

Recent Development in Living Marine Resource Law

***117 DEEP ECOLOGY AND THE ANTARCTIC MARINE LIVING RESOURCES: LESSONS FOR
OTHER REGIMES**

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I. INTRODUCTION

Extremely cold temperatures and severe climatic conditions make Antarctica the most lifeless continent in the world. Because the majority of its mainland is ice-covered, Antarctica is unable to support most forms of plant and animal life. The animal life that is able to survive is primarily marine dependent, living in the Southern Ocean.

The Southern Ocean is the habitat for a unique and diverse collection of marine living resources. Interestingly, this marine life, because of the small number of species, comprises one of the simplest ecosystems in the world. The existence of a peculiarly short food chain focuses much of the attention on one particular species--krill. Those marine animals which do not rely directly on krill as their main food source feed instead on other animals, which in turn feed directly on krill. [FN1] Consequently, a serious depletion of krill in the Antarctic could have a potentially devastating effect on the entire Antarctic marine ecosystem. This short food chain and the resulting strong interdependence among species have made it necessary to implement strict conservation measures in the Antarctic. [FN2]

***118** Surprisingly, it is only recently that the need for conservation measures in the Antarctic has been recognized and acted upon. When the Antarctic Treaty, the first in a series of agreements that comprise the Antarctic Treaty System, was negotiated in the late 1950s, conservation was not considered to be one of the more important issues. [FN3] Conserving the environment did not become a primary issue in the Antarctic until the Antarctic Treaty parties drafted the Agreed Measures for the Conservation of Antarctic Fauna and Flora (Agreed Measures), at the Third Consultative Meeting of the Antarctic Treaty Parties in 1964. [FN4] The Agreed Measures were the first in a series of agreements which offer greater protection to the Antarctic environment.

The move toward ecosystem awareness is a significant departure from previous human attitudes toward nature. More specifically, humans have historically viewed nature as existing purely for their own purposes and consumption. Natural resource management existed as a means to maximize long-term as well as short-term commercial benefits. However, the development of protective agreements for Antarctic marine living resources signals a corresponding retreat from this human-centered attitude. A new attitude has developed which acknowledges nature as having intrinsic value distinct from anything associated with humans or human benefits. This still-developing attitude has been classified as "deep ecology."

This Article reviews the development of the deep ecology approach, from its origins to its implementation, throughout the Antarctic Treaty System. Section II of this Article provides the necessary background information about deep ecology theory. Section III discusses and analyzes the Antarctic Treaty System. This section will also outline the initial, limited application of deep ecology in the Antarctic Treaty and the growth of the deep ecology approach through the System's subsequent Treaties. The Article concludes that the Antarctic Treaty System has evolved from ***119** a regulatory system concerned with protecting and developing the fishing industries, to a more preservation-oriented system which protects all species as part of the global ecosystem.

II. THE DEEP ECOLOGY PHILOSOPHY

A. The Roots of Deep Ecology

The deep ecological movement was first explained in a 1973 article by Arne Naess. [FN5] Since then, numerous commentators have expanded on Naess' foundational principles. Deep ecology focuses on human existence as a part of nature, rather than in isolation from, and domination over, nature. According to Devall and Sessions, "ecological consciousness and deep ecology are in sharp contrast with the dominant worldview of technocratic-industrial societies which regards humans as isolated and fundamentally separate from the rest of nature, as superior to, and in charge of, the rest of creation." [FN6] Humans must not be characterized as the master over all species, but rather as ordinary citizens of the natural community.

One of the major principles characterizing the deep ecological movement is that of "biocentric equality." [FN7] This principle recognizes that all organisms, as part of an interrelated system, are intrinsically equal. No natural object is viewed solely as a resource to be exploited by humans. Deep ecology does recognize, however, that mutual predation is a biological fact of life. Therefore, the right of humans to exploit natural living resources arises only in those situations where they are striving to satisfy their vital needs. The term "vital need," in the context of deep ecology, is left intentionally vague to account for significant differences in circumstances. [FN8] Deep ecology seeks to establish a mindset that embraces both human and nonhuman life forms as part of the same ecological system, without establishing a hierarchy of species which dominate over each other.

B. Deep Ecology and Resource Management

Another principle underlying the deep ecological movement is the notion that present human interference with nonhuman life forms is excessive and that the situation is rapidly worsening. [FN9] Related to this is the idea that for all life forms to flourish there must be a substantial decrease in the growth rate of the human population. Decreasing the rate of population growth is particularly important in developed countries because they represent a much greater threat to the environment due to their tremendous per capita rate of consumption and waste production. [FN10]

Reduction of human interference does not necessarily mean that humans must refrain from all modifications of natural ecosystems. Rather, the main issue is the extent and nature of human interference. Deep ecology seeks to instill in humans a greater awareness of their impact on the ecosystem as a whole. Ultimately, resource management should exist for reasons unrelated to human benefit or human consumption.

