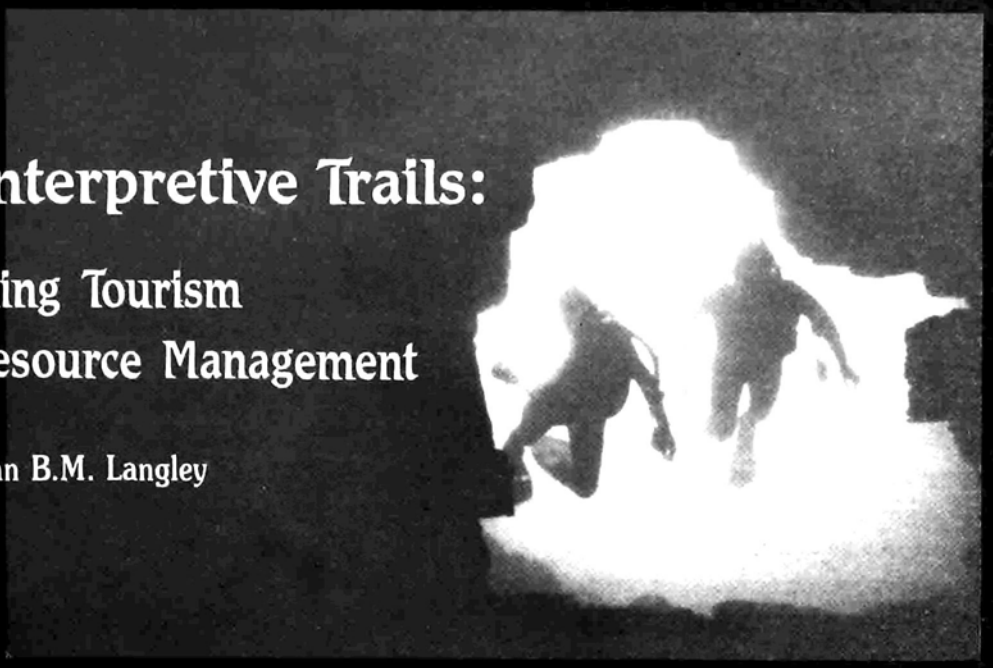
Underwater Interpretive Trails:

Reconciling Tourism and Cultural Resource Management



by Susan B.M. Langley

In 1962, the First World Conference on National Parks provided a forum for discussion of the concept of marine parks. Governments of nations with associated marine environments were encouraged to:

...examine as a matter of urgency the possibility of creating marine parks or reserves to defend underwater areas of significance from all forms of human interference, and further recommends the extension of existing national parks and environmental reserves with shorelines, into the water to the ten fathom depth or the territorial limit or some other appropriate boundary. (U.S. Department of the Interior 1962)

Many countries responded positively to this invitation and marine parks began to appear around the globe including Australia, Japan, Canada, the United States, in numerous Caribbean nations and the Seychelles. These were, by and large, nature conservancies dedicated to the preservation of plant and animal species and with little consideration given to cultural remains. The latter is not surprising as underwater recreational activities were not widespread. SCUBA equipment had only become generally available in the early 1950s and its use was basically limited to commercial endeavours. Interpretive programming in marine parks, if it existed at all, was limited to shore walks, perhaps wading and possibly snorkeling in suitable regions.

The affluence of the 1960s saw great increases in numbers of educated travellers, a growth which continues today. As tourism increased so did the popularity of underwater recreation and an awareness of the need to protect as well as promote both natural and cultural remains above and below water surfaces. This is reflected in the numerous Recommendations, Conventions and Agreements initiated by the United Nations, often via UNESCO, throughout the 1970s (Langley 1983:68-78;1985:60-63).

A 1983-84 survey of visitors to Australia's Great Barrier Reef indicates that 140,000 people to the *major* resorts spent A$60 million (Kelleher 1985:22), while Japan estimates that 18 million people annually visit its 23 marine parks (March 1985:39,42). These figures demonstrate an incredible pressure on extant resources, but also reflect an enormous economic gain that cannot be ignored. The problem facing resource managers (both cultural and natural) therefore is how to mediate conflicts in use or development to achieve solutions that mutually benefit all parties involved.

