may effectively block any recognition of the other consumer's demands.

The property rights of each consumer also condition response in that the holding of the property rights to a resource gives the consumer a much greater degree of power and legitimacy. To take the example of the bird watchers in the estuary again, their case in a conflict situation would be considerably weakened if the port development authority gained property rights to the estuary and acquired a foreshore lease. These three response conditioning factors; stress, power and property rights, should be examined carefully as the decision maker must be aware of how they interact in a given situation. These conditioning factors are outlined for the case study in Chapter Five by attempting to place resource demands in the context of regional planning. In addition it can be seen how the type of response will also condition whether or not a resolution mechanism will be employed and the type of mechanism that is used.

Response may be of two major types. The first would be for the consumer to simply stop or end his consumption of the resource in the face of the challenge from the other consumer, hence resolving the conflict. This is often the case in a conflict of the exclusive use type or in a situation where the other consumer is so powerful that no amount of opposition will affect him. This type of response may also occur when an alternative resource is readily available to one of the consuming groups.

The second type of response can be termed the negative response, where one or both parties decide to oppose the other. There are a wide range of possible actions in this type of response, ranging from the writing of a letter, to covert sabotage or even open physical conflict. In many cases, the lack of organization of a diverse consuming group, such as recreationists, will inhibit those consumers from making a direct response to the conflict situation as individually they may feel powerless to make any such response. If, however, the response is strong enough, then this pressure will lead the consumers involved to resort to some form of resolution mechanism.

#### *2.6 Resolution Mechanisms*

As discussed earlier, there are two types of resolution mechanisms that are needed to reduce resource use conflicts. The first are those immediate ones needed to temporarily relieve stress in a given situation. These range from court injunctions or other judicial decisions to direct intervention by governments or their peace keeping forces such as the police or armed forces. This type of mechanism seldom resolves a conflict but rather reduces stress to the point where a long term solution can be sought. Sometimes these short term mechanisms can further aggravate a conflict but most often they will "buy the time" needed to bring a long term resolution mechanism into the situation.

In resource conflicts the response has most often led to three major types of long term resolution mechanisms. These are also the same mechanisms usually employed to allocate resources so they are generally accepted by the consuming groups as having a legitimate claim to authority. These three mechanisms then are the private market, direct government intervention under existing institutions, and thirdly, the adjustment or creation of new institutions.

Except in cases where overt force was employed, private market solutions were the most common type of resolution mechanism used up until the beginning of the twentieth century. This type of resolution mechanism is still very important as it is often used in cases where the conflict is over property rights that can be bought and sold on the private market. According to some economic theory, market solutions should result in the maximization of social welfare, achieving the state of "pareto-optimality." Harlow's (1974) review of "Conflict Reduction in Environmental Policy" demonstrates how market solutions will meet the criteria of equity or fairness, and efficiency. Furthermore, market solutions minimize the demands on the social system as one of the functions of the market is to reduce the burden of decisions and control on the political process.

According to traditional economic theory, laissez-faire economics will result in the most output of goods and services at a given cost or conversely, a given output at least

cost. Certainly when the private market is operating effectively the reduction of conflicts can occur efficiently and quickly, but unfortunately this is not always the case. Market solutions can fail when the market is unable to consider all costs and benefits or especially when confronted with environmental issues, or the provision of public goods as outlined in Chapter One.

When the private market fails the response has been typically to rely on direct government intervention. [ This intervention can either be undertaken in the form of action by existing institutions or by the evolution of new institutions to respond to the conflict. Response by existing institutions has been popularized in the form of planning agencies and the established implementation tools of the planner. Not all intervention relies on the planner, however, as the implementation tools of zoning, the re-allocation of property rights by state ownership or restrictive legislation, can be used without consulting the planner. Current research has perhaps tended to overemphasize this type of "management" approach as O'Riordan's (1972) review demonstrates.

Problems in this approach are mainly centered in the processes of centralized planning itself. This type of intervention implies that the state determines who may use a property right and who is to be excluded (Castle & Rettig, 1972, p. 209). The approach assumes that all individuals

are equally protected under the law when in fact an individual may be outside the power structure to the extent that his interests may not be considered. The situation can evolve into a centralized provincial or federal agency imposing national goals or policy on unprotected local interests. The ability of institutions to resolve conflict can be further hampered when the various interests in a conflict cross jurisdictional boundaries and the co-ordination and co-operation between institutions fail.

This failure then leads to the third type of resolution mechanism; the creation of a new agency or authority. The best example of this approach is the rise of state coastal planning agencies in the United States. Hargis' (1972) article on "Solution to Conflict in the Coastal Zone" traces this evolution of a National Coastal Zone Program. Due to jurisdictional conflicts and a lack of sensitivity to the issues by local agencies, the author calls for the creation of new state-wide agencies to take over resource and land use planning in the coastal zone. Another good example is the creation of the Environment and Land Use Committee Secretariat in British Columbia. The evolution of this institution is summarized by Crook and Crook (1976).

As previously stated, a resolution mechanism can be said to be successful when the stress that created the conflict is either relieved or the demands of the consuming groups are satisfied. Whether resource conflicts can be

resolved or just reduced is dependent then on the successful operation of the resolution mechanisms. It is important to note that the chances for a successful resolution are greatly enhanced when all types of mechanisms are perceived to be of use. In current situations this has not always been the case and more conflicts may be resolved in the future if the entire range of alternative resolution mechanisms are utilized by resource managers. It must also be stressed that not all conflicts can be resolved to the satisfaction of all consumers. In many cases optimal solutions based on the highest and best use are often illusory. In these conflicts, the resolution process is probably best seen as an evolving incremental improvement on existing conditions.

### *2.7 Conflict Behaviour, Perceptions and Attitudes*

A conceptual framework, then, based on the process of conflict can be a useful tool to the resource manager when confronted with the contemporary demands placed on scarce resources. This approach provides a more holistic framework than other ecological, management or behavioural approaches. It allows one to view resource demands in the totality of the competition and conflict that is at the basis of the need for management. The information provided from an examination of conflict should be able to provide the information needed to begin to formulate management goals and

strategies.

This conceptual framework provides a useful starting point for further research. If conflicts are to be minimized in the future or even avoided, then resource planners and managers must move from crisis reaction planning (or conflict reaction planning) to more integrated long range approaches (Barker, 1974). This can best be achieved when the researcher has a full grasp of how existing conflicts operate, and how the consuming groups perceive, adapt and adjust to conflict situations.

In order to achieve this goal, a methodology must be constructed that will facilitate the measurement and understanding of the perceptions and attitudes of the different resource consuming groups as reflected in their behaviour, or more directly their patterns of resource consumption. This goal would also achieve the desired effect of providing for greater public participation in the planning process without resorting to the often difficult, unreliable and costly method of the public meeting. Sewell (1976) clearly identifies this need for public involvement when he states that;

. . . it is clear that in the coastal zone, public involvement has an especially critical role to play in the planning process. With so many differing views as to what are the goals to be sought, problems to be solved, and criteria to be applied, planners need a more articulate means of identifying these perceptions and the preferences that the public holds. Beyond this, policy-makers need to be sure that the programmes they put forward will have public support. Citizen involvement seems to satisfy both of these needs (p. 16).

What must be accomplished in the construction of this methodology is to integrate the conceptual framework of conflict, with the established interest in the measurement of perceptions and attitudes. Lowenthal (1972) notes that present contributions have been mainly in the fields of environmental quality, recreation, natural hazards and amenity choices. He goes on to note that:

. . . as a number of recent overviews indicate, the field as a whole remains essentially unorganized and disjointed. . . . Work in environmental perception and behaviour falls short of realizing its full potential because it lacks definitions, objectives and mechanisms for applying research results to the needs of environmental planning and decision-making (p. 409).

Sewell (1971a) indicates this failure in perception studies when he notes that "the problem then becomes that of integrating such perceptions and attitudes in the decision process" (p. 131).

The conceptual framework of conflict may aid in providing the overall organization and applications of perception research that Lowenthal and Sewell see as lacking. Several existing studies on environmental perception have inadvertently gone part way in this direction. Lucas' (1964) pioneering work on wilderness perception and use in the Boundary Waters Canoe Area led to several important conclusions: First that "all resources are defined by human perception," second that "the importance of resource perception is particularly obvious for recreational, scenic, and amenity resources because of the internal, personal and

objective way such resources are used," and third that, "order in the perception of the wilderness resource has implications for the management of that resource" (p. 409).

Hendee and Harris (1970) were able to demonstrate the importance of an accurate perception by the managers (in this case professional foresters) of user attitudes and preferences. While this study examined the *managers'* perceptions, they were able to conclude that the accurate perception of these user attitudes, determined "to a large extent their ability to satisfy them--or when appropriate to explain why they cannot or should not meet user preferences" (p. 759).

An attempt to extend perception research was made by Willhite, Bowlus and Tarbet (1973). In this case, professional management groups as well as certain segments of the public and environmental interest groups were examined to "determine the important dimensions of attitudes regarding forest service practices to serve for a basis for resolution of differences" (p. 351). They argued that "an effort can be made to resolve specific forest management problems once basic categories of attitudinal conflict can be determined" (p. 365).

Attempts have also been made to examine user preferences. The previously mentioned work by Lucas is a good example as is the work of Moeller, Larson and Morrison (1974). While the latter study appears conceptually weak, the authors were

responding to a desire to provide accurate information on "the recreation user, his attitudes and his opinions of management policies and problem solutions" (p. 1). The study noted the importance of this information in avoiding resistance to management plans that don't reflect user preferences.

Most of the research to date, except for Lucas' earlier work, examines only conflicts between managers or decision-makers and users. While the importance of understanding the problems inherent in "unshared images" (Twight & Catton, 1975) should not be underestimated, it would appear logical to extend this research and examine conflicts between two or more user groups.

This thesis, then, is an attempt to integrate the conceptual framework of resource conflict with the methodological foundations provided by perception and attitude research. It was hypothesized in Chapter One that in Howe Sound recreational boaters perceive a conflict to exist between their activities and those of the forest industry. In order to examine the boater's perception of conflict, a direct questionnaire was designed to measure their perceptions and preferences as well as the existing pattern of their resource demands. The questionnaire provided information on: (1) the identity of the boater (origin and residence, socio-economic characteristics, type and size of boat and moorage); (2) the nature of boating use (levels and

patterns of use, activities, destinations, satisfaction with the recreation experience); (3) attitudes to other resource users (perceptions and attitudes towards pulp mills, log booming, cottage owners and other boaters).

The information from this questionnaire should reveal the dimensions of resource conflict between the groups identified. This information can then be used as the critical data needed to formulate management policy and to identify the range of resource allocation adjustments needed in the study area to reduce conflict and to provide satisfactorily for the needs of all groups concerned.

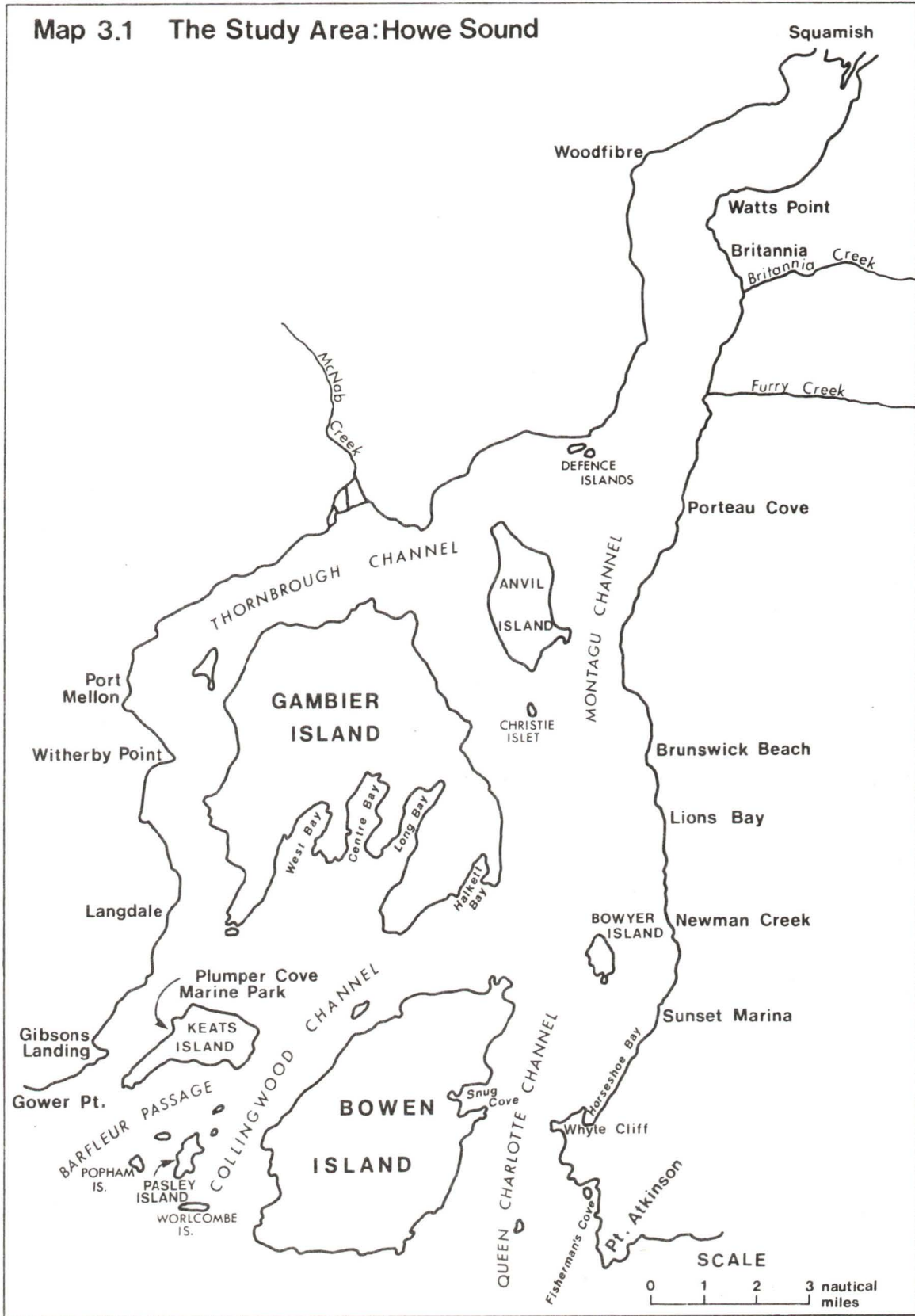
## CHAPTER 3

### THE STUDY AREA

Howe Sound is a typical British Columbia coastal fiord and the first north of the Vancouver-Lower Mainland area. Its eastern entrance at Point Atkinson is within the boundaries of the Municipality of West Vancouver. From this point to its western entrance at Gower Point on the Sechelt Peninsula, the Sound is 11 miles wide. It is almost entirely hemmed in by steep mountain slopes rising abruptly from its shores (Environment Canada, *Small Craft Guide*, 1975; Hoos & Vold, 1975). Approximately 15 miles north of Point Atkinson the Sound narrows to an average width of only 1.2 miles and terminates 10 miles further north in the Squamish estuary. The southern half of the Sound is much wider and contains four major islands--Bowen, Gambier, Keats and Anvil--as well as numerous smaller islands and reefs (see Map 3.1, The Study Area).

The supply of flat land is very limited around the Sound's perimeter and is usually only found in association with the mouths of rivers and creeks. The islands tend to be more low lying and contain numerous pebble beaches and gentle sloping shorelines. However, even on the islands, the supply of flat backshore is limited.

Map 3.1 The Study Area: Howe Sound



The economy of Howe Sound has historically, because of its proximity, been closely tied to Vancouver. Initially the resource extraction industries were most important but more recently resource use has shifted as well into recreational and residential activities. Today, both these types of resource uses exist in the area.

### *3.1 Transportation and Industrial Activities*

From its terminus in North Vancouver, the British Columbia Railway runs along the eastern shoreline of the Sound to Squamish and then into the interior of the province. The railway is paralleled by a two-lane highway (Highway 99) that leads into the Garibaldi-Pemberton area. From Horse-shoe Bay, the B.C. Ferry Authority operates car and passenger service to Departure Bay on Vancouver Island, across the Sound to Langdale on the Sechelt Peninsula and across Queen Charlotte Channel to Snug Cove on Bowen Island. The Authority also provides water taxi passenger routes to Gambier and Keats Islands. In addition, the Department of Highways runs a car ferry from Darrell Bay south of Squamish to Woodfibre.