C. Deep Ecology as Compared to Shallow Ecology

A clearer understanding of deep ecology develops when the "shallow" and "deep" ecological approaches are compared and contrasted in the area of resource management. [FN11] Living resources of the earth exist for those who have made the necessary technological advancements to exploit them. [FN12] Under the "shallow" approach, the focus is on human exploitation of these natural living resources. According to this philosophy, the only control mechanism in place to protect against the complete depletion of these resources is the assumption that as the resource gets scarce, an increase in its price will shift consumption to less expensive items. [FN13] This theory appears completely speculative. Adherents to the shallow ecological approach assess value to nonhuman life forms, including plants and animals, only in terms of value to humans. If no human use for the entity exists, the resource has no value and may be destroyed with impunity. This approach is a sharp departure from deep ecology principles.

The deep ecological approach, as applied to resource management, is concerned with the existence of a habitat for all life forms for their own sake. Nonhuman life is assumed to possess inherent value, regardless of any lack of known utility to humans. [FN14] The emphasis of deep ecology is on the ecosystem approach, where all life forms are interdependent. [FN15]

The Antarctic Treaty System has gradually shifted toward a deep ecological approach. There has been a gradual transition in the management of Antarctic marine living resources, from pure exploitation to their recognition as part of the global ecosystem. Various Antarctic conventions and measures document the shifting attitude toward preserving the species of the Southern Ocean; beginning with the Antarctic Treaty, and concluding with the 1991 Madrid Protocol.

III. THE ANTARCTIC TREATY SYSTEM: THE EVOLUTION OF THE DEEP ECOLOGY APPROACH

The Antarctic Treaty, [FN16] entered into force in 1961, provides the legal foundation for a series of subsequent agreements which comprise the Antarctic Treaty System. This System is made up of The Antarctic Treaty, the 1972 Convention for the Conservation of Antarctic Seals (Seals Convention), [FN17] the Agreed Measures for the Conservation of Antarctic Fauna and Flora (Agreed Measures), [FN18] the 1980 Convention for *122 the Conservation of Antarctic Marine Living Resources (CCAMLR), [FN19] and the 1991 Madrid Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol). [FN20] Because the Antarctic Treaty forms the basis of the entire Antarctic Treaty System, its provisions and purposes are the appropriate starting point in surveying the development of the System.

A. The Antarctic Treaty

The primary purpose of the Antarctic Treaty is to preserve the Antarctic continent for peaceful purposes only, [FN21] and to ensure freedom of scientific investigation and a free exchange of that information. [FN22] The Antarctic Treaty itself does not expressly address the issue of Antarctic environmental protection. However, some of the Treaty's provisions contain limited environmental protections, which, taken together, have the incidental effect of providing environmental protection for Antarctica.

One such provision indirectly relating to environmental protection is Article V. [FN23] This Article expressly prohibits any nuclear explosions or the disposal of radioactive waste anywhere on the Antarctic continent, [FN24] making Antarctica the world's first nuclear-free area. [FN25] Article I of the *123 Antarctic Treaty, which preserves Antarctica for peaceful purposes, also has the incidental effect of protecting the Antarctic environment. [FN26]

Perhaps the strongest reference to protection of the Antarctic environment appears in Article IX of the Antarctic Treaty, which refers to the "preservation and conservation of living resources in Antarctica." [FN27] Additionally, since the creation of the Antarctic Treaty, the environment has been the subject of many recommendations at the Antarctic Treaty Consultative Meetings over the years. [FN28] Although the Antarctic Treaty does not explicitly provide environmental protection, it is important to remember that the Antarctic Treaty is the agreement which forms the foundation for future, more conservation-oriented agreements.

The institutional mechanisms established by the Antarctic Treaty include meetings of the Consultative Parties every two years, inspection rights, and a decision-making process which gives the Consultative Parties the power to bind Non-Consultative Parties. A system of inspections is established in Article VII which gives the Contracting Parties the right to designate observers to carry out inspections. [FN29] Critics of the inspection *124 system claim that the procedures may be inadequate for effective environmental enforcement. [FN30]

Another criticism of the Antarctic Treaty is the nonbinding nature of the agreement and its loosely structured administrative mechanism. [FN31] Because the Treaty fails to expressly state that it intends to bind third parties, such third parties can assert that they are not bound by its provisions. [FN32] Additionally, because of the Treaty's loose administrative structure and the lack of adequate guidelines, parties often do not perform their reporting duties. [FN33] Despite these criticisms, the importance of this agreement rests in the fact that it has laid the foundation for more protective agreements concerning the Antarctic environment.