The term "park" as opposed to "preserve" connotes a relationship to recreation, interpretation and environmental education. It is intended for public use and enjoyment while still offering protection to the resource(s) for which it was initially created.

The successful management of submerged cultural resources requires

the examination of a number of needs and problems. These involve, at the most basic level, an appropriate geographic location (Ditton and Auyong 1985), adequate protective legistation, a means to enforce the latter, and a comprehensive programme of interpretation concomitant with visitor liaison activities.

Each of these points, in turn, subsumes a broad range of other considerations. Because of the breadth of this subject, this discussion is limited to a single element; interpretive programming and specifically the establishment of underwater interpretive trails.

Interpretive Programming

Most important in implementing an interpretive programme for an underwater park are the following considerations: the purpose of the park (recreation or preservation), the visitors (age range, ratio of local to non-local, degree of skill required for access to various areas), the type of resources available within park confines, the park's capability to handle visitors adequately (numbers, special needs of divers, programmes for non-divers, access for handicapped visitors), access to the park (road, boat, air; private or public) and most important, financing (initial and sustaining; source). These elements determine what is necessary for the sufficient preservation and interpretation of resources.

Examples cover a wide range of possibilities, from land-based displays and those mounted on rafts or platforms anchored over heritage remains, to plaques and maps actually installed on sites. Other possibilities include guides or self-guided underwater tours, floating moorages for private and commercial boats and facilities for non-divers.

The stated goals of the park largely, but not exclusively, determine the degree of development or commercialization of an area. Certainly, some parks have been established in areas which are already heavily populated or popularized. The latter have often provided the impetus for the park's creation.

An informational plaque on the submerged wall of a dam in Banff National Park, Alberta. It gives information about the townsites flooded by the construction of the dam.

Interpretive Trails

Interpretive trails are one facet of educational programming within marine parks which have proven an effective means of resource management. The trails and related facilities take a variety of forms. Examples of this diversity follow: The Marine Parks Center of Japan on Kuroshima Island in the Iriomote National and Marine Park "provides a visitor center that has displays on reef evolution, coral, fishing, artifacts and traditional boats, and has laid out an underwater nature trail around the reef, for which plastic fish identification guides are provided" (Marsh 1985:42).

One of the earliest underwater trails was created in the Virgin Islands National Park in 1958. Many other Caribbean Islands have followed this lead and have both guided and self-guided trails, some of these are set up for snorkeling only and others for SCUBA diving.

The trails vary in depth from eight to 20 feet for the former, while the latter are all less than 60 feet, with 30 being considered optimal. Some use interpretive signage and others provide waterproof guidebooks and have designated stopping points, while still others use rope systems to

The author preparing for an October survey to the steamboat Gertrude in Waterton Lakes National Park, Alberta.

lead divers along the trail (these are particularly helpful in areas with strong currents, where it is possible to become disoriented or where abundant iron remains make it impossible to use compass bearings) (Finkelstein 1985:130; O'Brien 1988:69).

These approaches occur both singly and in combination; as at John Pennekamp Marine Park, Florida. There are also underwater habitats (small, air-filled domes which serve as rest stations or communication/ interpretation centres as well as providing a safety factor) and, more rarely, electronically amplified speaking systems for guides that require no listening apparatus are used (Finkelstein 1985:131).

An important additional consideration in the establishment of such trails is the non-diver. Provision of facilities for non-divers significantly increases the user-groups who may participate in the marine experience. This wider appeal, especially to families, tourists and local inhabitants, has economic aspects; it broadens the marketability of a park and assists in justifying both the costs of its establishment and maintenance.

Of course, protection of the resources remains paramount so methods must be explored which maximize the numbers of visitors who may participate but which have minimal deleterious impacts on the resources. Some approaches which have proven successful include underwater observation towers and glass-bottom sightseeing boats. These have been used at Kushimoto Marine Park in Japan (Marsh 1985:36, 39) and at Green Island, Australia (Finkelstein 1985:128). These man-made structures are not without some initial impact on resources such as reef areas, but in time they too act in the same capacity (i.e. as artificial reefs), some with lights to attract different varieties of sea life at night.