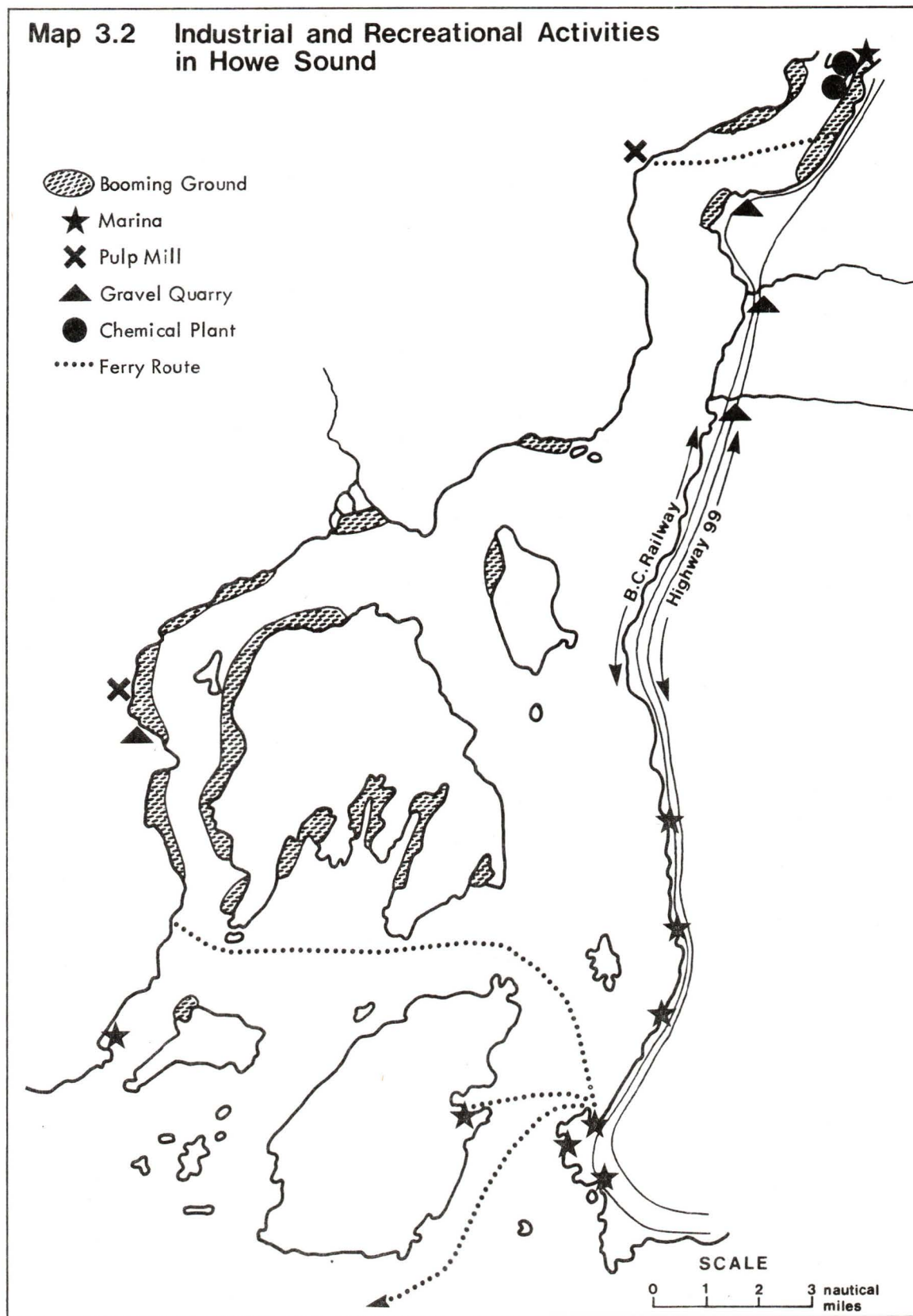
The town of Squamish is an important port for loading timber and chemicals and off-loading salt. It is also one of the proposed sites for a future major bulk-loading coal port. Located at Squamish on the east side of the estuary in the Mamquam Blind Channel are two chemical plants, FMC's

chloralkalai plant and Squamish Chemicals Ltd.'s sodium chlorate plant. The channel is also an important log storage area and is the site of Weldwood of Canada's Empire Mills sawmill (see Map 3.2).

There are several sand and gravel operations on the Sound at Furry Creek south of Britannia Beach, at Hillside near Witherby Point in Thornbrough Channel and north of Watts Point between Britannia Beach and Squamish. A major sand and gravel operation only recently closed just south of Britannia Beach, and this site has been mentioned as an alternative site for the proposed coal port (Paish, 1972, 1973).

The major industrial activity on Howe Sound is the forest industry. There are two kraft pulp mills on the Sound; Canadian Forest Products' Port Mellon Mill and Rayonier of Canada Ltd.'s mill at Woodfibre. Both operations have an approximate capacity of 550-600 tons per day of bleached and unbleached kraft pulp. The effluent from these mills falls into three major categories--kraft (sulphate) mill effluent, groundwood wastes, and bleaching wastes. The air pollution from these mills consists mainly of reduced sulphur compounds, sulphur dioxide and nitrogen oxides (Hoos & Vold, 1975). The major problems for the recreational boater from these air pollutants are the annoyances caused by the odour, reduced visibility and eye irritations. In addition, the effluents discolour the water

Map 3.2 Industrial and Recreational Activities  
in Howe Sound



and can make swimming unpleasant.

Howe Sound has also been an important source of timber, and logging scars are prominent on many hillsides. Logging is less active at the present time and is confined now largely to less visible areas in the Squamish and Mamquam watersheds. The camp at McNab Creek was recently reactivated to log the McNab Valley and another active camp is located just north of Furry Creek (site visits, 1975-76).

Of particular importance to the forest industry is Howe Sound's role as an important log booming and storage area. Much of the western shoreline of Gambier as well as Thornbrough Channel and West Centre, Long and Halkett Bays on Gambier are used for these purposes. Log storage areas are also found in the Squamish area and on the west coast of Anvil Island (see Map 3.2).

While log storage can have a major impact on the benthic organisms of the seabed as McDaniel (1973) notes, it can also provide certain benefits to the recreational boater. Many of the booms in the bays on Gambier are used by the boaters for temporary and overnight moorage. On one site visit in August 1976, 37 boats were noted tied to log booms in West Bay and 23 in Centre Bay. It should be noted, however, that some boaters do complain that the log booms limit access to the foreshore.

In addition, the storage of logs in the area and the location of the pulp mills necessitate a large amount of tug

boat traffic, towing both log booms and chip barges. This can also involve the dumping of self-loading log barges as well as sorting activities by boom boats. This traffic can sometimes be a navigational hazard to the boaters as they may be unfamiliar with the correct safety or nautical procedures. Log escapement from booms can also be a major hazard to fast moving boats which do not see floating debris in time to avoid collisions.

### *3.2 Recreational and Residential Activities*

Numerous recreational activities take place in Howe Sound, the most important being in some way connected with recreational boating. As the growth and importance of boating in the area is noted elsewhere in the thesis (see Chapter Five), the present discussion will be confined to the current facilities available to the boater in the area.

While the majority of the boaters who use Howe Sound keep their boats outside of the study area (see Chapter Four), there are several marinas in the Sound which provide parking, launching ramps, wet and dry moorage, boat rentals, as well as other amenities such as repairs, restaurants and fuel and bait sales. The major marinas are located in the Fisherman's Cove area, Horseshoe Bay, Sunset Creek, Newman Creek and Lions Bay. The supply of launching ramps is noted in Table 3.1 below.

TABLE 3.1 LAUNCHING RAMPS IN THE STUDY AREA

Location	No. of Ramps
Sunset Marina	2
Newman Creek	1
Lions Bay	2
Horseshoe Bay Boat Rentals	1
Garrow Bay Boat Rentals	1
Thunderbird Marina (Fisherman's Cove)	2
TOTAL	9

Source: Woods Gordon & Co., 1974.

In addition to these launching ramps, wet and dry moorage and boat rentals are available as noted below in Table 3.2.

TABLE 3.2 WET AND DRY MOORAGE AND BOAT RENTALS

Location	Wet Moorage	Dry Moorage	No. of Rental Boats
Sunset Marina	250	35	13
*Newman Creek	---	150	--
Lions Bay	---	72	15
Sewell's Ltd., Horseshoe Bay	150	200	30
Horseshoe Bay Boat Rentals	73	---	35
Whytecliff Boat Rentals	88	60	6
Garrow Bay Boat Rentals	26	8	18
Thunderbird Marina	855	60	--
Fisherman's Cove Marina	NA	NA	40
West Vancouver Yacht Club	245	200	--
Eagle Harbour Yacht Club	150	---	--
TOTALS	1837	785	157

Source: Woods Gordon & Co., 1974.

\*Personal communication, R. I. Murray, owner of Newman Creek Marina.

There are also marinas located elsewhere in the study area at Snug Cove and at Gibson's Landing (2). In addition,

moorage is available at the federal government docks in both of these areas. Other government docks are located throughout the Sound, notably on Gambier and Bowen Islands as well as at most of the major residential settlements and at several religious and children's summer camps.

There is one Marine Park located in the study area at Plumper Cove on Keats Island. There are six finger floats attached to the main dock and picnicking sites and campgrounds are located in the upland areas. In the past, mooring buoys were also available in the bay, but were not installed in 1976. However, the bay is one of the few in the Sound that is readily suitable for anchoring.

Several of the yacht clubs maintain outstations on Gambier Island in Centre Bay (Royal Vancouver and West Vancouver Yacht Clubs) and near Ekins Point at the north end of the island (Thunderbird Yacht Club). Also located in Centre Bay are the facilities of Centre Bay Outstation Ltd., a private operation that limits its membership to 100 boats.

Other recreational activities associated with the shoreline are the day picnicking sites along the eastern shoreline and many excellent skin diving sites, notably at Whytecliff Park and at Porteau Cove. There is also a provincial government park located on the Squamish Highway at Murren Lake north of Britannia Beach, which provides picnic tables, swimming and fishing. The highway itself is heavily used for casual drives due to its many scenic

viewpoints and as an access road to the recreational hinterland of the Squamish-Pemberton corridor.

Residential activities are also increasing in the study area. Summer cottages and weekend homes are located on all of the major islands and many of the smaller ones, especially Worlcombe, Popham and Pasley. Gambier and particularly Bowen Islands are becoming the sites of many permanent homes as well. Estimates of the permanent populations of these islands are 65 and 800 respectively (Islands Trust, 1975b). Along the eastern shoreline a major residential community is located at Lions Bay (population 781, Canada Census, 1976) and many former cottage communities such as those at Brunswick Beach and Sunset Creek are gradually changing into permanent residences. New developments have also been planned for Newman Creek (R. I. Murray, personal communication) and at Furry Creek (W. Wolferstan, personal communication).

Thus it may be said that Howe Sound is a region in transition. The area reflects the changing use of resources in urban hinterland areas from an emphasis on primary resource industries to a more diversified use, including recreational-leisure time activities and semi-rural residential communities.

## CHAPTER 4

### DATA ANALYSIS

#### *4.1 Methodology*

The information presented in Chapter Four is taken from the questionnaire distributed in Howe Sound during July and August 1976. A copy of the questionnaire is attached as Appendix A. It consists of seven pages; an explanation of the questionnaire, two pages of maps, a page of attitude scales, and three pages of miscellaneous questions. It was intended to collect information on three things: (1) the identity of the boater using Howe Sound; (2) the favourite activities and activity-use patterns of these boaters; and (3) the perceptions and attitudes of the boaters to other resource users and resource conflicts.

The questionnaire is structured from the simpler questions to the more difficult and controversial. The boater was first asked fairly simple questions on his use of the area, the type of boat he owns, and where he keeps it. The more controversial aspects of his perceptions and attitudes are gradually introduced indirectly by Map Two and the attitude scales (questions 22 and 23), and then are followed by the direct questions on his perception of resource conflicts. These are followed by the personal data items such

as sex, age, and income, and the questionnaire concludes by asking if the boater has been employed in the forest industry.

As stated in Chapter One, the operative hypothesis being tested is that a conflict exists between the recreational boater and the forest industry using the resources of Howe Sound. The null hypothesis is that this conflict does not exist or is not perceived to exist. Another hypothesis is that the conflicts that the boater perceives are not caused by the forest industry but by other boaters themselves. It is considered that this "conflict approach" to resource use planning is a useful one in that it identifies the major issues and directly solicits solutions from resource users themselves.

#### *4.1.1 Sampling Procedures*

The ideal sampling frame for the boaters of Howe Sound would be to attempt to question the entire population of all recreational boaters using the area. To achieve this ideal sample, however, would have involved a much larger and therefore costly study. The sample itself was drawn from those using the Sound from August 2-22, 1976, and some bias became evident due to these constraints. A discussion of the sample that was obtained is offered below.

A pre-test was conducted in July 1976 to determine problems with the format of the questionnaire and to help in selecting the appropriate sampling procedure. Different

forms of mail surveys and interviewing techniques were considered before it was decided to distribute questionnaires on a systematic basis to boaters at several access points to the Sound and at several pre-selected activity sites or destinations.

The boater was given a brief verbal introduction to the questionnaire and then given an addressed, stamped envelope in which to return the completed forms. This direct contact with the boater led to numerous long conversations, and it is estimated that approximately 50 of these informal interviews took place. The information from these interviews was used to guide the analysis of the data and where noted in the text was used to confirm some tentative findings. The problem of a lack of contact with yacht clubs arose at this point and therefore 30 questionnaires were given to members of yacht clubs for distribution to their membership.

In total, 210 questionnaires were distributed to the boaters. Table 4.1 shows the breakdown of this distribution.

As of October 31, 1976, 72 usable questionnaires were returned, a return rate of approximately 34%. This was somewhat lower than expected, but compares very favourably with other questionnaires using similar sampling techniques. Of the 72, 17 (24%) included extended comments on the questionnaire, and all of these comments are included as Appendix B.

TABLE 4.1 QUESTIONNAIRE DISTRIBUTION

Access Points:	Lions Bay	21		
	Sunset Marina	28		
	Newman Creek	<u>3</u>		
		52	52	(25%)
Activity Sites:	Centre Bay	34*		
	West Bay	41		
	Long Bay	5		
	Keats Island-Plumper Cove	34		
	Snug Cove	<u>14</u>		
		128	128	(61%)
Yacht Clubs:	Eagle Harbour Yacht Club	10		
	Gulf Cruising Club	10		
	Richmond Yacht Club	<u>10</u>		
		30	<u>30</u>	(14%)
TOTAL DISTRIBUTION			210	(100%)

\*The figure for Centre Bay includes eight questionnaires distributed at the private Centre Bay Outstation Ltd., and twelve questionnaires distributed at the Royal Vancouver Yacht Club outstation at Alexandra Island.

#### 4.1.2 Sampling Bias

Although every attempt possible was made to reduce sampling bias, it can be fairly concluded from an initial examination that some biases do exist. For example, despite the fact that a large number of questionnaires were handed out to boats under 21 feet in length, only 20% of the respondents owned boats in this category. Further, only 20% of the respondents indicated that the usual length of their trips was one day or less. Only 15% trailered their boats to Howe Sound, and only 30% kept their boats permanently moored in the Sound. The sample does not represent anybody

who rented boats. Thus it is possible that the sample is overrepresentative of the larger, self-contained boats over 20 feet in length which are using the waters for extended cruising of more than a day trip's duration. In addition, the study is perhaps overrepresentative of individuals who keep their boats outside of the Sound (65%).

This bias is perhaps not surprising considering that the owners of larger boats may perceive more of a self-interest in the protection of the Sound for their own use and in the provision of new facilities. This conclusion is supported from the informal interviews which indicated that resource conflicts were most keenly perceived by this group, while the smaller day-boater appeared less concerned with these issues.

It should also be noted that the entire sample consisted of residents of the Lower Mainland area, although some respondents came from as far away as Langley, Cloverdale and Port Coquitlam. Over 72% of the sample were residents of either Vancouver, West Vancouver or North Vancouver. While there are perhaps some transient boats from outside the Lower Mainland that do use the area, none returned questionnaires, although several were encountered in the informal interviews.

The sample then appears to be at least representative of the larger extended cruising boaters who seem to be more keenly aware of conflict issues. The smaller percentage of

responses from boats under 21 feet in length may be an indication of a lack of concern by this group about some of the major issues in the Sound or even a possible lack of contact with them. Often the smaller craft using the Sound for day trips are only running out to favourite fishing spots and then returning. This type of activity places less pressure on the existing resources, and results in little recognition by the boater of potential conflicts that are more important to larger-craft owners seeking overnight moorage and access to foreshore and upland areas. Some analysis of these relationships are included in the following sections.