B. Convention for the Conservation of Antarctic Seals [FN34]

1. The Decline of the Antarctic Seals

Human hunting of marine life has followed a predictable pattern. Initially, species are discovered as a food source and then they are exploited until near extinction. At that point, hunters choose not to waste their time on a drastically diminished stock, and move on to new, more abundant species with much the same result. Nowhere is this process more clearly exhibited than in the case of seal hunting. [FN35]

*125 Seal hunters first began visiting the islands of the Southern Ocean toward the end of the eighteenth century. [FN36] Not long after this, scientists recognized a drastic decrease in the fur seal colonies, and by 1820 this species had all but completely disappeared, forcing hunters to seek new species. [FN37] Fur seals remained scarce until the mid-1900s, when a surprising number were discovered at the island of South Georgia. The number of animals at South Georgia was much lower than that of original stocks, but, the increase in fur seals has been fairly consistent and is now closely approaching original numbers. [FN38] Although recovery of the seal population is in sight, previous abuse of this species [FN39] has motivated parties to the Antarctic Treaty

to institute control mechanisms which will hopefully preclude the possibility of similar results in the future.

2. Human Recognition of the Plight of the Seals

The signing of the Seals Convention signified international recognition of the hazards of unregulated natural resource exploitation. The Seals Convention did not ban sealing completely, but rather set very conservative catch limits for the three more abundant seal species, [FN40] while banning hunting of the three more endangered species. [FN41]

Those who formulated the Seals Convention were well aware of the possible effects of unmanaged seal harvesting. The Seals Convention was a forward-looking document that attempted to arrest the overharvest of seal stocks before they reached near-extinction levels. This preventive approach expresses more concern for the species than a purely "regulatory" approach, which normally focuses on preserving a species solely for *126 purposes of human consumption. The Seals Convention is important because it set precautionary catch limits before significant commercial activity depleted the stocks.

3. Analysis of the Seals Convention

Sealing in the Southern Ocean has not developed as rapidly as some feared it would, nor is it likely to do so. [FN42] Consequently, if the true measure of a convention's effectiveness is its practical effect, the Seals Convention has moved more toward a deep ecological result than was expected at its drafting, despite the fact that the language of the Convention does not reflect deep ecological concerns. Interestingly, this effect came at a time when there was no shortage in the harvestable seal stock. The existence of a harvestable seal stock and legalized hunting, viewed in light of the lack of recent hunting activity, indicates that humans now recognize seals as more than a mere resource that exists for human consumption.

Undoubtedly, the success of the Seals Convention speaks to a global concern for seal species which transcends a mere desire for continued commercial exploitation. However, by still allowing the taking of seals solely for economic use, the Convention itself falls far short of adopting the deep ecological approach. The Convention language recognizes seals as a resource which must not be depleted by over-exploitation, [FN43] and which must be regulated so as not to exceed the level of "optimum sustainable yield." [FN44] The use of these terms indicates a desire to preserve *127 the species for future human use. These provisions collectively show that, notwithstanding certain unanticipated results of its implementation, concern for seal stocks at the time the Convention was drafted was not derived from deep ecological sentiments, but rather was primarily based on economic motives.

To date, criticism of the Seals Convention has been limited. One potential problem which may arise is the lack of institutional mechanisms to enforce the agreement. The Seals Convention contains no enforcement mechanisms aside from the Antarctic Treaty mechanisms, which could become a problem if nations again begin to over-exploit Antarctic seal populations.

C. International Convention for the Regulation of Whaling [FN45]

1. The History of Antarctic Whaling

Exploitation of whales began in the nineteenth century. [FN46] Later in that century the hunting of whales escalated due in part to the development of the harpoon gun. [FN47] Conditions worsened in the 1920s with the advent of the factory ship, [FN48] a floating fish and mammal processing factory which allows large volumes of catch to be processed at sea. Attempts to manage whaling activities in Antarctica failed to effectively control the commercial *128 exploitation of these creatures. This failure illustrated the disastrous effect that short-term economic interests can have on a natural resource. [FN49]

The history of Antarctic whaling can be divided into a series of distinct stages. [FN50] Initially, global concern for the preservation of whales was motivated by fear that current stocks would be reduced to a point where the whale population would be inadequate for future human consumption. However, over time this narrow attitude has expanded into a desire to protect the whale species for their contribution to the natural ecosystem. Paralleling this shift in attitude are two distinct stages which represent an important portion of the history of Antarctic whaling: regulation and protection.

2. Regulation of the Whaling Industry

The need for a regulatory scheme to preserve existing and future whale populations was driven by the hunting and fishing industries, whose participants realized that future profits were dependant on maintaining a large number of whales for human consumption and use. Concern focused on protecting whaling as an industry, irrespective of any value that whales possessed as a natural living species. To remedy the uncontrolled exploitation of whales, a licensing system was encouraged to prevent any one vessel or country from depleting the whale stock to levels which would severely inhibit recovery.