However, because of the restricted mobility of the visitor (i.e. the resources come past the windows) this solution is less effective where cultural resources are concerned. The same is true of underwater tunnels with portholes and variations on an underwater monorail concept such as the "Telescaph" in use off Marseille, France (Finkelstein 1985:128-129), and others used in the tourism industry in Edmonton, Canada (Ibid;Sparks 1988:13). These have access towers which are emergent at all times for safety and although they offer better access to cultural resources in that tracks can be run near to wrecks, the tracks themselves are both physically (in the case of reefs) and aesthetically detrimental to the environment.

Such facilities may, however, be the best choice for an area, where resources such as vessels are particularly fragile and where diving should not be permitted at all; then everyone, divers and not, may still view the remains. Submersible All-Terrain Vehicles offer freedom of movement but cause extensive damage to submerged resources.

Some of the best solutions for permitting non-divers' access to the resources below, include small submersibles such as the ATLANTIS class sub, which permits mobility but has no negative impacts on the environment. These vessels are 50 feet

long, carry 28 passengers and two crew and operate at depths of up to 150 feet. They have eight viewing ports which are each two feet in diameter and have one large (52-inch) viewing dome at the front (Sparks 1988:13).

Two such vessels are in operation in the Caribbean; one is at George Town, Grand Cayman Island and the second is in Barbados. Other submarines operate in Japan and Australia, however, all of these are expensive to purchase, operate and maintain. Less expensive and therefore more widely available solutions include floating platforms, with or without observation chambers below, which have mooring facilities for watercraft. These platforms can be fitted with swivelling reverse periscopes to permit viewing of submerged remains or sea life.

These devices are especially effective in shallow areas (i.e. 30 feet or less) as that is where more marine life occurs and may be best viewed because of the penetration of sunlight and also, the existence of shallows and reefs are often the reason for the presence of shipwrecks and other cultural remains. Buckets or tubes, fitted with plexiglass bottoms can also be used in interpretive programmes to provide hand-held viewing ports from the surface.

A final possibility for interpretive programmes in the future is more widespread utilization of submersible video cameras. These can be swivel or track mounted on the underside of viewing platforms or boats, or on the site itself, on remotely operated video vehicles (i.e. ROV; Phantom Sea Scan), can be sent down and images relayed to interior screens or monitors. These devices offer the advantages of no safety factors like time limits, temperature or fatigue and no negative impacts on the resources.

The are still maintenance costs. But, with the ongoing technological advances in these fields, costs are dropping dramatically and in heavily trafficked areas, like Japan, these are definitely cost-effective solutions. The downside, of course, is that this distances the visitor from fully experiencing the marine environment. One way around this may be to have guides with communication helmets and cameras relaying live commentary and images to monitors which are always original because they are always changing. Again, this requires a level of funding and staffing beyond what is available to most marine parks.

The following section examines empirical examples from the provinces of British Columbia and Ontario, Canada. These reflect varying levels of funding and differing degrees of interpretation.

Case Studies

One of the prime movers in the formation of the Underwater Archaeological Society of British Columbia (AUSBC) was to bring the plight of several significant shipwrecks to the attention of the provincial government and obtain some measures of protection for them (Griffiths 1986). This group of sportdivers with an interest in archaeology, undertook extensive surveys, located, mapped and recorded many vessels off the west coast of Canada.

They convinced the provincial government to designate six of these as provincial heritage resources and undertook to make and mount plaques on these sites. The plaques give the name and a brief history of

The dive boat CLAVELLA using a mooring buoy provided by the UASBC, British Columbia, Canada. Photo courtesy of David Griffiths.

the vessel and ask divers to enjoy but not harm the remains.