#### *4.2 The Identity of the Recreational Boater in Howe Sound*

From the responses to the questionnaire, it is possible to draw a quantitative picture of the identity of the boater who uses Howe Sound. While a few transient boaters from other areas were encountered in the sampling, all of those responding to the questionnaire were from the Lower Mainland area. It is not possible to make an estimate of the numbers of non-residents who use Howe Sound, but the field surveys indicated that their numbers were small. Most of this group consists of tourists renting boats for day trips and larger craft passing through while travelling further up the coast. Of the sample, the respondents noted their home locations as follows in Table 4.2. Over 72% of the respondents came from the close lying areas of Vancouver and West and North

TABLE 4.2 HOME LOCATIONS (n = 72)

Location	Frequency	% of Sample
Vancouver	27	37.5
West Vancouver	18	25.0
North Vancouver	7	9.7
New Westminister	6	8.3
Port Moody	5	6.9
*Fraser Valley	4	5.6
Richmond	3	4.2
Port Coquitlam	2	2.8
	72	100.0

\*Respondents from Cloverdale, Langley and Newton.

Vancouver. The remaining 27.8% were all Lower Mainland residents coming from the more distant parts of the region.

In terms of the permanent location of their boats, 52.8% of the sample moored their boats permanently outside of the Howe Sound area while 29.2% moored their boats permanently in the Sound at one of the local marinas. A further 15.3% trailered their boats to Howe Sound and launched them in the area, and the remaining 2.8% (two respondents) trailered their boats to a launching ramp outside the Sound and then travelled to the area. The portion of the sample that moored permanently outside the Sound appears to represent the larger-craft owners and would include the majority of the sailboaters. From the field survey, these proportions seem to be fairly representative of the total population.

The length of the boats in the sample ranged from 14 to 53 feet, and included 50 power craft and 22 sailboats.

The sailboats tended to be larger than the power boats, having a mean size of 29.8 feet and ranging from 21 to 42 feet. The power craft were more evenly distributed in terms of length, including the smallest and the largest boats sampled and including all the boats under 20 feet in length. Generally, the boats under 20 feet were those that did not have galleys or heads (toilets) and tended to be only using the Sound for day trips with a preference towards fishing as their favourite activity. The size of boats for each type is shown in Table 4.3.

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TABLE 4.3 BOAT LENGTH (n = 72)

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	Power	Sail
Under 15 feet	1	--
15 - 19 feet	11	--
20 - 24 feet	15	2
25 - 29 feet	6	10
30 - 34 feet	4	6
35 - 39 feet	3	2
40 - 44 feet	7	2
45 feet & over	<u>3</u>	<u>--</u>
	50	22
MEAN	27.2 ft.	29.8 ft.

---

The larger self-contained boats were more diversified in their cruising interests and tended to make longer trips into the Sound and of course tended to have more people on board. Thus the sample could be broken down into two categories, the 20% of the boats 20 feet in length and under tending to day trips and the larger boats cruising for more

extended periods and spending at least one night in the Sound.

Most of the boaters showed a long history of use of the Sound for boating as a total of 51.4% indicated that they had been coming to the area since before 1966. Only 6.9% of the sample indicated that 1976 was their first year of boating on the Sound. The history of boat use of Howe Sound is shown in Table 4.4. The importance of this table is that it indicates that the boating use of Howe Sound is not a new phenomenon but a firmly established tradition. Almost 80%

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TABLE 4.4 HISTORY OF USE (n = 72)

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	Frequency	% of Sample	Cumulative %
Pre 1966	37	51.4	51.4
1966 - 1967	4	5.6	57.0
1968 - 1969	6	8.3	65.3
1970 - 1971	10	13.9	79.2
1972 - 1973	8	11.1	90.3
1974 - 1975	2	2.8	93.1
1976	5	6.9	100.0

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of the sample have been using the area since before 1972. Thus it may be tentatively concluded that the boaters may have some historical claim to a fair allocation of the Sound's resources, along with the other established activities.

Additionally, the boaters make numerous trips into the area each year. The sample indicates that for 25% of the boaters this amounts to more than 20 trips per year, and

over 93% make at least 5 or more trips per year. The total number of trips is indicated in Table 4.5 below.

TABLE 4.5 TRIPS PER YEAR (n = 72)

No. of Trips	Frequency	% of Sample	Cumulative %
Over 20	18	25.0	25.0
15 - 20	11	15.3	40.3
10 - 15	15	20.8	61.1
5 - 10	23	31.9	93.0
Under 5	5	6.9	99.9*

\*Discrepancy in cumulative percentage due to rounding off.

This high frequency of use would appear to be an indication of Howe Sound's importance as a boating area to the Lower Mainland population, especially if it is considered that there are no more than 12 to 14 weekends in the prime boating period (June to August) and that some of these weekends will be unattractive to boating due to inclement weather. Numerous boaters also indicated in the interviews that Howe Sound is an important cruising ground during the winter when the stormier weather makes a Strait of Georgia crossing or up-coast cruising difficult.

TABLE 4.6 LENGTH OF TRIP (n = 72)

Category	Frequency	% of Sample
One day	14	19.4
Overnight	26	36.1
2 - 3 days	29	40.3
Over 3 days	3	4.2

As previously mentioned, the sample indicated the length of each trip was normally longer than one day. Table 4.6 indicates this trend. The table indicates that the preference is for weekend cruising with a smaller percentage of day trips or cruises over 3 days in length.

Question 17 asked, "What do you consider to be the main advantages to boating in Howe Sound, what do you like most about the area?" Overwhelmingly, the most important reason given was the proximity of the Sound to their home. This factor was mentioned by over 75% of the sample. The second most important reason mentioned by 66.7% of the respondents was the local weather conditions. This category included mention of the protected waters, shelter, safety, and the peace of mind for smaller boaters. The advantages of Howe Sound, as indicated by the boaters, are shown in Table 4.7.

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TABLE 4.7 ADVANTAGES TO HOWE SOUND BOATING (Question 17)

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Category	Frequency of Mention	% of Sample
Proximity	55	76.5
Favourable weather	48	66.7
Local scenery	29	40.3
*Other	16	22.2
Good fishing	14	19.5
Lack of development	9	12.5
No gulf crossing	5	7.0
Good moorage	5	7.0
Climatic conditions (sunshine, good winds)	3	4.2

---

\*The Other category included mentions of clean and warm water, variety, an uncrowded atmosphere, good launching facilities, a "lack of cottages like in the Gulf Islands" and the "friendly people one meets."

It is very important to note the number of respondents who mentioned the proximity of the Sound and favourable local weather conditions. It is interesting to note that 5 respondents specifically mentioned the lack of a Strait of Georgia crossing as one of the main advantages to using Howe Sound.

It was also possible from the questionnaire to draw a picture of the socio-economic characteristics of the sample. These statistics are included as Tables 4.8 (Age), 4.9 (Income), and 4.10 (Educational Status).

TABLE 4.8 AGE OF BOATERS (n = 70)

Category	Frequency	% of Sample
Under 20	1	1.4
20 - 29	6	8.3
30 - 39	17	23.6
40 - 49	18	25.0
50 - 59	16	22.2
60 and over	12	16.7
No answer	2	2.8
TOTAL	72	100.0

Note: two respondents refused to answer.

TABLE 4.9 INCOME OF BOATERS (n = 67)

Category	Frequency	% of Sample	Provincial Avg.*
Under \$10,000	6	8.3	32.3
\$10,000-\$19,999	22	30.6	46.2
\$20,000-\$29,999	23	31.9	21.5
\$30,000-\$39,999	8	11.1	
\$40,000-\$49,999	2	2.8	
\$50,000 & over	6	8.3	
No answer	5	6.9	
TOTAL	72	100.0	

\*Statistics Canada, 1974.

TABLE 4.10 EDUCATIONAL STATUS OF BOATERS (n = 70)

Category	Frequency	% of Sample	Provincial Avg.*
Elementary school	2	2.8	18.0
Some high school	7	9.7	31.0
High school graduate	15	20.8	22.0
Some univ. or trade	30	41.7	21.0
University graduate	9	12.5	7.0
Post-graduate	7	9.7	
No answer	2	2.8	
TOTAL	72	100.0	

\*Statistics Canada, 1973.

When these figures can be compared with the total population of British Columbia, it can be clearly seen that the average income is considerably higher than the provincial average, as are the figures for educational status. Thus it can be fairly concluded that the boating population of this sample tends to be better educated and more affluent than the provincial average.

#### 4.3 Activity Patterns and Boating Use

One of the most important indicators of the activity patterns of the recreational boater is how the boater spent his time. This is indicated in Table 4.11 for four activity modes; cruising, anchored, moored and ashore.

It can be seen from these figures, especially the mean values in part E, that the majority of trip time is spent moored (Mean A = 16.6 hours). In addition, 75% of the sample spent some time in this mode. This contrasts with

TABLE 4.11 ACTIVITY TIME PER TRIP

Hours	Frequency	% of Sample
<b>A. TRIP TIME CRUISING (n = 71)</b>		
1 - 5	29	40.8
6 - 10	32	45.1
11 - 15	8	11.3
16 - 20	--	--
Over 20	2	2.8
	<u>71</u>	<u>100.0</u>
<b>B. TRIP TIME ANCHORED (n = 72)</b>		
0	45	62.5
1 - 5	8	11.2
6 - 10	6	8.4
11 - 15	8	11.2
16 - 20	2	2.8
Over 20	3	4.2
	<u>72</u>	<u>100.0</u>
<b>C. TRIP TIME MOORED (n = 72)</b>		
0	18	25.0
1 - 5	5	7.0
6 - 10	6	8.4
11 - 15	7	9.6
16 - 20	12	16.7
21 - 25	6	8.4
26 - 30	5	7.0
Over 30	13	17.9
	<u>72</u>	<u>100.0</u>
<b>D. TRIP TIME ASHORE (n = 72)</b>		
0	24	33.3
1 - 5	33	45.8
6 - 10	9	12.5
11 - 15	3	4.2
16 - 20	2	2.8
Over 20	1	1.4
	<u>72</u>	<u>100.0</u>
<b>E. MEAN TRIP TIMES</b>		
<u>Activity Mode</u>	<u>Mean A</u>	<u>Mean B</u>
Cruising	7.0 hrs.	7.0 hrs.
Anchored	4.0 hrs.	10.7 hrs.
Moored	16.6 hrs.	22.1 hrs.
Ashore	3.75 hrs.	5.6 hrs.

Mean A: calculated where n = total number of respondents.

Mean B: calculated where n = number of respondents indicating time spent in that activity mode.

the time spent anchored (Mean A = 4.0 hours), where over 62% of the sample did not spend any time in this mode. It is also significant that for boaters who did go ashore (67%) only 3.75 hours were spent on land. This low figure for time ashore would indicate either a lack of preference for onshore activities, or a lack of the facilities, and access to foreshore and upland areas which would allow this type of activity.

The preference of the boater to moor in Howe Sound rather than anchor is further indicated when the boaters were asked to rank how they most often spend their time while in some form of stationary mode. This is shown in Table 4.12.

TABLE 4.12 STATIONARY PREFERENCE (n = 58)

Mode	Rank (% of Sample)			
	1	2	3	Total
Moor to floats/wharves	40.3	27.8	18.1	86.2
Moor to log booms	40.3	22.2	18.1	80.6
Anchor	16.7	30.6	37.5	84.8

Thus it can be seen that over 80% of the boaters chose mooring to either floats and wharves or to log booms rather than anchoring as their first choice. Anchoring in Howe Sound would appear to be usually a second or third choice if moorage space is unavailable. This is logical, as very few areas in the Sound are both shallow and protected enough to allow safe anchoring.

The choice of a good moorage or anchorage was further indicated in Question 15, that asked in closed format: "What do you look for in a good moorage or anchorage?" The responses were ranked and are indicated in Table 4.13 for both frequency of mention (Ranks 1 to 9) and for individual ranking as either a first or second choice.

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TABLE 4.13 MOORAGE QUALITIES

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Category	Frequency of Mention	Rank 1	Rank 1 or 2
Shelter	90.3%	54.2%	79.2%
Solitude & quiet	76.5%	2.8%	23.6%
Scenery	73.7%	1.4%	4.2%
Floats & wharves	66.7%	22.2%	31.9%
Suitable bottom/depth/tides	65.3%	5.6%	26.4%
Log booms	54.1%	6.9%	18.0%
Absence of boats	50.0%	2.8%	7.0%
Presence of boats	37.5%	-	
*Other	11.2%	-	

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\*Includes: foreshore access, beaches, "no private property signs," no water skiers.

It can be seen that the three most important features of a moorage or anchorage to the Howe Sound boater are the amount of shelter, solitude and quiet, and the local scenery, followed by adequate floats and wharves, suitable bottom, depth and tides, and the presence of log booms. These responses indicate the type of new facilities that should be developed in the study area.

The questionnaire also indicated the favourite activities of the boater while cruising (Table 4.14) and while ashore (Table 4.15). As in Table 4.13, the questions were

in closed format and the respondent ranked his favourite activities. The tables indicate the total frequency of mention (Ranks 1 to 9) and also the first and second choices of the respondent.

TABLE 4.14 FAVOURITE CRUISING ACTIVITY

Activity	Frequency of Mention	Rank 1	Rank 1 & 2
Relaxing	90.2%	38.9%	58.3%
Viewing scenery	83.3%	6.9%	31.9%
Eating & drinking	73.6%	4.2%	13.9%
Fishing	73.5%	22.2%	37.5%
Sunbathing	69.5%	2.8%	15.2%
Exploring	66.6%	6.9%	15.2%
*Other	15.4%	1.4%	4.2%
Water skiing	15.4%	1.4%	4.2%
Skin diving	14.0%	1.4%	2.8%
Sailing	11.1%	6.9%	6.9%
Travelling to cottage	9.7%	6.9%	8.3%

\*Other category includes: reading, bird watching, nature photography, or unspecified.

From Table 4.14 it can be seen that six activities were rated by over 66% of the respondents while the remaining five were ranked by not more than 15.4%. The three most important activities--relaxing, viewing scenery and eating and drinking--are notably all passive activities, indicating the importance of boating as a relaxing activity. Fishing, a more active pursuit, was rated more highly by the owners of small boats. Of the owners of boats 22 feet and under, 74% rated fishing as one of their five favourite activities while only 57% of the owners of boats larger than 22 feet gave fishing the same rating. In addition, fishing was

rated first by 47% of the small boat owners and first by only 10% of the larger boat owners. This would confirm the earlier hypothesis about the difference between small and larger boat owners in the sample.

While the other less passive activities such as water skiing and skin diving were not rated highly by the overall sample, they should not be neglected. Although a smaller percentage of the sample mentioned water skiing, it is still a significant activity, again especially to the smaller boaters and as a nuisance factor when considering conflicts with cottage owners and the larger boaters seeking peace and solitude. Skin diving in Howe Sound is also an important activity but one that is often carried out by the non-boating recreationists. Whytecliff and Porteau Cove, both accessible from Vancouver by car, are major centres of this type of activity to all residents of the Lower Mainland.

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TABLE 4.15 ONSHORE COMPONENTS

Component	Frequency of Mention	Rank 1	Rank 1 & 2
Trails	73.7%	37.5%	51.4%
Viewpoints & outlooks	68.2%	18.1%	48.7%
Beaches	55.5%	6.9%	13.8%
Stores	44.6%	9.7%	15.3%
Restrooms & garbage disposal	44.5%	11.1%	20.8%
Oysters & clams	43.1%	5.6%	18.1%
Picnicking sites	27.8%	1.4%	4.2%
Camping spots	19.6%	1.4%	2.8%
Skin diving sites	14.0%	-	1.4%

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The last component to activity patterns in the study area is the favourite onshore activities of the boater.

Table 4.15 indicates what the boater most often looks for when going ashore. The three most important activities include in ranked order trails, viewpoints and outlooks, and beaches. In the interviews, many boaters expressed a desire to go ashore more often but were hesitant about trespassing. Many boaters indicated that they would like to have land areas available to them which "we could call our own, like the Keats Island park but less crowded and larger." Support facilities such as stores and restrooms and garbage disposal were ranked fourth and fifth, while onshore attributes such as oysters and clams, picnic and camping sites, and skin diving areas were ranked lower.