In response to concerns regarding the rapidly diminishing whale stocks, the Whales Convention [FN51] was signed in 1946. [FN52] The Whales *129 Convention incorporates both regulatory jargon and language indicating a genuine concern for the preservation of whales as a species. This combination makes discerning the ultimate objective of the document extremely difficult.

The first signs of preservationist-oriented measures are found in the 1946 Convention's Preamble, which states:

(1) it is in the interest of the nations of the world to safeguard for future generations the great natural resource represented by the whale stocks;

(2) that in view of the history of whaling [which] has seen overfishing of one area after another and of one species of whale after another to near extinction, it is essential to protect all species of whales from further overfishing. [FN53]

The ultimate objective of the Whales Convention focuses on protecting whales from over-exploitation, and preserving whale stocks for their undisturbed contribution as a natural resource. However, the Preamble to the Whales Convention contains language that evidences a much different motivation for preserving whale stocks. The Preamble also states that the parties desire to "establish a system of international regulation for the whale fisheries to ensure proper and effective conservation and development of the whale stocks." [FN54]

From the deep ecology perspective, the Whales Convention may be no more than an attempt to preserve whales for future human exploitation. However, some ambiguity exists as to the real intention of the document. On one hand, whales are unequivocally classified as a natural resource to be safeguarded for future generations of human beings. [FN55] This provision is ambiguous as to whether whales are protected for future human consumption or for their value to the natural ecosystem. On the other hand, the ultimate purpose of the Convention as stated in the Preamble is *130 "to provide for the proper conservation of whale stocks and thus make possible the orderly development of the whaling industry." [FN56] While the word "conservation" attempts to offer initial legitimacy to this phrase, it appears that the Convention's intent is to efficiently develop the whaling industry.

3. Deep Ecology and the Conservation of Whales

Nevertheless, the Whales Convention is the first document to even address the need to conserve whales. The language in the Convention indicates that there was more in mind than purely regulating whaling for human consumption. Most importantly, the Whales Convention paved the way for future measures and conventions to expand and articulate more precise provisions for the conservation and protection of whales.

Following the Whales Convention, provisions in various conventions attempted to institute measures to protect whales. However, it was not until 1982 that a provision to conserve whales was precisely articulated. The Third United Nations Convention on the Law of the Sea Convention (UNCLOS III) [FN57] specifically addressed the problem of whale exploitation. In this regard, UNCLOS III recognized "the right of a coastal state or the competence of an international organization, as appropriate, to prohibit, limit, or regulate the exploitation of marine mammals more strictly than provided for in this [[convention]." and that the "states cooperate with a view to the conservation of marine mammals." [FN58]

The creation of a state's right to prohibit whaling represents a further shift in attitude to the deep ecological approach to the preservation of whales. No longer are whales considered merely a natural resource existing for the sole purpose of human consumption. Instead, the goals behind the preservation of whales now include conserving, managing, and studying the whale population. Article 65 of UNCLOS III implies that the motivating forces behind these objectives now go beyond human concern for their own purposes. This represents a departure from previous motives underlying the preservation of whales.

*131 4. Analysis of the Whales Convention

The main enforcement mechanism of the Whales Convention is found in Article III, which establishes an International Whaling Commission (IWC) [FN59] composed of one representative from each Contracting Government. [FN60] Article III also allows the IWC to set up committees, from among its own members, experts, or advisors, to perform functions designated by the IWC. [FN61] The IWC is made up of three permanent committees: the Scientific Committee, [FN62] the Technical Committee, [FN63] and the Finance and Administration Committee. [FN64]

Initially, the Whales Convention had three major flaws. First, there were no quantitative studies done on whale stocks and the scientists associated with the IWC had little, if any, quantitative expertise. [FN65] As a result, the lack of adequate scientific information made it difficult for the IWC to effectively adjust the catch limit. [FN66] Attempts to reduce the catch quotas, in the absence of quantitative evidence to support the proposal, received little support.

The second flaw with the IWC was its general failure to consider economic aspects, specifically the failure to allocate shares of the total quota to specific nations. [FN67] Consequently, fishing nations tended to increase, or at least maintain, their whale harvests. [FN68] Because the quota was not allocated in shares, the fishing nations continued to compete for the resource, resulting in a decrease in the profitability of whaling. *132 Eventually, a system of allocation was negotiated outside the formal framework of the IWC. [FN69]

The third flaw, and one which has not yet been resolved, is the absence of an effective enforcement provision. [FN70] This flaw is responsible for the Convention's inability to prevent the hunting of endangered whales. Article IX of the Whales Convention contains the only provision that might deter the hunting of whales. In part, Article IX states that members must take "appropriate measure to ensure the application of the provisions of this Convention and the punishment of infractions against the said provisions." [FN71] However, critics of this provision claim that it lacks substance, in that "appropriate measures" in the past have consisted of no more than withholding any bonus or remuneration calculated on the basis of whales killed beyond the quota. [FN72]