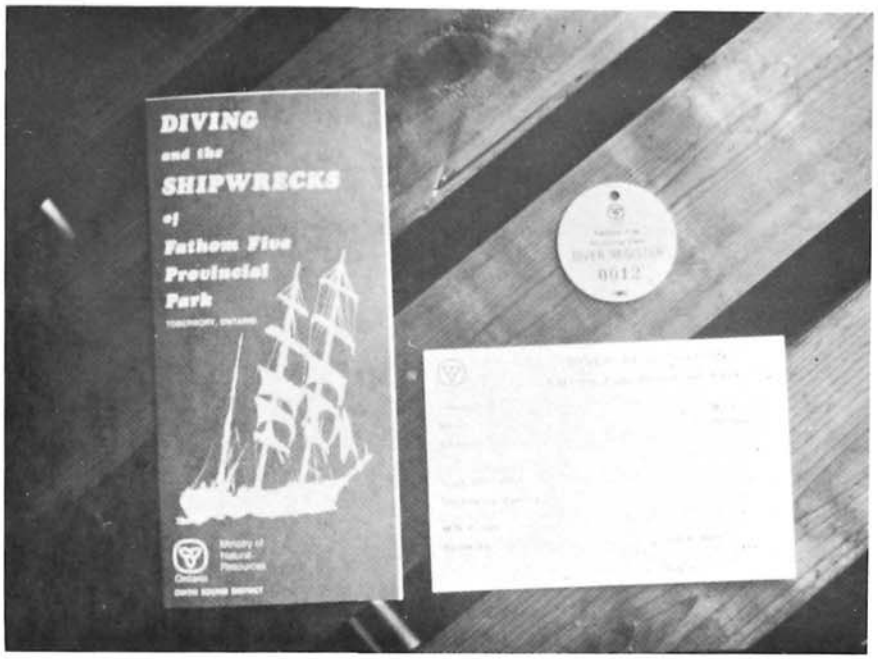
It soon became apparent that some of the vessels were suffering inadvertent damage from the anchors of visitors' boats. And the Society installed mooring buoys which not only protects the sites but makes them easier for visitors to locate. Although none of these vessels are situated within parks as such, the site and surrounding areas are protected by designation.

The Society has also been instrumental in having several shore-based marine parks created. These offer a variety of recreational activities including artificial "reefs" of tires to attract marine life and some vessels which are not deemed to be of historic significance and therefore provide a subaquatic playground, as well as picnic and other terrestrial facilities.

Since it is impossible to monitor or police these sites with any regularity, the Society also serves an educational function within the sport diving community. It teaches the value of cultural and natural resources and encourages divers to respect these areas and to report any damage or violations witnessed.

Another society called S.O.S. (Save Our Shipwrecks) has established an interpretive trail in Lake Superior, the northernmost of the Great Lakes. The trail runs over the remains of the S.S. ONTARIO, a steamboat which sank in 1899. The wreck is spread over one-quarter of mile at depths varying from 15 to 40 feet.

Since there are too many ferrous objects for a compass trail, a polypropylene rope links up major features. There is a topside display at the beginning of the trail to explain



A registration package for divers at Fathom Five Underwater Park. Photo courtesy of Stan McClellan.

the history, architecture of the vessel and to outline diver safety. Divers swim through the boiler to begin the trail and features are marked by plastic plaques. Near the end of the trail there is a statue commemorating the many victims of shipwrecks in Lake Superior and at the end there is a plaque that divers can sign.

Mooring anchorages have been designed to ensure a safe moorage regardless of wind conditions; an important consideration in this tempestuous region, and for non-divers, anchorages over parts of the wreck which are sufficiently shallow to be viewed from the surface are marked.

A nature trail and picnic facilities have been laid out on the island against which the vessel wrecked (LeBlanc 1986:4-5). This is an excellent example of an amateur or avocational group, obtaining successful results with a minimum of funding but solid planning and organization.

Another project, carried out by the Comet Foundation, a private group, was the sinking of THE WOLFE ISLANDER, a 40-year old ferryboat in Lake Ontario, near Kinston. One of the many means used to raise funds involved the "sale" of portholes; that is, the glass was etched with the logo or name of the cash donors, but the porthole was left in place on the boat. The vessel also contains a time capsule to be opened in 50 years. All doors and hatches were removed and it was carefully scuttled to ensure that it settled in an upright position. A notice advises against a too deep penetration of the hull and for safety reasons it was decided not to run a line through the vessel (Alford 1986).

In Lake Huron, the third of the

of the Great Lakes to be discussed, is situated in the only freshwater underwater park in the world (McClellan 1985). It was known as Fathom Five Provincial Park until 1987 when it became Canada's first underwater national park and was renamed Fathom Five National Marine Park. It has a small land base with a visitor centre. Divers must register and receive information about the 16 known shipwrecks (more are suspected to be within its boundaries) as well as other resources and safety and park regulations. There are ongoing survey and recording projects which offer further interpretation possibilities.