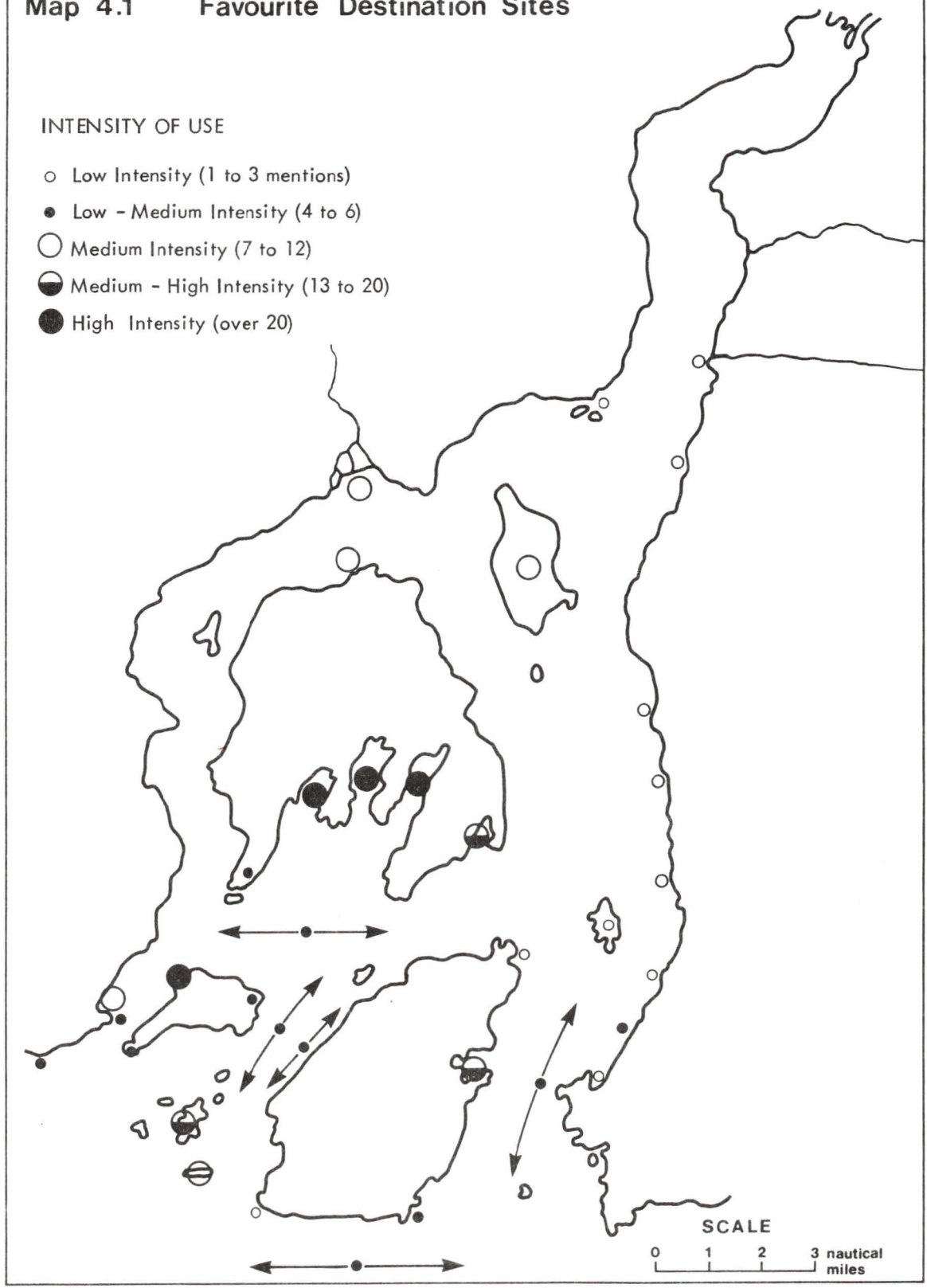
From the preceding section it is possible to draw conclusions about the activity patterns of the Howe Sound boaters. They appear to spend a large amount of time in some form of stationary mode, and are generally more concerned with passive rather than more active pursuits. Many boaters expressed a desire for more opportunities for on-shore activity, either on the shoreline or in upland areas. It only remains to discover the areas in the Sound the boater chooses as his favourite destinations.

The responses to Question 21 in the study give a spatial picture of the boaters' favourite areas. The question asks the boater to circle on a map of Howe Sound areas that he visits most frequently or enjoys the most for recreational boating. The results are shown on Map 4.1,

Map 4.1 Favourite Destination Sites

INTENSITY OF USE

- Low Intensity (1 to 3 mentions)
- Low - Medium Intensity (4 to 6)
- Medium Intensity (7 to 12)
- ◐ Medium - High Intensity (13 to 20)
- High Intensity (over 20)



"Favourite Destination Sites," which takes the responses and replots them on a map of the study area. While the map shows the data in a simplified form of intensity of use (five categories, low to high), the specific scores for the most important individual areas are shown in Table 4.16.

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TABLE 4.16 FAVOURITE AREA RATINGS

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Area	Frequency of Mention
Centre Bay	37
West Bay	32
Long Bay	30
Plumper Cove (Keats)	21
Snug Cove (Bowen)	17
Pasley Island	13
Halkett Bay	12
Worlcombe Island	10
McNab Creek	8
Ekins Point	8
Gibsons Landing	8
All other areas	101

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It should be noted from this table that the three most important areas mentioned were Centre, West and Long Bays on Gambier Island's south shore, followed by the Plumper Cove Marine Park on Keats Island and Snug Cove on Bowen Island. The 101 responses in the "All other areas" category are fairly evenly divided all over the Sound, but do not mention any area north of Furry Creek.

If the results are combined by area, then a slightly more informative picture can be drawn. The results are shown in Table 4.17.

TABLE 4.17 COMBINED FAVOURITE AREAS

Area	% of Total
Gambier Island	43
Keats, Pasley & surroundings	23
Bowen Island	10
McNab, Anvil, Bowyer	8
Eastern shoreline	6
Channels & passages	10
TOTAL	100

It can be concluded that Gambier Island provides the largest number of opportunities for recreational boating, followed by the Keats Island area including the small islands between Keats and Bowen and as far west as Gower Point. The lower rating of importance of Bowen Island, despite its large size, stems largely from the lack of facilities on the island, the majority of responses being from the Snug Cove area where a government dock is located. It follows that in order to overcome problems of crowding or the problems of resource conflict due to an excessive use of one area by boaters, new facilities should be designed to ensure a more dispersed pattern of boating use. In addition, the facilities in existing areas should be upgraded to ensure that existing conflicts caused by boaters or to the boaters are lessened.

This goal would not be too difficult to achieve as the present results indicate that boaters now frequent areas where some form of moorage facility is provided. This can either take the form of the docks provided at Snug Cove and

Keats Island or the log booms in Long, Centre and West Bays on Gambier. It is interesting to note that use of Halkett Bay on Gambier appears to have declined considerably over the past three years, as fewer and fewer log booms have been stored in the bay. Its value as a destination has been reduced simply by removing moorage facilities. To encourage a dispersion of destinations in the Sound, then, one possible technique is to expand moorage opportunities in other less heavily used areas.

#### *4.4 Boater Attitudes to Other Resource Users*

A major factor in understanding the recreational boaters in Howe Sound is their attitudes to other resource users. It is conflict with these other groups that leads to a deterioration of the recreation experience. Conflicts amongst boaters themselves must also be evaluated to determine if any major conflicts are generated internally amongst the boating population.

This first step is some measure of the present satisfaction level of the boaters now using the Sound. They were asked to rank their current satisfaction with recreational boating on a 5-point scale ranging from one (very satisfied) to five (very dissatisfied). The results are shown in Table 4.18. While no boater responded that he was very dissatisfied, over 50% indicated that they were somewhat dissatisfied or only partly satisfied with the recreation

experience. It is necessary therefore to discover the reasons for this dissatisfaction.

TABLE 4.18 SATISFACTION LEVEL

	Frequency	% of Sample
1. Very satisfied	9	12.5
2. Satisfied	25	34.7
3. Partly satisfied	33	45.8
4. Dissatisfied	4	5.6
5. Very dissatisfied	0	0.0
0. No response	1	1.4
MEAN = 2.4		

When responding to a question that asked the boaters what they considered to be the main disadvantages to boating in Howe Sound, trends can be discovered that shed light on the problems of boating in the area. The responses are shown in Table 4.19

TABLE 4.19 DISADVANTAGES TO HOWE SOUND

	Frequency of Mention (%)
Forestry conflicts	63.9
Lack of facilities	32.0
Boating conflicts	27.8
Site problems	18.1
Pollution (in general)	12.5
Lack of marine parks	11.2
Too much development	2.8
No disadvantages	2.8
Other	2.8

The category "forestry conflicts" includes all mentions of deadheads, debris, pulp mill pollution and lack of access to the foreshore because of log booms. The "boating conflicts"

included references to crowding, unskilled, inconsiderate boaters with large wakes, and water skiers disturbing the peace and solitude of a moorage.

It is interesting to note that specific "site problems" such as a lack of beaches, deep water, too much rain and too few fish, as well as "fickle winds" for the sailors, were only cited by 18% of the sample as disadvantages. It might be safely said, then, that the problem is not with the Sound itself but with the use of it.

One of the major problems then would appear to be conflicts caused by the intensive use of the Sound by the forest industry. While most boaters consider log booms an asset to the area, the accompanying debris and pollution from the two pulp mills in the area are major factors contributing to dissatisfaction. When the "Squamish" winds are blowing from the north, the odour from the mills at Wood-fibre and Port Mellon are more than evident.

Boating conflicts such as crowding were mentioned by 27.8% of the sample. These types of conflicts in turn are often caused by the lack of facilities (moorage, launching ramps, marinas) and by the lack of Marine Parks in the area. Only two people in the sample felt that there were no disadvantages to the Sound and only two stated that there was too much development. Clearly, while forestry activities are one cause of dissatisfaction, the lack of facilities that lead to overcrowding is almost as important in

reducing satisfaction levels.

The second map question asked boaters to indicate areas that they avoid because of some other activity, and gives a spatial picture of the existing resource use conflicts in the area. The responses are shown in a simplified form on Map 4.2, "Conflict Areas." A summary of the number of references to major conflict areas is shown in Table 4.20.

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TABLE 4.20 CONFLICT AREAS AND FREQUENCY OF MENTION

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Port Mellon	24	
Horseshoe Bay	22	
Plumper Cove	14	
Gibsons Landing	14	
Snug Cove	12	
North end of Sound	12	
Woodfibre	9	30
Squamish	6	
Britannia	3	
McNab Creek	4	
Centre Bay	3	
All other areas	23	
	146	

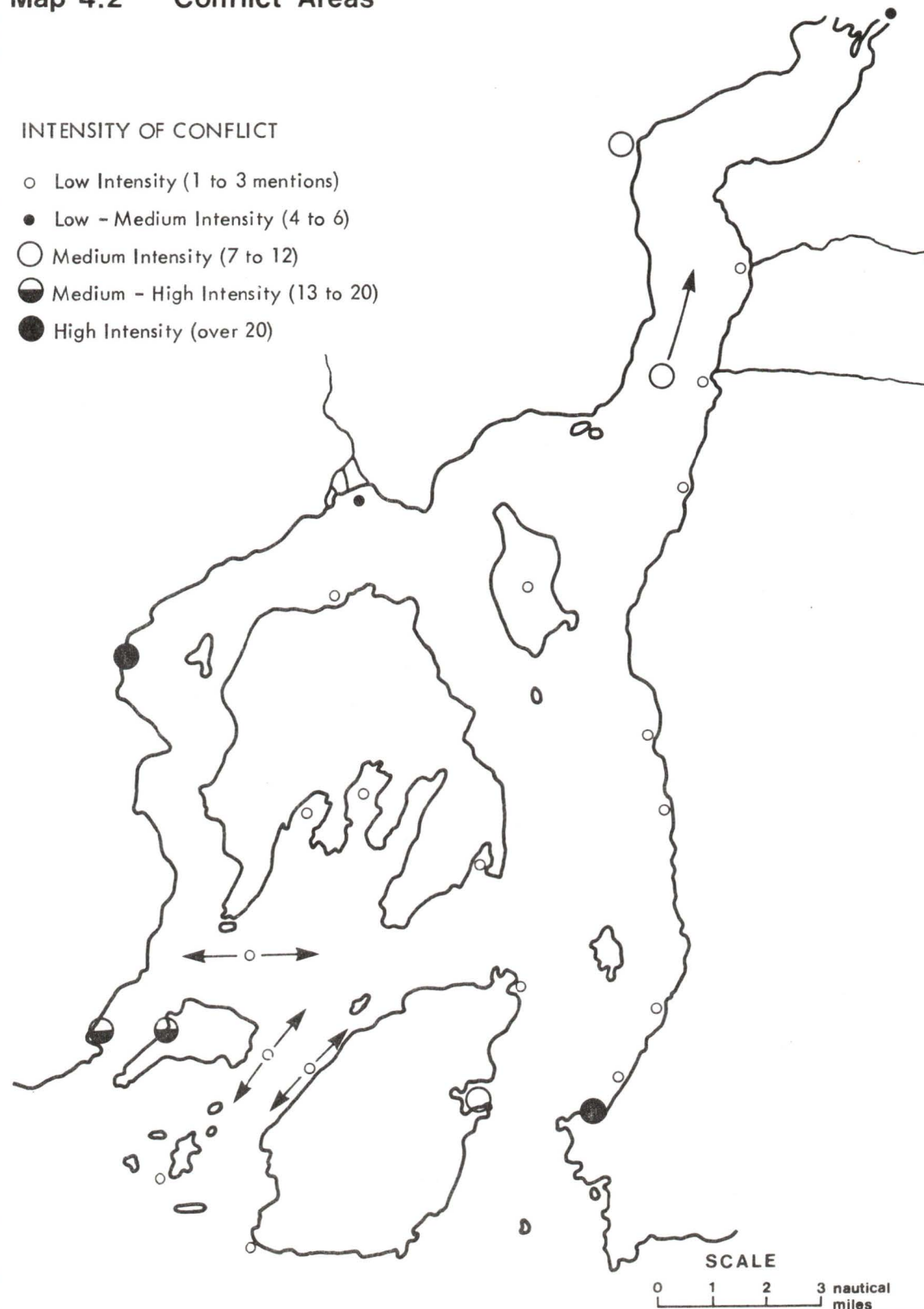
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The major conflict areas, then, are Port Mellon, Horseshoe Bay, Plumper Cove, Gibsons Landing, Snug Cove and the area of the Sound above Furry Creek, including Britannia, Woodfibre and Squamish. These areas are therefore less acceptable to the majority of boaters because of conflicts with other activities. If some of these conflicts can be eliminated or reduced, larger areas will be available to the boater for his use.

**Map 4.2 Conflict Areas**

**INTENSITY OF CONFLICT**

- Low Intensity (1 to 3 mentions)
- Low - Medium Intensity (4 to 6)
- Medium Intensity (7 to 12)
- ◐ Medium - High Intensity (13 to 20)
- High Intensity (over 20)



The boaters were also asked to indicate why they did not go to the specific conflict areas. In many cases (24%) no reason was given, but the reasons that were mentioned give a good indication of the generators of these conflicts. Table 4.21 gives a summary of the responses.

TABLE 4.21 CONFLICT REASONS (n = 146)

	Frequency (%)	Adjusted Frequency (%)
Forestry activities	27.4	36.0
Crowding	24.0	31.6
Traffic	10.9	14.4
Boating activities	3.4	4.5
Cottage owners	1.4	1.8
Other	8.9	11.7
No reason mentioned	24.0	--
TOTAL	100.0	100.0

While all types of forestry conflicts were grouped together, boating conflicts are included in three categories. "Crowding" refers to all forms of crowding while "traffic" refers in most cases to conflicts with ferry routes or other non-recreational craft. The category "boating activities" refers to mentions of water skiers and large wakes.

When these tables are cross-tabulated, it can be seen what type of conflict exists in each area. Port Mellon obviously is a conflict area caused by forestry activities as is Woodfibre while Squamish and general references to the north end of the Sound are mixed between forestry and "other" (general industrial pollution). Conflicts at Horseshoe Bay are of course generated by the heavy traffic resulting from

the intensive use of the bay by B.C. Ferries. The conflicts at Gibsons Landing are mainly due to overcrowding, as are the conflicts at Plumper Cove, while the latter site did have mention of boating activity conflicts. Snug Cove was referred to as an area where the conflicts were mainly caused by crowding but also by ferry traffic. The two areas where cottage owners were cited as the cause of conflict were Pasley Island ("too many no trespassing signs") and Lions Bay, an area of permanent residences.