Since its creation, the International Whaling Commission has gone through many conflicting stages. Initially, the IWC allowed the hunting of whales at a rate faster than the whales could reproduce. However, over the last fifty years, there has been a gradual but significant shift in the global attitude toward whales and whaling. Greatly reduced whale quotas and the adoption of many regulations aimed at protecting whales have earmarked the shift from protection of short-term economic interests to long-term, conservation-oriented measures. [FN73]

D. Agreed Measures for the Conservation of Antarctic Fauna and Flora

In 1964, the Consultative Parties to the Antarctic Treaty drafted the Agreed Measures for the Conservation of Antarctic Fauna and Flora, [FN74] *133 the first set of rules directed toward environmental protection in the Antarctic. Although the Agreed Measures apply only to land and floating ice shelves, [FN75] the policy behind these measures illustrates the gradual shift toward a deep ecological approach within the Antarctic Treaty System.

The Agreed Measures were established to preserve both plant and animal species, expressly prohibiting all harvesting except for scientific purposes. [FN76] This provision recognizes that plants and animals need protection, irrespective of any benefit to the human population.

Additional provisions throughout the Agreed Measures evidence a shift toward deep ecology. Article VI of the Agreed Measures forbids the "killing, wounding, or capturing" of any native mammal or bird. [FN77] While this provision is not absolute, its exceptions are very limited. Exceptions include a limited subsistence hunting exception, a scientific study exception, and an educational/cultural use exception. [FN78] The Agreed Measures do not contain a human use or industry exception, which may indicate that the drafters recognized that plants and animals in Antarctica should be protected from unnecessary human interference.

The Agreed Measures appear to implement the deep ecology approach, but they have three deficiencies. First, because they were adopted in the form of Agreed Measures, they do not have the same binding effect of a Convention. [FN79] Second, the Agreed Measures lack built-in enforcement mechanisms. [FN80] Third, Article V of the Agreed Measures still permits the taking of species purely for human purposes. [FN81] This directly contradicts the foundation of the deep ecological approach.

Although narrow in scope, Article VIII is nonetheless revolutionary in that it is the first Antarctic Treaty document to include ecosystem language, [FN82] and it may have been the foundation for the subsequent broad *134 ecosystem approach adopted by the 1980 Convention for the Conservation of Antarctic Marine

Living Resources. [FN83] Unfortunately, the immediate effect of Article VIII is weakened by its comparatively small application area. [FN84] Despite falling short of the deep ecological approach in some respects, the Agreed Measures nevertheless provided a solid foundation for more protectionist measures in the future.

E. Convention for the Conservation of Antarctic Marine Living Resources [FN85]

1. The Krill Harvest

The most recent example of natural resource exploitation in the Southern Ocean began in the early 1970s and concentrated on the harvest of krill. Serious constraints limit the krill industry. [FN86] Krill are very perishable, and there is a lack of suitable markets. [FN87] Despite the fact that the krill fishery could likely sustain an increase in fishing, decisions to protect krill pose a unique problem because of their important role in the marine ecosystem of the Southern Ocean.

Krill play a crucial role in the Antarctic marine ecosystem because they are the basis of the entire Antarctic food chain. A drastic depletion in the krill stock could have potentially devastating effects on all of those species which rely on krill as their main food source--most notably whales *135 and seals. Consequently, the increase in krill harvesting from the early 1970s caused immediate concern among conservationists. In response to the potential threat to krill populations and the predators who feed on krill, the Consultative Parties to the Antarctic Treaty concluded negotiations for CCAMLR [FN88] in 1980 at Canberra, Australia. [FN89]

2. The Establishment of the CCAMLR

The CCAMLR is a remarkable treaty in many ways. First, the Convention was negotiated, ratified, and entered into force in an unusually short time period. [FN90] This was due to a sense of urgency motivated by fears that a significant stock depletion would be disastrous to the krill species, and would therefore impact the entire Antarctic food chain. [FN91] An additional characteristic unique to the CCAMLR was that it signified the first time within the Antarctic Treaty System that a permanent institution for enforcement was established to implement the objectives of a convention.