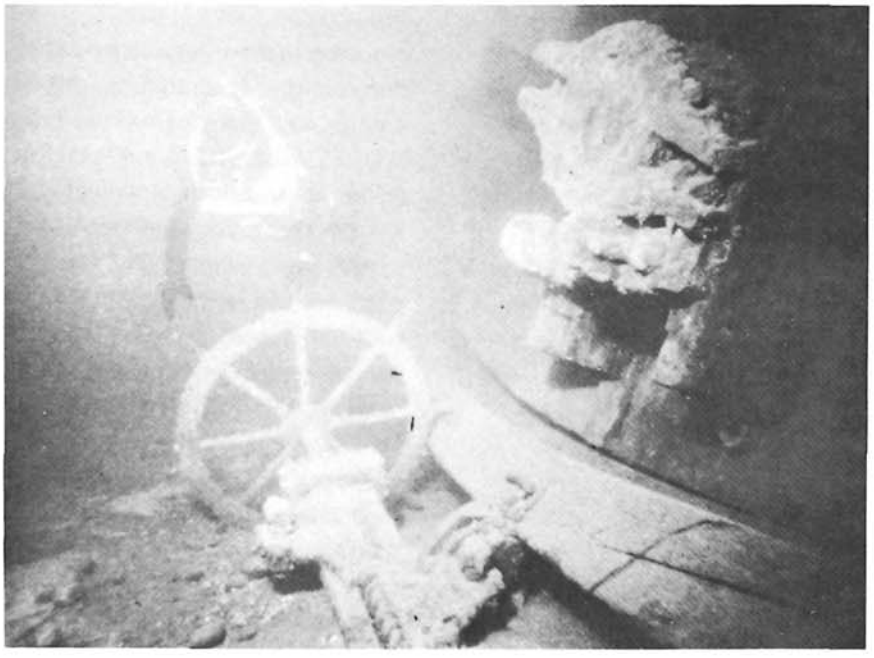
In addition to having a high potential for submerged prehistoric cultural remains, the park also contains extremely varied geological and living resources. There are no specific trails within the park as the vessels and other resources are widely distributed and vary in depth, but several vessels do bear informational plaques. As on the west coast, mooring buoys are provided and interpretation and safety play important roles.

Earlier plans for underwater walkways have been discarded in favour of hand-held viewing ports for non-divers. Because of its government sponsorship, there are boat patrols for safety and security reasons. It is the only park where a conviction has been obtained for the theft of submerged heritage resources, although vandalism remains a problem everywhere (Langley 1989:141).

Three interpretive trails are planned for the province of Alberta. These involve two sites largely researched and documented by the author (Langley 1986;1988:177-178; 1989:140-141). One, a World War II vessel prototype has already been marked with a plaque and a surface interpretive display by the Alberta Underwater Archaeological Society (AUAS) at Patricia Lake within Jasper National Park.

Another involves two submerged village sites which date from the late 19th and early 20th centuries and which were both submerged as the result of dam construction. These are situated in Lake Minnewanka, Banff National Park. The third proposed trail will encompass both historic and prehistoric sites within the reservoir of a large dam project currently underway along the Oldman River in Southern Alberta.

The advantage and unique feature of this last is the opportunity to record, document and prepare sites and trail elements prior to inundation. An extensive experimental programme, proposed jointly by the author and AUAS, is presently under consideration by the provincial government.



A portion of the wreck of the ARABIA, which bears an informational plaque, at Fathom Five National Marine Park, Ontario. Photo courtesy of Stan McClellan.

Conclusions

The success of the marine park concept with its related interpretive programmes is evident from their rapidly increasing numbers. This has, however, not been without difficulties. The lifeways of people living in and around designated areas must be left as unimpeded as possible.