When asked to rate in a closed format what activities bother them the most in Howe Sound, the results of the previous section were confirmed. The responses to this question are indicated in Table 4.22

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TABLE 4.22 CONFLICT ACTIVITIES

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Activity	Frequency of Mention	Rank 1	Rank 1 & 2
Pulp mills	48.8%	15.3%	32.0%
Other boaters	47.2%	20.8%	29.1%
Log booming	32.1%	4.2%	13.9%
Logging	32.1%	8.3%	18.0%
Ferry traffic	30.6%	8.3%	12.5%
Tug boat traffic	25.1%	5.6%	7.0%
Industry	25.1%	2.8%	2.8%
Summer cottages	22.2%	---	6.9%
*Other	20.9%	11.1%	16.7%
Commercial fishing	15.4%	2.8%	7.0%

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\*Other category includes mention of pollution in general, lack of fore-shore access, water skiers and fishing derbies.

It can be seen that forestry conflicts of some form were mentioned by at least 48% of the sample, with conflicts

caused by pulp mills the most frequently mentioned, followed by log booming and logging. Conflicts caused by other boaters are almost as important while conflicts due to commercial traffic, industry, and summer cottages are less important.

The conflicts caused by other boaters, as was previously mentioned, can be reduced somewhat by the provision of expanded facilities that will decentralize and diversify the areas used by the boater. Forestry conflicts however are more complicated and must be examined more closely. A series of attitude scales were included in the questionnaire and were designed to measure the boaters' attitudes to forestry. A copy of the percentage of the responses as well as the mean values for each question are included as Figure 4.1. A total aggregated attitude score is also shown on the figure.

A completely neutral response to an attitude statement would be indicated by a mean value of 3.0, while a negative attitude to forestry would be above this figure, and a positive response below it. (Note: The values for positive statements [3, 6, 7, 10] were reversed in order to give a one-directional scoring system.)\* What is important is that

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\*It should be noted that with a true Likert Scale, the questions should have been pre-tested on a large population to ensure that the scale was valid. (See Oppenheim, 1966, "Questionnaire Design and Attitude Measurement.") As this was impossible, the results from the pre-test were checked for consistency with the study sample. In addition, the factor analysis run on the ordinal data of the questionnaire demonstrated an internal consistency in the scoring. That is, the attitude scales measured consistent attitudes amongst certain groups in the sample.

FIGURE 4.1 CUMULATIVE RESPONSE TO ATTITUDE SCORES

	Responses (%)					Mean Score
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
23. Below are actual views that have been expressed by various people, about possible conflicts between the activities of the forest industry and recreational boating. Please read each statement carefully and then indicate how much you agree or disagree with each one by checking the appropriate box.						
1) Howe Sound is a good example of an area where forestry activities and recreational boating are able to co-exist with conflict .....	16.7	40.3	19.4	18.1	5.6	3.4
2) Pulp mills should be banned completely from Howe Sound .....	15.3	9.7	29.2	30.6	15.3	2.8
3) Log booms are good for the boater as they provide shelter and a good place to tie up .....	34.7	38.9	13.9	12.5	--	2.04
4) The major navigational hazards in Howe Sound are floating logs and debris from the forest industry .....	54.2	33.3	1.4	5.6	5.6	4.25
5) Howe Sound would give me a much more enjoyable recreation experience if forest activities were banned completely from Howe Sound .....	5.6	12.5	15.3	48.6	18.1	2.4
6) Forest activities are good in Howe Sound as they signify people at work and a healthy economy in the province .....	13.9	52.8	25.0	5.6	2.8	2.3
7) If forestry activities increase in Howe Sound, many boaters will stop using the area .....	2.8	19.4	19.4	48.6	9.7	2.6
8) The problems with boating in Howe Sound aren't caused by the forest industry, but are the result of other activities .....	6.9	20.8	27.8	41.7	2.8	3.1
9) Forestry activities are the major cause of environmental pollution in Howe Sound..	19.4	44.4	15.3	16.7	4.2	3.6
10) Forestry and recreational activities should be able to continue at the same time without conflicting with one another .....	38.9	54.2	5.6	1.4	--	1.7

AGGREGATE ATTITUDE = 2.8

the statements tend to isolate which specific forestry activities are acceptable or unacceptable to the boater and how strongly the boater holds these attitudes.

It can be seen that the boaters are fairly neutral towards statements 2 and 8 (scores 2.8 and 3.1 respectively) indicating that they realize that pulp mills have some kind of right to location in the Sound, and that problems are also caused by other activities. The boaters were most negative to statements 4 and 9 that demonstrate their negative attitudes to the debris from logging and the environmental pollutants of the industry. The boaters were most positive to statements that referred to the benefits of log booming as a provider of moorage space (question #3) and to the economic benefits in general of the forestry industry to the province (question #6). Many of these positive attitudes may result from the fact that over 30% of the sample has been employed at some time by the industry.

The most positive statement to the industry was recorded in question 10, that stated: "Forestry and recreational activities should be able to continue at the same time without conflicting with one another." Perhaps the respondents feel that while certain aspects of forestry use are conflicting with their use of the area, adequate steps can be taken to reduce these conflicts. The overall aggregated attitude to the industry while perhaps of doubtful meaning, did indicate a slightly positive attitude.

In a final question the boaters were asked in what way they thought that forestry activities should be modified in order to reduce conflicts with their boating experience. The results to this question are tabulated in Table 4.23.

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TABLE 4.23 PREFERRED FORESTRY MODIFICATIONS (n = 63)

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	Frequency of Mention (%)
Debris clean-up	65.1
Pollution clean-up/prevention (pulp mills)	41.3
Foreshore use alterations	23.8
Partial forestry ban	17.5
No modifications needed	9.5
*Other	6.3

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\*Other category included mentions of establishing parks in tree farm areas, and banning logging on visible mountain slopes.

Some of the suggestions were fairly imaginative. For example, under the category of foreshore use alterations, some boaters suggested allowing open space between booms to facilitate foreshore and beach access. Others proposed keeping booms in steeper areas and moving them out of the low lying areas. Some of the suggestions under the category of "partial forestry ban" suggested the banning of activities such as sorting and the moving of booms during weekend periods in the summer months. Others proposed banning booms completely. The comments on the questionnaire, included as Appendix B, revealed many of the same attitudes. Several of these comments mention the importance of log booms in providing moorage space in areas where it is not otherwise provided.

The overall implications of these results are discussed in Chapter Six. It is important however to first define the context in which recreational policies and plans are formulated.

## CHAPTER 5

### THE PLANNING CONTEXT AND THE BOATING ENVIRONMENT

Planning for the needs of recreational boaters is conditioned by the nature of demands on the Howe Sound environment and the institutions employed to allocate resources. The preceding chapter described the behaviour and perceptions of boaters in Howe Sound. Recreational policies, however, are developed from a much wider range of demands and groups.

The demands placed upon shoreline areas reflect dynamic processes of regional economic growth and social change. Urban development in the coastal zone is generally characterized by a shift toward increased use of the shoreline for recreation, residence and preservation, providing new sources of land use conflict. The pressures of urban growth in Greater Vancouver, as Gibson (1976) and Barker (1974) clearly document, are confronted with changing values and greater concern for environmental quality. Coastal recreation particularly demonstrates this growing conflict:

In Greater Vancouver, much of the potential recreational space along the coastline and river banks is either occupied by industry or has been zoned for industrial purposes. This apparent competition for land resources has been assuming increasing significance as the population and therefore demand for recreational space rises (Skoda, 1976).

Howe Sound is indicative of these problems. Alongside existing industrial uses, there are increased demands for permanent and seasonal residence; automobile traffic to Bowen Island, for example, increased 106% between 1969-74 (Islands Trust, 1976). There are also increased pressures of recreational use in Howe Sound. Historically an area of primary resource development, it has evolved as a significant boating hinterland to Greater Vancouver.

#### *5.1 Howe Sound as a Boating Hinterland*

There are an estimated 70,000-80,000 recreational boats in Greater Vancouver. They generate over 3.5 million person-days of use per year. Given the limited amount of sheltered tidal water, a considerable portion of Greater Vancouver boaters are likely to use Howe Sound, particularly since average use in salt water is about 60% of total use. Some of these boats are moored within the Sound. About 20.7% of the total wet berths in Greater Vancouver are located in the study area. Of the total boats for rent in the metropolitan region, 63.6% are located in Howe Sound (Mos & Harrison, 1974; Woods Gordon & Co., 1974).

Exact figures on boating use in Howe Sound are not available. It is generally recognized, however, that the heaviest user pressure in British Columbia is being exerted in the area of Howe Sound, in the Gulf Islands and along the southeast shores of Vancouver Island. On a July-August

weekend, an estimated 12,500 boats owned in the Vancouver-Howe Sound area are in use in fresh and salt water (Meyer & Harrison, 1976). A 1970 Fisheries Service report estimated 350 boaters on most summer weekends in Howe Sound and Vancouver (Hoos & Vold, 1975). Another source estimated normal weekend day use in the Howe Sound-Burrard Inlet area during April to September at 400-500 boats, rising to over 4,000 on a fishing derby day (Task Force on National Marine Parks, 1971). A similar study indicated that the West Vancouver, Point Grey and Howe Sound waters have an average of 456 sport boats per weekend day during July and August (Environment Canada, 1972). Based upon these studies and site observations (1976), summer weekend day use appears to be over 400 boats in Howe Sound alone. Accurate estimates of boating patterns however proved difficult to undertake because of the special problems of counting boats. More detailed study would prove useful.

Recreational pressures on the marine environment of Howe Sound arise largely due to its proximity to Greater Vancouver. Population in the metropolitan area has increased 18.4% in the decade between 1966-76 (Census Canada, 1966; GVRD, 1976). Recreational boating has grown even more rapidly. Boat ownership and wet moorage increased 61.4% and 85.3% respectively during 1966-74. Approximately 22% of Vancouver's residents are directly involved in recreational boating through family ownership of one or more boats, up

from 15% in 1966 (Woods Gordon & Co., 1974). There are also an estimated (1970) 95,000 tidal sport fishermen in the metropolitan area (Sinclair, 1972). The growing participation in boating necessitates changes in public policy to provide adequate recreational facilities and protection of amenities.

A number of "marine parks" have been established to serve boaters in British Columbia. The Provincial Parks Branch administers 19 marine parks for boating. Of over 27,000 acres in marine park and marine recreational area in the province, only 83-acre Plumper Cove Marine Park is located in the Vancouver-Howe Sound area. Other heavily used public moorage sites are provided by federal government wharves at the major islands, Gibsons Landing and Horseshoe Bay.

In an area which has traditionally served resource industries, the shift in public policy toward recreational use and environmental protection is ridden with conflict. Mining, logging, and pulp production have long provided the basis for resource use. The recognition of increased recreational values in resource use decision-making has been at best minor and piecemeal. There are, for example, no identifiable guidelines as to the important recreational values which require protection in Howe Sound. These values are often recognized only under threat of deterioration. In the proposal for port development at Squamish, for instance,

recreational resources were given little consideration except in a general way from other agencies reviewing the proposal (Hoos & Vold, 1975). Similar problems are evident in the formation of community land use plans at Gambier Island, where there have been different perceptions of the recreational sites which warrant designation. Detailed baseline information, as Hoos and Vold (1975) note, is lacking on such aspects as wildlife, recreation and scenic resources.

There is a need therefore for a more positive recreational input to resource use decision-making. Howe Sound and the marine environment in general is an integral part of the Lower Mainland region and deserves recognition as such. This requires acknowledgement of the values associated with marine waters, which have traditionally been viewed as common property, freely available resources.

Significant demands will be placed upon Howe Sound to provide for boaters in the future. Meyer and Harrison (1976) describe some of these demands:

Pressure on temporary facilities serving the boater away from his home berth is most intense in Howe Sound and the Gulf Island area. Approximately 90% of the pressure comes from the residents of the south-coastal area. Pressure is most intense on weekends in July and August, and moorage facilities are overtaxed at that time (p. 33).

About 25% of the boaters in Greater Vancouver presently indicate inadequate launching and berthing facilities (Mos & Harrison, 1974). Participation rate in boating in Vancouver

is expected to increase from 22% (1974) to 26% in 1980. It is also estimated new wet berths and launching facilities would have to increase 70% and 62% respectively to meet 1980 needs (based on a 6% rate of growth of boat ownership) (Woods Gordon & Co., 1974). In the study sample of boaters in Howe Sound, 33% mentioned the need for new Marine Parks, 28% the need for expanded temporary mooring facilities and 16% the need for greater marina moorage. (Another 16% did not wish to have increased facilities, while 7% requested greater efforts in industrial clean-up.) New facilities and standards are necessary therefore to reflect the importance of recreation and scenic values in Howe Sound. This also implies new initiatives in planning.

### *5.2 The Institutional Setting*

Responsibility for land and water planning in Howe Sound is shared among a range of government agencies. This broad framework reflects the difficulties of separating recreational issues from larger problems of regional planning. A recent meeting of concerned parties emphasized the necessity of a multiple use approach to planning in Howe Sound. It concluded by recognizing "the need for a basic set of principles to govern land use and recreation in Howe Sound and the need for assistance in developing a structure to deal with the requirements and concerns of the affected

groups and communities."\*

Given the jurisdictional and administrative complexity in coastal areas, it is often necessary to focus upon a number of specific problems or themes. The division of multiple use planning into separate elements can assist the formulation of a plan through a series of visible policy issues. Recreation, then, can be viewed as a separate element of the planning process, to be integrated with other elements of the larger regional "plan." The appropriate set of participants can only be defined "during" this process. It is useful, however, to highlight some of the major institutional characteristics and constraints associated with recreational planning in Howe Sound.

At the federal level, the Small Craft Harbours Branch of Environment Canada has assisted in the development of marina facilities. Permanent wet moorage has traditionally been the focus of assistance. Meyer and Harrison (1976) describe inequities in conventional policies, particularly in a lack of assistance to the majority of recreational boaters: the trailer-boaters, the small club boater, and the resident renter/borrower. There are, for example, more than three times as many households with trailer or cartop boats as those with wet-moored boats (Meyer & Harrison, 1976). The authors recommend, amongst other actions, a broadening

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\*Minutes of a meeting sponsored by the Islands Trust, held in Vancouver, August 27, 1976 (mimeographed).

of programs to effectively reach more of the boating public. In addition, little attention has been given to the construction of transient, temporary moorage to serve the major boating pressures during July and August. The implication is for more systematic provision of boating facilities.

The Federal Fisheries and Marine Service have an important function in protecting the commercial and sport fishery and its critical habitat. Sport fishing is a primary activity for an average 64.5% of Greater Vancouver boaters (Mos & Harrison, 1974). Yet, some 88% of surveyed fishermen were also found to be seeking satisfactions unrelated to the catching of fish, the primary motives being "to take it easy" and "to be outdoors" (Bryan, 1974). The satisfactions associated with sport fishing appear to be closely tied to the larger marine environment. This suggests that sport fishing experiences, as well as the sport fishery, can be significantly affected by other resource uses in Howe Sound. It should be noted that Howe Sound has been closed to commercial fishing.

Major responsibility for land use planning exists at the provincial and regional levels. The Islands Trust is entrusted with preserving and protecting the "unique amenities and environment for the benefit of the residents of the trust area and of the Province generally" (Islands Trust Act, 1974). The qualities and vulnerabilities of the islands warrant special attention in the preparation of community

plans and regulation of conflict between resident and non-resident interests. Gambier Island is a case in point. The proposed Community Plan recognizes the need to reserve major areas for public recreational use, including the provision of marine parks (Sunshine Coast Regional District, "By-Law No. 110, Gambier Island Official Community Plan," 1976). Local residents have provided the objectives and criteria for determining land and foreshore use. In general, the draft plan provides extensive protection of recreational and scenic values. It notes in clause 8.2.3.3:

The development of marine parks on Gambier Island should be part of an overall marine recreational plan for Howe Sound. The uses of each site should relate to the total recreation system with some sites used as access to the interior with provision for small boat docking only, some used for day-use picnic areas and others as overnight marine parks.

Local residents, however, do not appear to favour the provision of major recreation facilities (Sunshine Coast Regional District, n.d.). In a local survey, 67% of residents favoured backpacking trails, but only 40% desired public campgrounds. Some 64% did not see the need for additional boat-related facilities and 68% did not favour a Marine Park. In light of these attitudes, the proposed plan recommended provincial park status for the undeveloped interior of the island at Gambier Lake. The Provincial Parks Branch, however, considered the shoreline more important for park use than the interior and noted that the most suitable site for a Marine Park had been designated

residential in the plan.\* These different perceptions reflect different communities of interest. Local community plans express the views of area residents and provide only marginal input for outside users such as recreational boaters. It is important therefore to recognize the recreational significance of Howe Sound to ensure recreational boaters have adequate representation in the planning process. The example of Gambier Island highlights the need to find a compatible relationship between resident and non-resident users.