The CCAMLR sets up a commission composed of all Contracting Parties along with any acceding states which continue to be involved with *136 research and harvesting in the Antarctic region. [FN92] The Commission's main objectives include establishing conservation standards for the Antarctic region in addition to carrying out observation and inspection duties to assure that CCAMLR's aims and objectives are being properly executed. [FN93] In addition, CCAMLR established a scientific committee. [FN94] Lastly, the most novel concept introduced by the CCAMLR was that it was the first such instrument to clearly delineate its application area as the region's entire ecosystem. [FN95]

3. CCAMLR and the Incorporation of the Deep Ecology Approach

Incorporation of the ecosystem approach into the CCAMLR represents the first time that an international treaty has expressly articulated deep ecological principles. The foundation of the deep ecology approach is to protect the habitats of all species which combine to form the natural ecosystem. No natural life form is considered solely as a resource; rather, each is regarded as part of an entire living system consisting of human and nonhuman life forms. The ecosystem approach, which forms the foundation of the deep ecology approach, is specifically and unequivocally adopted by the CCAMLR as its way of managing the Antarctic marine living resources. Specific language to this effect is located in Article I of the CCAMLR, which states:

*137 Article I [Scope and definitions]

1. This Convention applies to the Antarctic marine living resources of the area south of 60 degrees South latitude and to the Antarctic marine living resources of the area between that latitude and the Antarctic convergence which form part of the Antarctic marine ecosystem. [FN96]

Additional language incorporating the ecosystem approach can be found in the Preamble, as well as Article II. [FN97] The existence of ecosystem language throughout CCAMLR demonstrates the drafters' firm commitment to incorporating this system of marine resource preservation in the Southern Ocean.

The application area of CCAMLR is purposefully larger than that of previous Antarctic marine resource conventions. [FN98] Whereas past conventions *138 apply exclusively to the seas south of 60 degrees South

latitude, CCAMLR specifically delineates its application area as "the area south of 60 degrees South Latitude and to the Antarctic marine living resources of the area between that latitude and the Antarctic Convergence which form part of the Antarctic marine ecosystem." [FN99] The expansion of the treaty application area is due to the realization that marine life is not restricted by latitudinal boundaries. Marine life is highly mobile, either on its own or drifting among the currents. [FN100] Accordingly, management of these resources must be expanded to actual biological boundaries as opposed to arbitrary lines not recognized by animal life. This CCAMLR provision represents a growing awareness among the international community of the interdependence which exists between all facets of nature, whether human or nonhuman. Despite the favorable aspects of the CCAMLR, critics have been quick to enunciate its drawbacks.

4. Analysis of CCAMLR

Criticism of CCAMLR focuses on the ineffectiveness of the institutional mechanisms intended to enforce the convention's purposes and goals. Article VII of CCAMLR establishes the Commission for the Conservation of Antarctic Marine Living Resources (the Commission), the nucleus of the Convention's institutional mechanisms. [FN101] Each member country of the Commission has one representative who has the option of being accompanied by other representatives and advisers. [FN102] In addition, those states which accede to the CCAMLR pursuant to Article XXIX are entitled to engage one representative for as long as that country is involved in "research or harvesting activities in relation to the marine living resources to which this Convention applies." [FN103] The Commission's duties are varied and are included in Article IX of the Convention. [FN104]

***139** The primary focus of the Commission is to "give effect to the objective and principles set out in Article II of this Convention." [FN105] The exact objective referenced by Article II is the "conservation of Antarctic marine living resources." [FN106] More specific principles are set out in paragraph 3 of Article II. [FN107] The Commission gets its power to institute conservation measures from Article IX paragraph 2 of the CCAMLR. [FN108] Specifically excluded from these conservationist measures were catch allocation provisions. [FN109] The drafters of CCAMLR excluded these because catch allocation provisions would have changed the nature of the CCAMLR from a conservationist agreement to a pro-fisheries regime. [FN110] This is yet ***140** another example of the drafter's specific concern for the Antarctic environment itself, apart from any value to humans.

One of the main controversies during the negotiations of the CCAMLR related to the method of decision making. Once again, this issue exemplifies the controversy that exists between exploitive fishing nations and conservationist nonfishing nations. The method of decision making is set out in Article XII of the CCAMLR, which states that "[d]ecisions of the Commission on matters of substance shall be taken by consensus," [FN111] while all other decisions are to "be taken by a simple majority." [FN112] Fishing states insisted on consensus voting, while non-fishing states recognized the obstacle that consensus voting would have on instituting effective conservation measures. The basis of the fishing states' insistence on consensus voting was that the majority of the Commission consisted of non-fishing states. In a decision making process based on majority vote, this majority of non-fishing states could inhibit harvest operations regardless of the fishing states' consent. [FN113]