For example, in the area of fishing rights, local people who rely on fishing for their food must retain this right, although it should be monitored for abuses (Payne 1985). It may also be necessary to limit commercial fishing activities to specific seasons, if they cannot be eliminated altogether, and this has

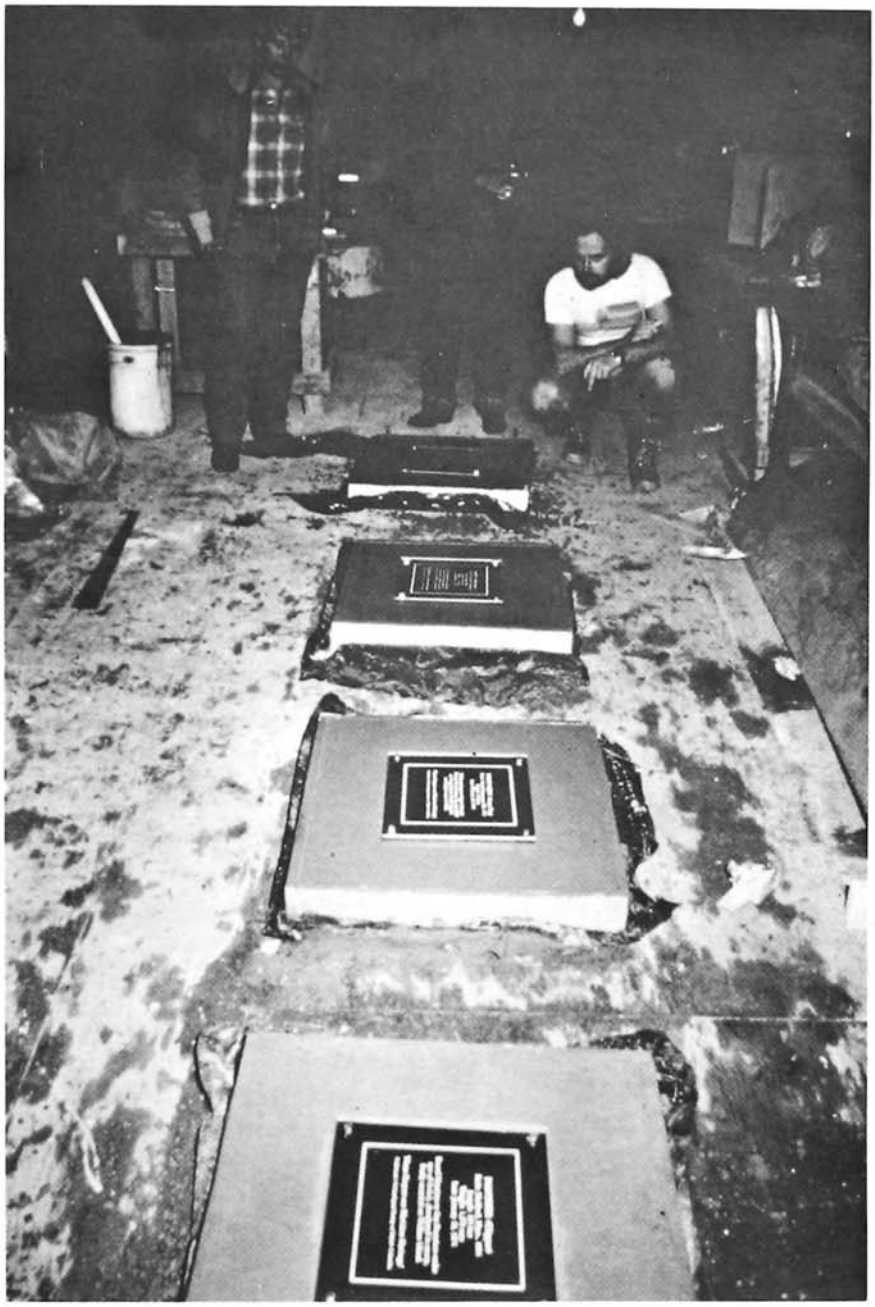
proven very difficult if not impossible to do. It may be possible to alter certain practices such as the destructive dynamiting of coral reefs as a fishing procedure.

The rationale given for this method has been a great demand for seafood by tourists, but if one of the reasons for visiting the area is to view the marine life on the reefs, this is a self-destructive behaviour pattern in the long term.