The Islands Trust is responsible for only Bowen and Gambier Islands, and assists the Regional Districts in land use planning for these areas. But Howe Sound is also divided among the three Regional Districts of Greater Vancouver, Squamish-Lillooet and Sunshine Coast. The location of Howe Sound on the fringe of these Regional Districts may tend to inhibit the development of rural recreation policies. The Greater Vancouver Regional District has provided an initial framework through an open space conservancy which includes a small part of the Howe Sound shoreland within a multi-use area (GVRD, 1976). More specific proposals throughout the Sound will be required if recreation and scenic resources are to be protected. The Provincial Parks Branch are also directly involved in providing recreational

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\*Minutes of the Technical Planning Committee meeting, Regional District Offices, Sechelt, B.C., April 14, 1976.

facilities of regional and provincial significance. They especially have a prominent role in Marine Park planning, although the extent of surrounding land use pressures in Howe Sound requires that such planning does not occur in isolation.

The Land Management Branch has a visible role in administering foreshore and other Crown land leases. Foreshore log booming, sorting and storage have been a traditional use in Howe Sound. The effects of bark debris and soluble organic substances (leachates) on benthic life have only recently become recognized (Hoos & Vold, 1975). Local land use policies at Gambier Island, for example, favour "removing log booms from waters where there are significant changes to marine growth as a result of their presence" (SCRD, By-Law No. 110, clause 6.4.3, 1976). These objectives reflect the increased emphasis on non-industrial values in Howe Sound. For the recreational boater, log booms can often constrain access to the shore, but they are also highly valued as temporary moorage facilities. Some 74% of the survey sample in this thesis agree or strongly agree that log booms are "good for the boater." This response, however, is also indicative of the lack of existing mooring facilities. The log booms are popular moorage sites yet, under heavy levels of use, they become neither efficient nor safe forms of moorage. They are nevertheless important in lieu of other facilities. A recognition of

recreational values in these foreshore leases will be increasingly necessary as boating activity grows. This also implies a need for some regional perspective to compromise in separating the intensively used boating-moorage sites from log storage sites.

Other agencies have important roles in the recreation environment. The Forest Service, for example, is presented with an excellent opportunity to protect scenic values in Howe Sound through forest landscape management. The Environment and Land Use Secretariat offers an important function for co-ordinating resource use plans. In general, recreational boating values in Howe Sound have been given only limited commitment by government. Planning has traditionally focussed upon urban and land-oriented areas, while the uses and demands upon marine waters have significantly increased over the years. The need has arisen to expand the planning perspective.

In the present process of formulating land-use plans in Howe Sound, the locus of decision-making lies with "legal" owners and tenants. But the Sound is also of regional and provincial significance, satisfying important values held by residents of Greater Vancouver and elsewhere. It is important that these recreational users are represented in the planning process. Some 78% of the study sample stated that the provincial government should take steps to provide the recreation facilities needed. In addition, potential

conflict among local, regional and extra-regional interests requires that a broader approach than traditionally used is necessary in formulating resource use plans. If policies and plans can be clearly articulated, it will provide a better basis for avoiding future conflict between industrial, residential and recreation resource users.

## CHAPTER 6

### CONCLUSIONS

#### *6.1 Summary*

From the preceding chapters, several general conclusions can be drawn about resource use and resource allocation mechanisms in Howe Sound. The demands upon the Sound have changed significantly over the years. This change has been described as a shift from an earlier emphasis on primary, resource extraction activities to a more diversified use of the resource base that includes the growing number of recreational and residential uses. The growth of boating has particularly altered resource use values in Howe Sound.

It is also evident that government resource management agencies at all levels need to respond to the increased recreational uses and benefits derived from Howe Sound. The response of these agencies in the past has largely failed to recognize these changing values.

In particular, there appears to be a lack of marine-oriented planning. Existing plans and policies have tended to focus on land areas of the Greater Vancouver region. The marine environment (particularly the water surface) serves an integral part of the urban region which has not been highly recognized in land use policies. This deficiency

reflects, perhaps, a lack of overall planning and co-ordination.

Finally, the shoreline should be viewed as a functional part of the recreational boating experience. Boaters are making demands on shoreline and upland areas; the recreational experience encompasses a much broader environment than simply the water surface.

Some of the specific conclusions of the research are summarized below in point form:

- (1) The boaters who use Howe Sound are mostly residents of the Lower Mainland area, and over 60% make at least 10 to 15 trips to the area each year.
- (2) Boaters prefer Howe Sound as a boating area to a large degree because of its close proximity to their homes, and because of the sheltered nature of the area. In general, these boaters are older, better educated, and have higher incomes than the population of the province as a whole.
- (3) A majority of the time spent in Howe Sound is stationary, either with the boat moored or anchored. A significant amount of time is spent by the boater on shore.
- (4) There is a preference amongst the boaters for mooring their boats rather than anchoring. In the moorage, the boaters are mainly looking for shelter, solitude and quiet, local scenery, adequate floats and wharves, suitable bottom, depth and tides, and log booms.

- (5) Cruising tends to be a passive rather than an active activity. The major preferences are for relaxing, viewing scenery and eating and drinking.
- (6) Fishing was rated highly by the owners of smaller boats (22 feet and under in length). Most of the concentrations of sport fishing boats occur in the southern area of the Sound between Cowans and Gower Points.
- (7) While ashore, the boaters were primarily looking for trails, viewpoints and outlooks and beaches. Support facilities such as stores, restrooms and garbage disposal were rated as less important.
- (8) Destinations favoured by the boaters were West, Centre, and Long Bays on Gambier Island, the Plumper Cove Marine Park on Keats Island and Snug Cove on Bowen. Favoured destinations appeared to be related to the opportunities for moorage in the area.
- (9) A need was indicated for more dispersed moorage facilities that would reduce conflicts due to crowding and overuse.
- (10) Over 50% of the boaters indicated that they were either dissatisfied or only partly satisfied with the recreation experience in Howe Sound.
- (11) The major disadvantages to boating in Howe Sound were noted by the boaters as: (a) forestry activities, (b) a lack of facilities and (c) boating overcrowding.

- (12) Over 74% of the sample agreed or strongly agreed with the statement that "log booms are good for the boater." Log booms appear to be an important component in providing moorage space in lieu of other facilities.
- (13) While the population in the Greater Vancouver Regional District grew by about 20% between 1966 and 1976, boat ownership in the area increased by about 60% between 1966 and 1974.
- (14) It was estimated that more than 400 boats use Howe Sound on a summer weekend day.
- (15) There is a broad range of government agencies that affect recreational policies in Howe Sound. This fact contributes to the lack of distinct policies and to the marginal consideration of recreation in the allocation of resource use.
- (16) Recreational boaters have a lack of direct input to the resource allocation process in Howe Sound. It would appear that their needs are underrepresented in existing community and land use planning.
- (17) Major responsibility for the provision of recreational boating facilities lies at the provincial level since the study area is of regional and provincial significance.

## 6.2 Implications

The information presented in this thesis offers a number of implications for future recreation planning in Howe Sound. These implications can be divided into two types; those drawn from the internal conflicts identified amongst recreationists themselves, and those resulting from conflicts with the forest industry. As noted in Chapter Four, these two types of conflicts appear to be of equal importance to the boater and therefore to ensure the maintenance of the quality of the recreation experience in Howe Sound, effort should be made to resolve or reduce both types of conflict.

In terms of the internal conflicts amongst the recreationists, there would appear to be a serious need for more Marine Parks in the study area, particularly on the heavily used south shore of Gambier Island. A park in this area would help to absorb the impact of the boating activity that is already taking place in the area, and would also aid in reducing potential conflicts that emerge. By channelling or containing the existing use of the area, future negative spillover effects on the nearby cottage and landowners could be minimized. This park should provide access to the back-shore and uplands areas and the entire area should be considered a priority in the provision of marine-based moorage facilities.

In addition to this area, several smaller parks in outlying areas would help to reduce conflicts due to overcrowding and overuse in the major boating areas by dispersing activity patterns. These parks should provide some form of moorage facility and foreshore-backshore recreation area. Picnic and camping facilities are not necessarily required for such sites.

There is also a need to ensure public access on the eastern shoreline of the Sound. This area is under intensive pressure from sprawling residential development. Since the supply of flat land is very limited, wherever possible the remaining areas should be protected for day use recreation accessible from Vancouver by car. One crucial area for day use recreation is at Porteau Cove.

Future expansion of the B.C. Ferry Authority facilities at Horseshoe Bay must be seriously questioned due to the importance of the area to the recreational boater, and also because of the impacts of increased marine traffic on the Sound.

There is a need to encourage the development of launching ramps and dry moorage facilities on the eastern shore of the Sound. Many boaters presently complain of overcrowding at the existing facilities.

In terms of the recreation/forestry conflicts, three major issues emerge: (1) debris control, (2) pollution abatement from the pulp mills, and (3) foreshore lease policy.

The data collected from the study sample clearly indicate the need for a better form of debris control in the Sound as the present clean-up system is inadequate from the boaters' point of view. The question of who should take responsibility for the clean-up and who should pay is complicated by the fact that there is still some question as to the origin of debris. A 1971 B.C. Forest Service study of the Fraser River concluded that at least 51% of the debris in the river comes from the forest industry either in the form of logs lost in transit, logging wastes or sawn lumber. The remaining 49% is natural debris carried down the river (Barker, 1974). Regardless of the origin, the same report estimated that the loss to the forest industry and the damages caused to both private and commercial boats at over \$3 million annually on the Fraser River alone.

In addition, the tremendous impact of the accumulated debris and bark loss on water quality and the benthic marine life is becoming increasingly recognized (Hoos & Vold, 1975; McDaniel, 1973). Barker (1974) summarizes the impacts:

Marine habitats and freshwater spawning beds are smothered and the amount of dissolved oxygen can be badly depleted. In some cases, the oxygen demand of the slowly decomposing bark creates anaerobic conditions that lead to fish kills. The water storage of logs releases highly coloured oxygen-demanding 'leachates'. Long log booms also reduce the amount of sunlight filtering through to bottom-living plants (p. 24).

In Howe Sound, due to the steepness of the shoreline, the biological impact of debris is much less than in shallow

or estuarine areas, but major booming grounds do exist in several of the shallow areas, notably West, Centre and Long Bays on Gambier Island and in the Mamquam Blind Channel.

Due to the very high damage costs of log debris in Howe Sound, this conflict must be further reduced and as the present initiatives do not appear to be adequate, stronger action needs to be taken by government agencies to alleviate the problem. Co-ordination is also clearly lacking between industry and government in providing the necessary clean-up. Witness one letter from a local log salvor to the major B.C. boating magazine *Pacific Yachting* in the December 1976 issue:

I wonder if your readers would be interested in knowing that . . . Gulf Log Salvage Co-operative Association, has recently decided not to pay for the recovery of certain grades of merchantable logs that are hard for them to market.

I can understand our new government allowing them to leave this material in the woods but how can the industry through their agency, Gulf Log, be allowed to leave it loose in the water thus adding to their already considerable contribution to our cluttered water and beaches?

G. MacDougall,  
Log Salvor  
Port Mellon, B.C. (p. 9).

Present pollution control at the two pulp mills in the Sound also appears to be inadequate. Information from the B.C. Pollution Control Board indicates that at the present time neither mill is meeting the standards for a "C" class effluent discharge permit (the lowest standard). Although the Port Mellon mill has been directed to upgrade to a "B" standard by 1979 and Woodfibre by 1980, there is doubt if present industry conditions will permit these objectives to

be achieved (M. Kruegar, personal communication, 1977). In the light of the increasing importance of the Sound to recreational activities, the effluent discharge licenses of these mills should be reviewed and perhaps stricter standards or enforcement applied.

A general review of foreshore lease policy that would reflect the important use of these areas for recreational boat moorage as well as for log storage, appears to be urgently needed. It is questionable whether log booms are the most efficient means of providing destination moorage space to the boater in the crowded and sheltered areas of the Sound. Many boaters made significant comments on the problem in the interviews and in the comments written on the questionnaires (see Appendix B). One general consensus was that until alternative facilities are provided, the booms provide important moorage and in many cases facilitate access to the foreshore rather than restricting it.

This review of foreshore lease policy is an immediate need as a large number of the leases in the Sound expire in the next ten years. As input is needed from numerous government agencies and interest groups, the Environment and Land Use Committee Secretariat would be a logical body to co-ordinate such a review.

Finally, a general implication of the study is the obvious need to provide more positive recreation policies for the Sound. This process should formalize boating input

to the resource allocation process in Howe Sound. Greater representation should be given to the needs of the recreational boater. This reflects a need for a much more co-ordinated framework in which to formulate recreation policies than currently exists.

Recreation policy responsibilities are dispersed among a number of agencies and an integrated planning framework is needed to provide cohesiveness to the policy process. This could take the form of an inter-agency committee similar to existing technical planning committees, or at a less formal level, some leadership from the Provincial Parks Branch in formulating recreational planning proposals and guidelines in co-operation with other agencies and public groups.

The increasing pressure on Howe Sound's resources will not be easily reduced through traditional resource use policies. A new basis for resource use decision making will be necessary, in keeping with the growing recreational importance of Howe Sound.

### *6.3 Conflict Theory, Resource Management and Regional Planning*

This thesis has attempted to demonstrate how an approach to resource management utilizing the concepts of resource conflict and employing the methodologies of perception research can provide the necessary information needed to formulate management policy and planning goals. This

approach identifies the pressures that are being put on resources by the demands of different resource consuming groups, and notes their implications, as a pre-stage to management.

In the case study of Howe Sound, the sources, spatial dimensions and magnitude of conflicts between forestry and recreational demands clearly demonstrate the future resource management policy needs of the region. Without this information, much time and energy could be wasted instituting misdirected and unnecessary policy. While study of the perceptions and attitudes of the forestry managers towards the recreational boaters was beyond the scope of this thesis, investigation in this regard might uncover further policy directions.

The methodology and the resulting conclusions and implications also reveal the usefulness of the conceptual framework of conflict outlined in Chapter Two and presented in Figure 2.1. The field work implied that the resource conflicts in Howe Sound are still in some form of pre-stage. Resource demands have been expressed by both forestry and recreation, and the stress due to their incompatibility is being introduced into the land and water use system. This is the stress that will lead to conflict in the future. Due to the fact that the conflicts are being perceived by the recreationists, it would appear that the stress is building. This demonstrates the need to act now to adjust the resolu-

tion mechanisms in order to avoid conflict in the future. In addition, if conflicts are hypothesized initially as was the procedure in this study, and then examined, it would appear that the conceptual framework can aid in the prediction of future conflicts and stress points in the land and water use system.

The types of conflict identified according to the conceptual framework are mainly of the deterioration of consumptive quality type (type four), although characteristics of all four types are exhibited. The internal conflicts identified amongst the boaters themselves seem to be of the type four variety. The spillover effects of noise, large boat wakes and crowding would imply a deterioration in the former quality of the recreation experience. However, as it can be said that the boaters have exceeded the carrying capacity of the present facilities, some form of the unsatisfied demand type of conflict is also in evidence.

The forestry/recreation conflicts identified are largely of the fourth type of conflict due to the externalities and spillovers causing a further deterioration in the recreation experience. The problem of log debris in the water causing damage to boats is of this type, as are the pollution effects from the pulp mills. The complex conflicts caused by the foreshore leases and log booming exhibit a wider variety of conflict types. On the one hand, there are the positive benefits due to the provision of moorage space by the log

booms while on the other hand, there are the unsatisfied demand type of conflicts in cases of restricted access to the foreshore caused by booming in shallower areas. In addition, the deterioration in biological production of marine life caused by the log booms exhibit aspects of both resource depletion conflicts when sport fish habitats are disrupted, or a type four conflict when the settling debris causes a deterioration in the consumptive quality of an area. The sheer occupancy of large amounts of water space would also imply conflict of the exclusive use type.

While these conflict typologies only have an indirect application to the problem, and they only partially aid in indicating the types of resolution mechanisms needed, they are useful in adding some order to the diverse array of conflicts. Other current typologies often rely on distinctions between private and public goods, and private and common property resources and as such can also be restrictive in their application. Further work on conflict typologies may provide more useful applications in resource conflict research.

The field work also indicated the types of adjustments to the resolution mechanisms that are needed to resolve or reduce conflict. The conclusions arrived at in the first two sections of this chapter would indicate that the existing government institutions could resolve conflict by solving the problems of boater crowding and by instituting the

forestry adjustments noted. The results do not seem to justify creation of a new institution such as a coastal zone management agency modelled along the lines of U.S. agencies. With better co-ordination and more direct action, the existing institutions seem capable of taking the necessary action, especially if problem awareness in these institutions is enhanced by this type of research.