The Commission's power is further hampered by the fact that the Commission's decisions are considered mere recommendations and do not have a binding effect on member states. [FN114] Decisions of the Commission may become binding upon its members within 180 days of notification, unless a member state advises the Commission that it is unable to accept the measure. [FN115] To this end, the CCAMLR acts as little more than a voluntary code of conduct for member states. [FN116] In an effort to assist the Commission with technical and scientific issues, the CCAMLR establishes a Scientific Committee in Article XIV. Paragraph 1 of Article XIV clearly designates the Scientific Committee as a consultative body to the Commission. [FN117] Although the Scientific Committee appears to be a significant and helpful consultant to the Commission, the membership of the Committee calls into question its legitimacy. Membership in the Scientific ***141** Committee consists of a representative from each member of the Commission who possesses "suitable scientific qualification." [FN118]

This raises a problem concerning the objectivity of the representatives and their actual "scientific" judgment. There is potential for the scientists from each member state to come to their conclusions based on their individual state's views, as opposed to an unbiased scientific judgment. The more appropriate method of comprising the Scientific Committee would be to appoint a committee of objective scientists whose main concern focused on the natural, rather than the political, order of the environment. Paragraph 3 of Article XIV attempts to do this, however this provision is inadequate due to its optional nature and the strength of the existing Scientific Committee. [FN119]

The last institutional mechanism established by the CCAMLR is a system of inspection and monitoring. Article XXIV establishes the inspection system, vesting the Commission with the responsibility to designate inspectors. [FN120] Skeptics of CCAMLR's inspection and observation system assert that the system of inspection employed under the Antarctic Treaty would have been more effective. [FN121]

Additional criticism of the CCAMLR and its novel ecosystem approach centers around the lack of accurate data necessary to legitimize and implement the Convention and its ensuing objectives. [FN122] However, the lack of accurate data to substantiate the ecosystem approach also means a lack of accurate data to refute its principles and objectives. Further-more, accurate data exist that demonstrate the disastrous effects that *142 exploitation and/or regulation can have on an ecosystem. One need look no further than the history of whaling to see the devastating effects of a system of regulation or exploitation. [FN123] The lack of accurate data refuting the objectives of the ecosystem approach provides further support for this approach until it is proven ineffective.

F. 1991 Madrid Protocol on Environmental Protection to the Antarctic Treaty

Due to the increased concern for the Antarctic environment, parties to the Antarctic Treaty [FN124] gathered in Madrid, Spain, to sign the most comprehensive protection-oriented instrument concerning the Antarctic environment--the Protocol on Environmental Protection to the Antarctic Treaty. Technically, the Madrid Protocol is not designed nor intended to replace any preexisting agreements. [FN125] Instead, the Madrid Protocol is expected to work together with those agreements which make up the Antarctic Treaty System. [FN126] The Madrid Protocol strengthens and supplements the Antarctic Treaty system by ensuring that human activity in the Antarctic coincides with the purposes and goals of the already existing system, and reinforcing the measures established by the CCAMLR. [FN127]

*143 The Madrid Protocol has both strengths and weaknesses. On the one hand, the Madrid Protocol is a comprehensive environmental agreement containing some of the most stringent protective measures for the Antarctic environment to date. The most notable of these is the ban on Antarctic mining. [FN128] On the other hand, the Madrid Protocol's shortcomings include its inadequate institutional mechanisms and the difficulty in binding those states that are not parties to the Antarctic Treaty System or the Madrid Protocol.

The Madrid Protocol does not expressly apply to the Antarctic marine living resources, but language throughout the agreement demonstrates its applicability to these resources. [FN129] The Preamble to the Madrid Protocol vaguely defines the agreement's main purpose, stating that the Protocol was initiated due to "the need to enhance the protection of the Antarctic environment and dependent and associated ecosystems." [FN130] Article 2 further expands this principle by expressly declaring that the parties shall "commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and hereby designate Antarctica as a natural reserve, devoted to peace and science." [FN131]

These opening sections of the Madrid Protocol reiterate and reinforce the novel conservation-oriented measures established by the CCAMLR. By incorporating the ecosystem approach in the Madrid Protocol, the international community has chosen to accept one of the foundational *144 principles underlying deep ecology as its own approach to the preservation of natural resources.

Further evidence of the deep ecological philosophy is found in Article 3 paragraph 2, which states in pertinent part that:

(a) activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;

(b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:

....
(iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;

....
(v) further jeopardy to endangered or threatened species or populations of such species; or

(vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance;

(c) activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research.... [FN132]

The most striking feature of Article 3 paragraph 2 of the Madrid Protocol is its comprehensiveness. As a

whole, Article 3 provides a standard of environmental protection for all human activity in Antarctica and its surrounding waters, including the marine living resources of the Southern Ocean. Most importantly, the 1991 Protocol is supplemental in nature, so important features contained in earlier agreements are also in effect.