In addition to commercial fishing in and around marine parks and preserves, which can also damage cultural remains by dragging lines, anchors and nets, there are other activities which occur outside of park areas that can have serious repercussions. These include agricultural and industrial wastes and run-offs which can poison marine life and kill off coral reef by creating a too rich environment (Emery 1985:89) as in cases in Southeast Asia where chemicals and fertilizers used in rice farming and prawn aquaculture are depleting coastal fisheries or where mining detritus washes into the sea (Kelleher 1985:23).

Pollution and a major shipping industry have resulted in poor visibility and are the main reasons that there are no marine parks around Japan's inland sea despite "great outdoor recreation demand", famous features such as the Naruto Whirlpools and, being an area of profound cultural significance (Marsh 1985:33, 36). As for cultural remains, the effects, either direct or incidental, of such pollutants have not been sufficiently studied to make a definitive statement, but it is highly unlikely any benefits will be found.

The importance of local involvement in all aspects of park development and management cannot be overemphasized. Not only do persons, living near or in an area under consideration for marine park status, have a right to be included in making decisions which may affect their livelihood but they can also play a key role in the preservation process. Such consideration, as well as the equitable resolution of conflicts, provides a positive motivation for involvement and pride in park



Members of the UASBC prepare plaques for vessels off the Canadian west coast. Photo courtesy of David Griffiths.

projects. This involvement is very important because in spite of legislative protection, monitoring and enforcement remain problem areas where submerged cultural resources are at stake.

Although interpretive trails are relatively easy to establish, some degree of upkeep is required. This is often exaggerated by theft and vandalism of resources and trail markers. Boat patrols are not always feasible, either from a financial or a practical standpoint, and are really ineffectual unless divers are actually caught in the act of bringing objects to the surface. Diving patrols are extremely limited (Lenihan 1989:130) due to their high cost and low efficiency, although there is some deterrent value. The most practical answer lies in the cultivation of good relations with local inhabitants, especially in the diving community.

Where diving visitors are involved, the best means of establishing a good rapport is through the interpretive programmes *per se*. In areas where visitors have to rely on public or park transportation for access to a dive area, they constitute a "captive" audience for safety advice, orientation tips, park regulation lectures and explanations of the available resources. Such a situation does not apply to local divers who probably have their own boats. These people must be reached by local liaison activities, these include a general education as to the values of the cultural past and the interaction of nature and culture.

Areas of management which deserve further examination are the use of created or artificial sites within underwater parks and the use of positive peer pressure within the diving community. The former involves the deliberate sinking of vessels, aircraft and so forth to provide facilities for recreational diving and to act as reefs for marine life while reducing the visitor pressure on real heritage sites. The main difficulty with this concept is that such sites are not as "interesting" as genuine sites (i.e. those with a history). This is where well-directed community relations come into play.

As demonstrated in the case studies provided here, the concerned sportdiver is an invaluable asset. These people outnumber professional archaeologists and dive more frequently and in more varied locales than the academic sector can hope to cover. Therefore, they provide a strong ally in monitoring sites, reporting offences and educating other divers.

It is in discussing "created" parks that disagreement arises between divers who prefer "real" sites, versus those who feel that it is the sport that matters. The former think that deliberate wrecks and "prepared" parks have no worth, while the latter believe that such recreational dive parks take the pressure off genuinely significant sites. Obviously, there is no one correct answer; different types of underwater parks are required to suit different types of visitors.

A system of parks which offers a variety of experiences is necessary: from aesthetic appreciation of nature and/or cultural remains to highly developed interpretation or education-oriented areas. Conflicts between user groups must be avoided, such as snorkeling and water-skiing. One or two parks simply cannot offer everything to everyone and should not be expected to do so. This is just as true in a marine environment as in a

The author christening the plaque about to be submerged on the remains of HABBAKUK, Jasper National Park, Alberta. This site is scheduled to be one of the first underwater interpretive sites in Alberta.

terrestrial one.