Private market solutions may also prove to be effective in reducing certain types of conflict. Many boaters indicated that they felt that it was the responsibility of private enterprise (with some government assistance) to provide new marinas and other marine-oriented facilities. It is also possible that the private market could be utilized to solve some of the problems of log debris by providing a larger return to log salvors for certain smaller or undesirable material. This may prove a "least cost" method of solving debris problems.

Finally, the results of the field work have certain implications with regard to the power of the resource consuming groups. The boaters are relatively unorganized and ineffective in communicating their perceptions to resource managers and the forest companies. Thus, it seems possible that if the recommended management steps are not taken, and stress continues to build, the forest companies could wield their larger power in an inequitable manner. In this case, either the problems besetting the boater would not come to

the attention of the resource managers, or the conflict could then build into a much more explosive situation than the relatively quiet one that now exists. In cases where the power or the disorganization of a consuming group inhibits conflict response, resource managers may have to formulate means to facilitate better communication by these groups of their resource demands and conflict perceptions.

The thesis also indicates that the concepts of conflict provide a sound basis for future perception studies. The results are readily translated into policy applications and the theoretical basis provided by a long tradition of investigation of conflict in other social sciences lends some order and focus to the direction of the study. Future application of this approach may prove to be very promising.

The research techniques employed in this thesis have clearly revealed inadequacies in the resource management process. In the future, a better understanding of resource preferences and demands within a conceptual framework of conflict will help to solve resource management problems. By providing decision makers and resource managers with more complete information about their public, the resources of sensitive coastal areas may be allocated with greater efficiency and equity without the creation of new, centralized and often distant management agencies.

## POSTSCRIPT

The data presented in this thesis were also used by the author to prepare a report for the Islands Trust entitled: *Recreational Boating in Howe Sound: A Data Base for Regional Planning*. The report, written in association with Mr. Alan Ferguson, a graduate student in geography at the University of Victoria, included most of the recommendations that are presented in this thesis. The report was received by the general trust committee on December 15, 1976, and was then circulated within the provincial government. At the time of writing (March 1977), it would appear that several of the recommendations are being acted upon.

On February 25, 1977, provincial Finance Minister, Evan Wolfe, announced that the government plans to expand the system of Marine Parks in the Strait of Georgia. The minister indicated that a number of Marine Parks are in the planning and development stages. He particularly welcomed the support of the Marine Trades Association of B.C. and the Canadian National Sportsmen's Shows who had earlier informed the government that they would support a joint project to acquire and develop Marine Parks in the Vancouver-Howe Sound area. It is very likely that these parks will be located in the areas recommended in the earlier report to the Islands Trust.

A second announcement from the government relates to the structure of the trust itself. The report and this thesis indicated that some institutional adjustments were needed in the resource allocation process in the Howe Sound area. New amendments in the Islands Trust Act have been introduced to the legislature by the Minister of Municipal Affairs and Housing, the Hon. Hugh Curtis. These changes (Bill 25, 1977) would transfer the responsibility for planning and zoning in the trust area from the regional districts to the trust. The regional districts would still be able to issue building permits and conduct inspections, and would still have responsibility for such things as sewers and hospitals. The minister indicated that by giving the Islands Trust responsibility for the important aspects of planning and zoning, the "over-government" that has afflicted the trust area would be reduced. Curtis states that, "The new system will not only eliminate the delays and frustrations associated with an additional approval level; it will also confer a positive planning role on the trust and the communities it serves" (*Vancouver Province*, Feb. 26, 1977, p. 41).

Since the introduction of the legislation, reaction has been mixed. Some of the regional districts have contended that the government will be centralizing powers into the hands of the appointed general trust committee and will thus be taking powers away from the local communities. On the other hand, the government feels that the planning process

will be more efficient and due to the representation of local residents on the various local trust committees, more responsive to community needs. The overall impacts of these changes in the Islands Trust Act on the resource allocation process in Howe Sound is unclear at this time.

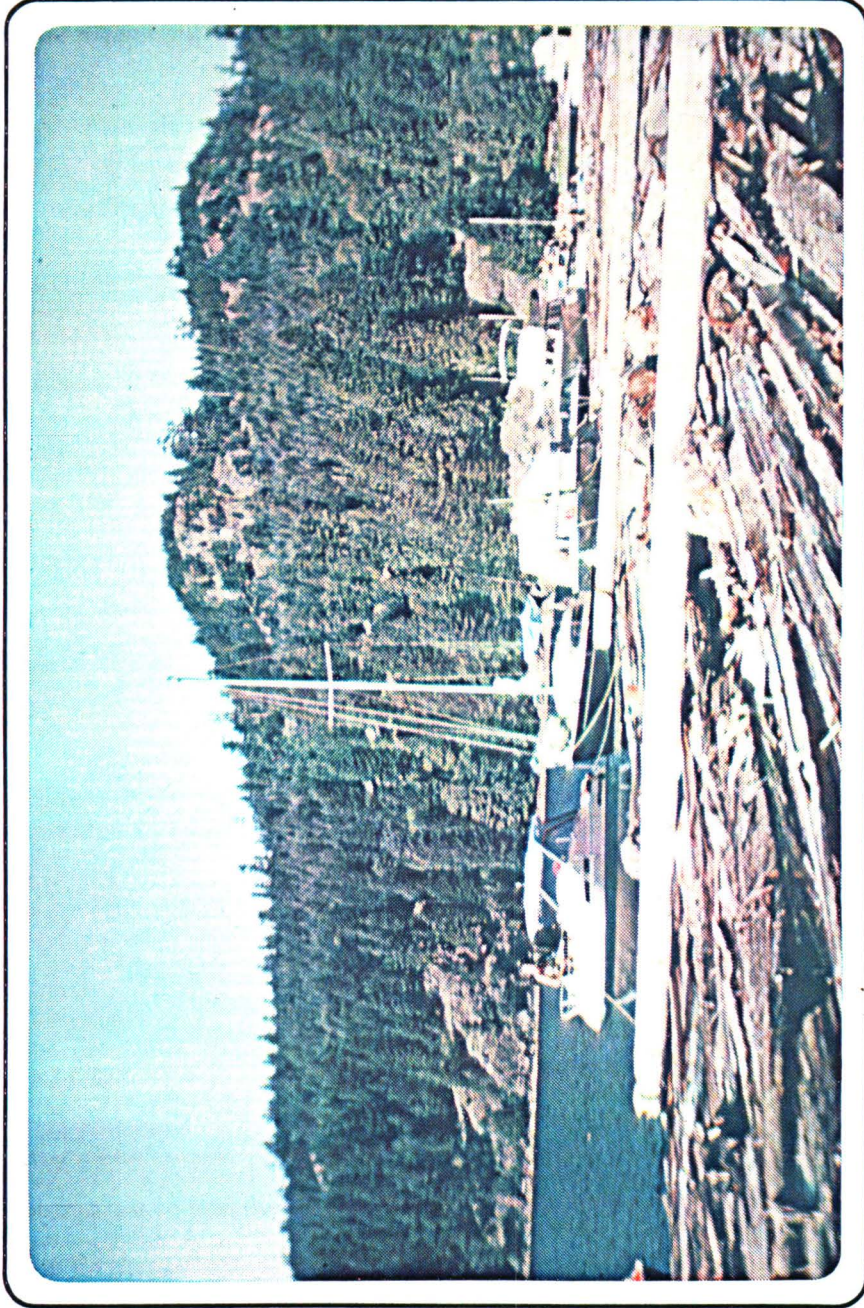


Plate 1. Boaters moored to log booms in West Bay, Gambier Island.

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## APPENDIX A

### THE QUESTIONNAIRE

The undertaking of the questionnaire was sponsored by the Provincial Government's Department of Labour, Provincial Seasonal Employment: University Program. The author wishes to acknowledge this important assistance without which this research would not have been possible



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*Department of Geography*

## HOWE SOUND RECREATION STUDY BOATER'S QUESTIONNAIRE - 1976

The attached questionnaire is intended to gather information on recreational boating in Howe Sound. As a boater we hope that you will be willing to respond to the questions. Some of them relate to your own activities, while others are designed to allow you to express your attitudes on the area in general.

Please complete all the questions and feel free to make any comments you wish on the back. When you have completed the questionnaire either return it to a field worker if they are available or use the attached envelope to mail the questionnaire to us.

The information that you provide will be used to aid in future planning for the area and for university research. All answers will be kept strictly confidential and at no time will answers be identified with individuals. Thank you for your co-operation and assistance.

Sincerely yours,

A handwritten signature in cursive script that reads "James A. Alley".

James A. Alley

1. Location \_\_\_\_\_ 2. Date \_\_\_\_\_ 3. Time \_\_\_\_\_
4. Where is your home? \_\_\_\_\_  
 If you are a B.C. resident, please list the first three diddits of your telephone number .....   
 (this allows us to locate your home community accurately)
5. At the present time, is your boat:
  - a) permanently moored in Howe Sound .....
  - b) trailered to Howe Sound .....
  - c) rented in Howe Sound .....
  - d) moored outside Howe Sound .....
6. Length of Boat \_\_\_\_\_ ft. Power  Sail  Horsepower \_\_\_\_\_
7. Do you own a cottage in Howe Sound? \_\_\_\_\_ If so, where? \_\_\_\_\_  
 \_\_\_\_\_
8. When did you first start coming to Howe Sound?  
 1976  74-75  72-73  70-71  68-69  66-67   
 before 1966
9. How many local trips do you intend to make entirely in Howe Sound this year?  
 less than 5  5-10  10-15  15-20  over 20
10. What is the average length of your trips?  
 one day or less  overnight  2-3 days  over 3 days
11. How many people are usually on your boat? \_\_\_\_\_
12. How many hours do you spend on each trip:
  - a) cruising \_\_\_\_\_ hrs.
  - b) anchored \_\_\_\_\_ hrs.
  - c) moored \_\_\_\_\_ hrs.
  - d) ashore \_\_\_\_\_ hrs.
13. What activities do you most often engage in WHILE CRUISING in Howe Sound?  
 (PLEASE RANK 1, 2, 3, 4 etc. in order of importance. Mark X against those that are not important)
 

a) exploring ..... <input type="checkbox"/>	f. viewing scenery ..... <input type="checkbox"/>
b) sunbathing ..... <input type="checkbox"/>	g. skin diving ..... <input type="checkbox"/>
c) fishing ..... <input type="checkbox"/>	h. eating & drinking ..... <input type="checkbox"/>
d) travelling to cottage .. <input type="checkbox"/>	i. relaxing ..... <input type="checkbox"/>
e) water skiing ..... <input type="checkbox"/>	j. other (specify & rank) . <input type="checkbox"/>

\_\_\_\_\_  
 \_\_\_\_\_

14. Do you most often: (RANK 1, 2, 3)

- a) moor to floats and wharves .....
- b) moor to log booms .....
- c) anchor .....


15. What do you look for in a good moorage or anchorage? (RANK AS BEFORE)

- |                               |  |
|-------------------------------|--|
| a) amount of shelter .....    | f) log booms .....                     |
| b) local scenery .....        | g) suitable bottom, depth, tides ..... |
| c) solitude and quiet.....    | h) presence of other boats .....       |
| d) adequate floats & wharves. | i) other (specify) .....               |
| e) absence of other boats.... | _____                                  |



16. What do you look for when you go ashore? (RANK AS BEFORE)

- |                              |                                       |
|------------------------------|---------------------------------------|
| a) oysters & clams .....     | f) stores .....                       |
| b) picnicing sites .....     | g) restrooms & garbage disposal ..... |
| c) trails .....              | h) beaches .....                      |
| d) viewpoints & outlooks ... | i) skin diving sites .....            |
| e) camping spots .....       | j) other (specify) .....              |
|                              | _____                                 |



17. What do you consider to be the main advantages to boating in Howe Sound, what do you like most about the area? (In order of importance)

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18. What do you consider to be the main disadvantages to boating in Howe Sound, what do you dislike most about the area?

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19. What new or expanded facilities would you like to see provided in Howe Sound?

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20. Who do you think should take the steps to provide them?

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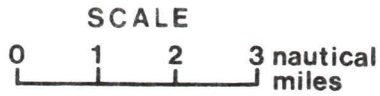
21. Please circle on the following map of Howe Sound (MAP ONE) your favourite areas for recreational boating.

22. On Map two, please circle areas that you avoid going to because of other activities that take place in the area. Also indicate on the map why you don't go to that area.

# HOWE SOUND

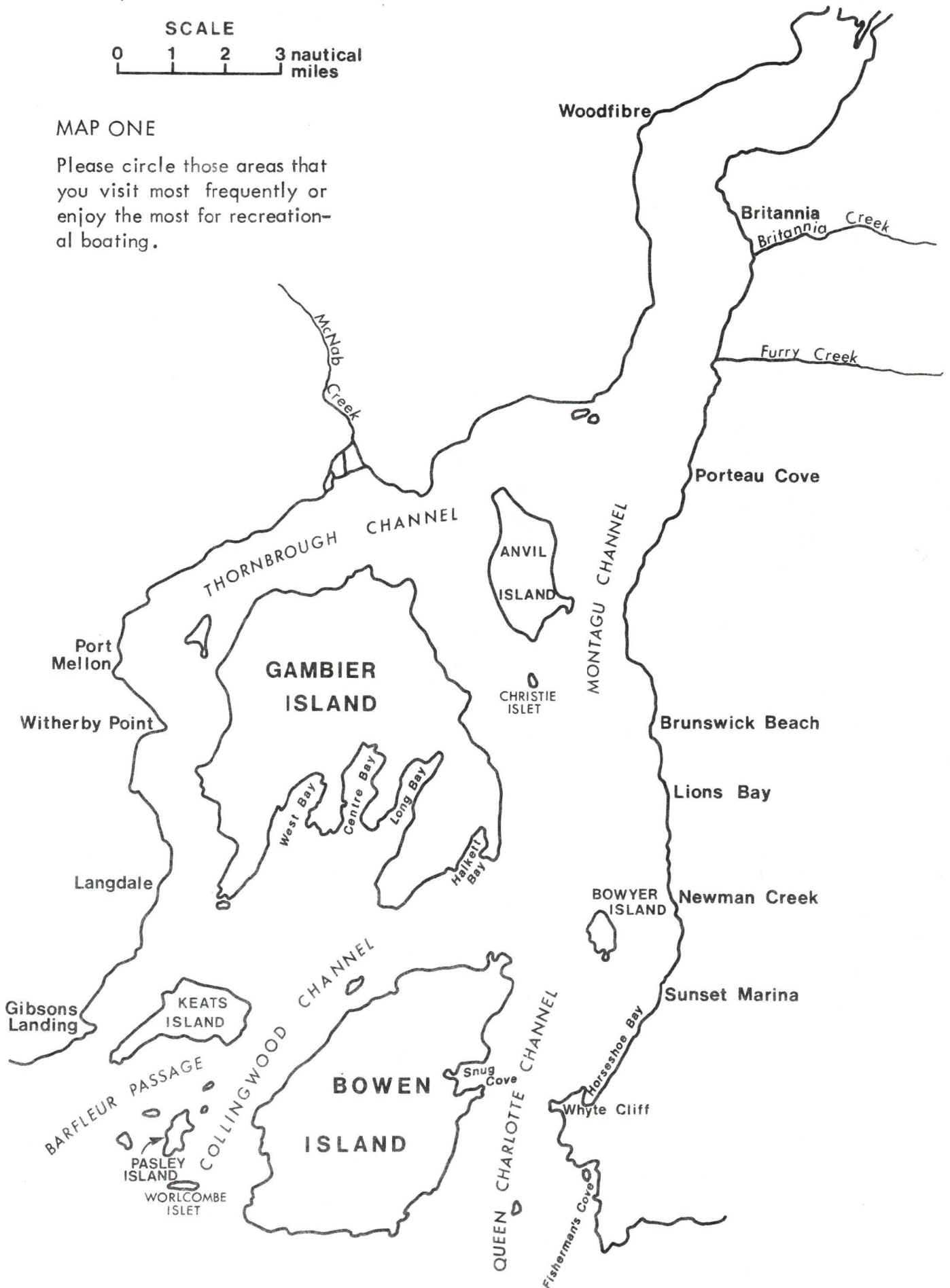
130

Squamish

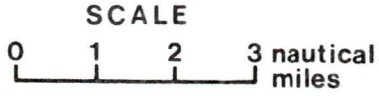


## MAP ONE

Please circle those areas that you visit most frequently or enjoy the most for recreational boating.