While every archaeological survey or excavation requires the examination of some ethical decisions, nowhere is this more apparent than when interference with ecological or anthropological conditions is contemplated. Specific protective considerations must be urged for sites which have become an integral part of their environment and for those where human remains are involved. In many cases, fragile corals and other delicate marine life are damaged by salvage attempts on remains around which these colonies have grown up. Also, as exciting as the prospect of refloating a famed vessel may be, there is an intrinsic immorality involved in permitting the violation of a mass tomb for commercial purposes. It is not as though any data would be added to the current body of knowledge by such an endeavour, except possibly in the way of salvage technology (Lenihan 1983). Recent finds and salvage activities strongly illustrate the need for coordinated protective efforts.

The most important consideration now facing resource and park planners and managers is the need to make decisions consistent with international goals. In order to achieve the aims of optimal conservation, preservation and management of the submerged cultural and environmental heritage, the need to think globally must be strongly encouraged at both National and International levels. International cooperation and coordination cannot be too strongly emphasized for the cultural resources of any one nation are in fact part of the common heritage of mankind. ▣

REFERENCES

Alford, Terry. *Kingston's Newest Wreck Dive.* **Diver Magazine,** 12 (1) 1986, pp.18-21.

Ditton, Robert and Janet Auyong. *Understanding Recreation Activity Patterns Implications for Siting Marine Parks and Reserves.* **Marine Parks and Conservation: Challenge and Promise.** Jon Lien and Robert Graham, editors. The National and Provincial Parks Association of Canada. NPPAC Henderson Park Book Series No. 10, 1985. Vol 1, pp. 147-154.

Emery, Alan. *Coral Reef Conservation.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 2, pp. 85-91.

Finkelstein, Max. *Marine Park interpretation: Fact and Pantasios.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 1, pp. 125-132.

Griffiths, David. *The Underwater Archaeological Society of British Columbia.* **Diving for Science-1985: Practical Aspects of Research.** Proceedings of the Canadian Association for Underwater Science, Scientific Diving Symposium. Francis Emery, editor, 1986. pp. 75-83.

Kelleher, Graeme. *The Great Barrier Reef Marine Park.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 1, pp. 125-132.

Langley, Susan. *Protecting Underwater Heritage.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 1, pp.59-69.

----------.*Operation HABBAKUK: A World War II Vessel Prototype.* **scientia canadensis.** 10 (2) 1986. pp. 119-131.

----------. *Submerged Heritage Management: Underwater Parks in Canada.* **Proceedings of the First World Congress on Heritage Presentation and Interpretation.** John Lunn, editor. Heritage Interpretation International and Alberta Culture and Multiculturalism, 1988. pp. 173-183.

----------. *Heritage Resources: Underwater Parks in Canada.* **International Perspectives on Cultural Parks: Proceedings of the First World Conference.** U.S. National Park Service in association with the Colorado Historical Society, 1989. pp. 139-142.

Le Blanc, Ryan. *Thoughts on Underwater Interpetive Trails.* SOS Newsletter. 5(1): 22-23.

Lenihan, Daniel. *Rethinking Shipwreck Anthropology.* **Shipwreck Anthropology.** Richard Gould, editor. Albuquerque: University of New Mexico Press, 1983. pp. 37-64.

----------.*Managing Shipwrecks in Parks and Preserves.* **International Perspectives on Cultural Parks: Proceedings of the First World Conference.** U.S. National Park. Service in association with the Colorado Historical Society, 1989. pp. 128-131.

Marsh, John. *Japan's Marine Parks.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 2, pp. 29-44.

McClellan, Stan. *Fathom Five Provincial Park: Working Example of an Underwater Park.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 2, pp. 173-177.

O'Brine, Christine. *Current Status of Interpretation in Australia.* **Proceedings of the First World Congress on Heritage Presentation and Interpretation.** J. Lunn, editor. Heritage Interpretation International and Alberta Culture and Multiculturalism, 1988. pp. 61-79.

Payne, R.J. *Protection and Development: Marine Conservation in the Seychelles.* **Marine Parks and Conservation: Challenge and Promise.** J. Lien and R. Graham, editors, 1985. Vol. 2, pp. 107-116.

Sparks, Robert. *CAUS and Scientiffic Diving: Looking Back – Looking Forward.* **Diving for Science - 1986 : Assessing the Environment.** Proceedings of the Canadian Association for Underwater Science, Scientific Diving Symposium. Susan Langley, editor, 1988, pp. 1-23.