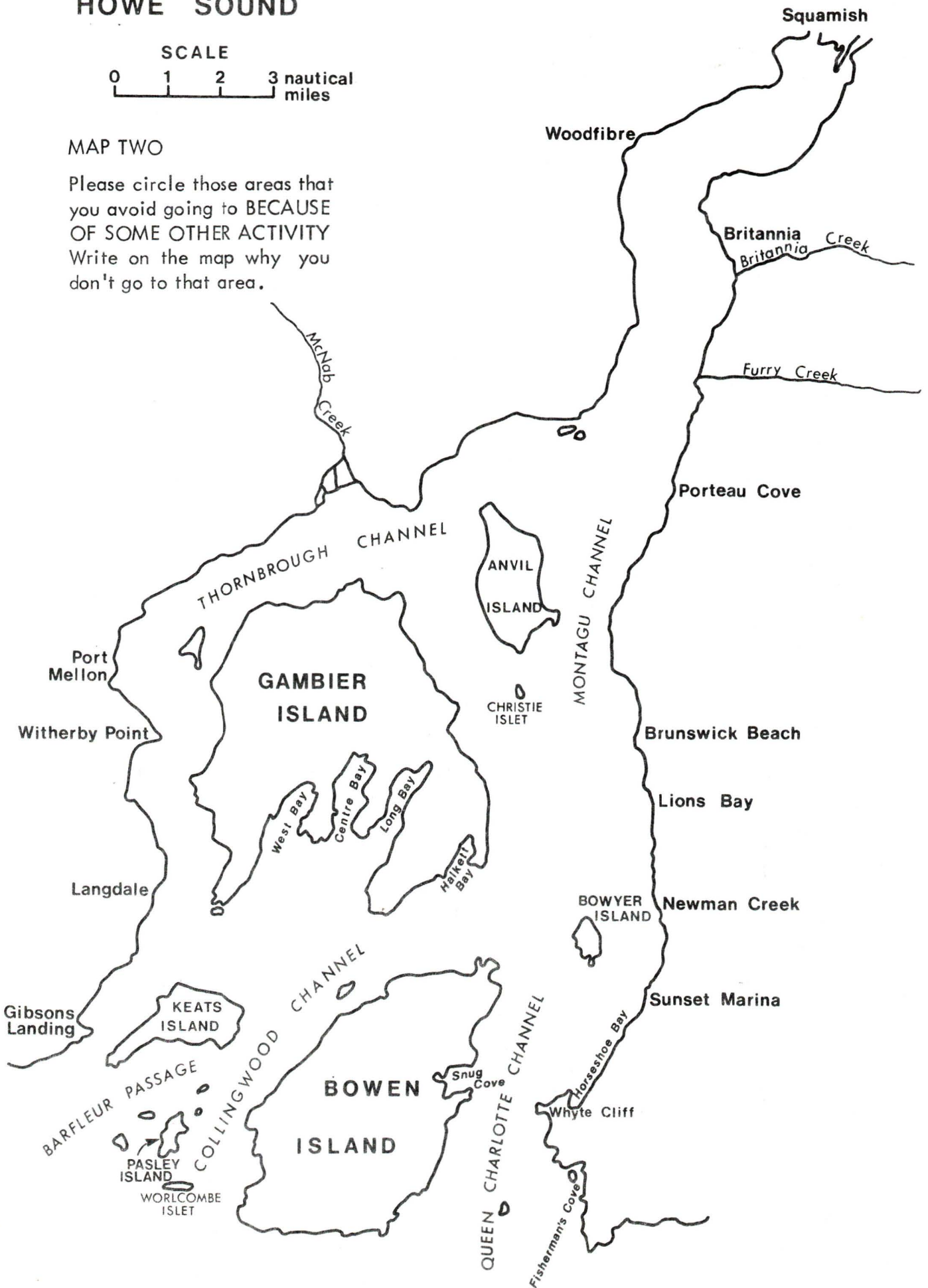


# HOWE SOUND



## MAP TWO

Please circle those areas that you avoid going to BECAUSE OF SOME OTHER ACTIVITY. Write on the map why you don't go to that area.



23. Below are actual views that have been expressed by various people, about possible conflicts between the activities of the forest industry and recreational boating. Please read each statement carefully and then indicate how much you agree or disagree with each one by checking the appropriate box.

- 1) Howe Sound is a good example of an area where forestry activities and recreational boating are able to co-exist with conflict.....
- 2) Pulp mills should be banned completely from Howe Sound.....
- 3) Log booms are good for the boater as they provide shelter and a good place to tie up.....
- 4) The major navigational hazards in Howe Sound are floating logs and debris from the forest industry.....
- 5) Howe Sound would give me a much more enjoyable recreation experience if forest activities were banned completely from Howe Sound.....
- 6) Forest activities are good in Howe Sound as they signify people at work and a healthy economy in the province.....
- 7) If forestry activities increase in Howe Sound, many boaters will stop using the area.....
- 8) The problems with boating in Howe Sound aren't caused by the forest industry, but are the result of other activities.....
- 9) Forestry activities are the major cause of environmental pollution in Howe Sound.....
- 10) Forestry and recreational activities should be able to continue at the same time without conflicting with one another.....

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1) Howe Sound is a good example of an area where forestry activities and recreational boating are able to co-exist with conflict.....					
2) Pulp mills should be banned completely from Howe Sound.....					
3) Log booms are good for the boater as they provide shelter and a good place to tie up.....					
4) The major navigational hazards in Howe Sound are floating logs and debris from the forest industry.....					
5) Howe Sound would give me a much more enjoyable recreation experience if forest activities were banned completely from Howe Sound.....					
6) Forest activities are good in Howe Sound as they signify people at work and a healthy economy in the province.....					
7) If forestry activities increase in Howe Sound, many boaters will stop using the area.....					
8) The problems with boating in Howe Sound aren't caused by the forest industry, but are the result of other activities.....					
9) Forestry activities are the major cause of environmental pollution in Howe Sound.....					
10) Forestry and recreational activities should be able to continue at the same time without conflicting with one another.....					

24. Are you presently satisfied with recreation in Howe Sound?
- Very satisfied .....                       Disatisfied .....
- Satisfied .....                                   Very dissatisfied.....
- Partly satisfied .....

25. What other activities that take place in Howe Sound bother you most? Activities that interfere with your recreation experience. (PLEASE RANK 1, 2, 3, 4 etc. in order of importance. Mark X against those that are not important).

- |                              |                          |                         |                          |
|------------------------------|--------------------------|-------------------------|--------------------------|
| a) other boaters .....       | <input type="checkbox"/> | f) logging .....        | <input type="checkbox"/> |
| b) commercial fisheries..... | <input type="checkbox"/> | g) pulp mills.....      | <input type="checkbox"/> |
| c) log booming .....         | <input type="checkbox"/> | h) summer cottages..... | <input type="checkbox"/> |
| d) tug boat traffic.....     | <input type="checkbox"/> | i) industry.....        | <input type="checkbox"/> |
| e) ferry traffic.....        | <input type="checkbox"/> | j) other (Specify)..... | <input type="checkbox"/> |

26. In what ways do you think that forestry activities should be modified in Howe Sound so that they don't conflict with your boating experience?

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PERSONAL DATA - STRICTLY CONFIDENTIAL

27. Sex: Male.....                       Female.....

28. Please mark an X against appropriate income bracket.
- |                             |                          |                            |                          |
|-----------------------------|--------------------------|----------------------------|--------------------------|
| a) under \$10,000.....      | <input type="checkbox"/> | d) \$30,000 - \$39,999...  | <input type="checkbox"/> |
| b) \$10,000 - \$19,999..... | <input type="checkbox"/> | e) \$40,000 - \$49,999.... | <input type="checkbox"/> |
| c) \$20,000 - \$29,999..... | <input type="checkbox"/> | f) \$50,000 and over ...   | <input type="checkbox"/> |

29. Age:      under 20.....                       40 - 49.....
- 20 - 29.....                                   50 - 59.....
- 30 - 39.....                                   60 and over.....

30. What is your occupation? \_\_\_\_\_

31. What is your educational status?
- |                              |                          |                              |                          |
|------------------------------|--------------------------|------------------------------|--------------------------|
| a) elementary school.....    | <input type="checkbox"/> | d) some university or trade. | <input type="checkbox"/> |
| b) some high school.....     | <input type="checkbox"/> | e) university graduate.....  | <input type="checkbox"/> |
| c) high school graduate..... | <input type="checkbox"/> | f) post graduate.....        | <input type="checkbox"/> |

32. Have you ever been employed in the forest industry?
- Yes.....                       No.....

## APPENDIX B

### COMMENTS

The comments written by the respondents on the questionnaires are included here. No attempt has been made to correct spelling or grammar, and they are included exactly as written by the boaters.

## COMMENT #1

The following comments are mine but are held by a large number of fellow yacht club members who use Howe Sound for the majority of their boating. We boat from Easter until after Nov 11, with occasional trips in Jan & Feb.

Without exception booms have for years provided us with good safe moorage and the ability to be close together. East, Centre & West Bay on Gambier would be virtually useless for boats without booms, as the booms provide moorage and shelter from both S.E. & N.W. winds. The depth of water in some areas would preclude anchoring, and sunken logs, cables, etc. on the bottom make anchoring a risk of losing an anchor.

The towboats (mainly Riv-tow-Straits) are always most co-operative, giving plenty of notice when moving booms, and we have on occasion been allowed to stay overnight and have the tugs advise us that they will be back at 9:00 A.M.

As this is being written there are 28 boats moored to booms in West Bay.

## COMMENT #3

One question I would have like to see in the survey is regards to numbers of boats using present log boom tie up system on average weekend. On Gambier Island one Saturday in August there were 27 boats tied to one boom. Surely this is terribly significant to you?

## COMMENT #4

The booming of logs in Howe Sound is admittedly a great boon to the boater because they provide tie up facilities at no cost to the boater.

Without log booms tie up and anchoring opportunities would not be adequate for the numbers of boaters.

Initially, if it could be arranged that log booms are not moved over weekends and loading and boom boat activities restricted, boaters could enjoy the log boom with out disturbance by noise and having to move (often in the middle of the night).

Private enterprise marinas would probably not pay & would disturb the quietness & relaxation that these areas now provide. Stores and gas sales should be kept out, but this is not compatible with private docks for moorage. Rudimentary docks of 2 logs & 2 boards (such as are supplied by the Parks Dept. at Princess Louisia Inlet) would be a possibility under provincial government Parks Branch; for use when booming is eventually eliminated. This applies to West, Center and Long Bays.

Wash caused by large power boats is a danger to boats moored on the outside of booms & docks. Speed should be restricted to 3 K in Center Bay starting now.

## COMMENT #5

I think that all pleasure boats, licensed or registered in B.C. should help pay for the additional privileges of floats and buoys in Howe Sound and in B.C. for that matter. I would suggest the following as a basis for consideration and I do not expect that the average boater would object.

vessels	12' to 21'	=	3	dollars	per	year
"	22' to 35'	=	5	"	"	"
"	36' to 50'	=	7.50	"	"	"
"	51' to 75'	=	10	"	"	"
"	76' and over	=	15	"	"	"

All regardless of charter status.

American vessels exempt as they are only visitors, but they could donate, or not, in some way when coming through immigration points.

## COMMENT #6

I believe that it will be essential in the next few years for recreational boat operators to be required to take a test of proficiency and obtain a licence. Now that boating has become commercialized and advertised as "the thing to do" there are more and more people out there who know nothing about what they are doing. I believe that the more accessible you make something the more it is abused. This also goes for boat manufacturers (you can't call them "builders" any more) anyone who owns a garage in Richmond can call himself a boat builder. There should be some government standards for boat construction and equipment design. The

protected waters of Howe Sound and Georgia Strait have made it possible for every fly-by-night to get into the act.

(Ralph Nader, where are you!)

Marine parks are great if the alternative is private subdivisions. However, please leave us something to "escape" to. We don't need floats to tie our dinghs to, we don't need signs, trails, bar-b-que pits, leave us some wilderness to use our dulled senses in.

Every year I go to Gambier Island and enjoy its relative undevelopment I wonder if it will be the last!

#### COMMENT #7

If it weren't for the log booms in Howe Sound adequate protected mooring sites in Howe Sound would be practically non-existent. The towing and log sorting companies are extremely co-operative with boaters giving them very generous warning of any movement by booms in order that you have very ample time to move to another location.

I feel the logging industry is being blamed for a lot of the debris in the water that actually is flushed from river systems during freshets--particularly the Squamish and Fraser Rivers where this debris should be trapped and disposed of by burning or some other method. Above Welcome Pass & north of Powell River where most of the concentrated logging takes place the problem of logs and debris is practically non-existent. Even the Gulf Islands are compari-

tively free of debris where material from the Fraser River doesn't penetrate but instead has spread up and down the Gulf and into Howe Sound with the tides.

COMMENT #8

If anything can be done to make Howe Sound less attractive to those who would destroy its peace and quiet, then now is a good time to go to work.

COMMENT #9

Howe Sound is a most valuable recreational area. So unique & convenient to a large population but lacking charm because of remains of a faded logging industry and old floating logs.

The largest disappointment is the pollution created by the pulp mills. This is a crime to allow the continuation of such an operation when it can be relocated to a more active area to logging & further away from dense population. A mill should be located open to sea breezes & not where the smoke can be trapped by mountains.

The sooner Howe Sound can be shaped up the better it will be for local residence. It will keep many people from attempting voyages out in the Straights & protect lives while decreasing rescues by the coast guar.

If Gambier Island is developed on the north and west ends, it will spread the traffic out. This must be accom-

panied by the elimination of Port Mellon smell.

COMMENT #10

Short of logging the slopes, which should be resisted at all costs, it seems unlikely that the logging industry should need to expand in the Howe Sound area. That they have the use of these sheltered waters for transport, sorting & storage should be sufficient in relation to the recreational needs of so large a population so near by. The status quo has achieved an exemplary balance, and that relationship alone is deserving of conservation.

It seems likely that it should be possible to create legislation using zoning concepts to preserve the present relatively unspoiled character of Howe Sound without expense. What costs may be encountered might in some way be placed on industry's shoulders.

COMMENT #27

Logs should be transported by scow. Towing of logs should be forbidden.

COMMENT #32

Feel mills should clean up there debris and some govt. control to ensure same.

I agree with this statement (pg. 3-#5) only because of the lack of clean up of debris, floating logs, logs on most

shores, deadheads that the forest industry does nothing about. I strongly feel most of these logs or deadheads are created by this industry in not only Howe Sound, but all our waters and should be cleaned up by this industry.

## COMMENT #51

Stop hiring a crane to unjam the logs at the Annacis Isl. Causeway every year. Put the logs in a barge & burn them or cut them up for fill.

## COMMENT #56

The problems with boating anywhere are mostly inconsiderate bastards in other boats.

More stringent policing of the area would be helpful.

## COMMENT #62

The Forest Industry should become secondary to recreation in the Sound. Forestry should give way to the recreational boaters as the prime activity. Forestry need not be excluded, but should not monopolize, in attitude, as it does now.

## COMMENT #63

Disagree with question 5, pg. 3 because if there was no forest activity, there would be no log booms. If log booms were replaced by mooring buoys or long warfes I would agree.

Howe Sound does not generally provide good anchorages due to the great depths of water and debris i.e. sunken logs to foul anchor.

COMMENT #69

I have just bought my boat and this short time in Howe Sound I can't stress enough my concern over these dead-heads, but the water is still safer than our highways.

Logs should not be stored on the water but in log piles along side of mill, as they do in the interior. Less waste would get into the water & possibly some sort of screen along the shore line which could be removed for logbooms, to trap small floating debris.

COMMENT #72

This appears to be a very biased survey. An effort is being made to 'lead' the boater against forest activities. A great many boaters, including myself, would not be employed or have boats if it wasn't for jobs provided by this industry, which has become the most responsible industry in British Columbia.

VITA

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\_\_\_\_\_ \_\_\_\_\_ to \_\_\_\_\_

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\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

\_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_

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Publications:

J. A. Alley & A. J. Ferguson. *Recreational Boating in Howe Sound:  
A Data Base for Regional Planning.* The Islands Trust, Dept.  
of Municipal Affairs and Housing. Victoria B.C.:  
Queen's Printer, 1977.

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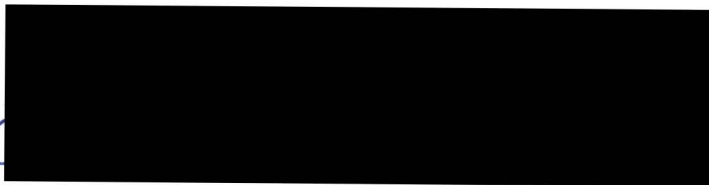
A CASE STUDY OF FORESTRY/RECREATION CONFLICTS

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IN HOWE SOUND, BRITISH COLUMBIA

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Author:



JAMES ALEXANDER ALLEY

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Name

March 30, 1977

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Date