Article 3 paragraph 2 of the 1991 Protocol expressly advocates protection of the ecosystem as a whole. Moreover, the ecosystem approach as described in the Madrid Protocol is more detailed than when it was first introduced by the CCAMLR. [FN133] By detailing the ecosystem ***145** approach with additional "dependent and associated" ecosystems, the drafters of the Madrid Protocol recognized that not only is it important to protect individual ecosystems, but it is also important to protect those ecosystems which rely on each other. The prevalence of this language throughout the Madrid Protocol indicates a strong international acceptance of the ecosystem approach. More importantly, the additional detail given to the ecosystem concept shows a desire to continually refine an already environmentally friendly concept in order to effectively preserve the natural environment.

Paragraph 1 of Article 3 of the Madrid Protocol contains the main environmental principle of the agreement:

The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, ... shall be the fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area. [FN134]

This Article unequivocally recognizes the intrinsic value of nature apart from any potential value to humans--a foundational principle of deep ecology. [FN135] This intrinsic value concept is part of the larger principle of biocentric equality, [FN136] which is based on the notion that all organisms and entities in the ecosphere, as part of the interrelated whole, are equal in intrinsic worth. [FN137] The incorporation of these principles in the Madrid Protocol put it at the forefront of international agreements containing deep ecological principles. No other international agreement relating to the Antarctic environment has expressly recognized the importance of ***146** nature's intrinsic value. Nevertheless, other deficiencies exist in the agreement. Two of the most notable flaws are the lack of adequate institutional enforcement mechanisms and the non-binding effect of the 1991 Protocol on those states not parties to the Antarctic Treaty System. The Madrid Protocol fails to establish an institutional body with adequate means or a definitive purpose. Article 11 establishes the Committee on Environmental Protection (CEP), the agreement's sole institutional body. [FN138] The CEP's main duty is to ensure compliance with the Protocol and its principles, however the CEP lacks specific functions and adequate enforcement mechanisms.

The CEP was not established as an independent body with the responsibility of overseeing compliance with the Protocol. [FN139] Instead, Article 12 of the Protocol vests the CEP with more of an advisory role. [FN140] ***147** Although the establishment of a permanent institutional body, albeit advisory, was an improvement over preceding agreements, the CEP may lack the power and tools to effectively enforce the purposes and goals of the Madrid Protocol. A proposal offered by the French and Australians probably would have more effectively provided the CEP with both the power and the tools necessary to enforce the instrument. [FN141] First, the Franco-Australian proposal would have provided the CEP with a scientific and technical committee for assistance, a secretariat, [FN142] and an inspection and monitoring corps. [FN143] In addition, the CEP would have been vested with the power to determine the measures necessary to enforce the Protocol's principles and provisions. [FN144] A more adequate inspection and monitoring corps is indeed necessary, as the present inspection procedures which are to be carried out in conjunction with Article VII of the Antarctic Treaty have not yet addressed the issue of environmental protection. Consequently, the lack of a specific function and inadequate enforcement mechanism may undermine the stringent environmental principles embodied in the Madrid Protocol. [FN145]

The nonbinding nature of the Madrid Protocol on those states that are not parties to the Antarctic Treaty or the Protocol poses another problem. Numerous states are not bound by either of the treaties; the agreement is not designed to reach third parties. [FN146] Nothing prevents these states from asserting that by not being a member of the Protocol, they are not bound to protect Antarctica's environment. [FN147]

***148** Overall, the effectiveness of the stringent conservation measures in the Madrid Protocol is questionable. The lack of adequate enforcement mechanisms and the possible nonbinding effect of the Protocol on nonparties seems to lessen the agreement's effectiveness. Nonetheless, the Madrid Protocol represents a progressive international adherence to deep ecological thinking.

IV. CONCLUSION

Over the years, the Antarctic Treaty System has evolved from a regulatory system concerned with protecting

and developing the fishing industries to a more preservation-oriented system concerned with protecting all species for their contribution to the natural global ecosystem. Beginning with the Antarctic Treaty and ending with the Madrid Protocol, the Antarctic Treaty System represents a gradual and substantial shift toward the deep ecological approach to nature. Strongest support for the deep ecology approach begins with the CCAMLR and its novel ecosystem approach to natural resource management and continues with refinement in the Madrid Protocol. The CCAMLR, however, was not a complete adoption of deep ecology because it still allows the harvesting of natural living resources for purely economic use. Nonetheless, CCAMLR was a vast improvement on earlier conservation measures and provided a firm foundation for the more stringent conservation measures instituted by the Madrid Protocol. While the "rational use" language of the CCAMLR is not fully consistent with the "vital needs" approach of deep ecology, the CCAMLR is appropriate for the present global mentality. Strict adherence to deep ecology principles could be self-defeating in that it is not presently realistic to expect humans to refrain completely from utilizing all marine resources except for their vital needs. Therefore, restricting the use of marine resources to "rational use" provides a good segue between the older, less conservation-minded approach and the future goal of uninhibited freedom for all life forms.

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[FN1]. J.A. Gallant, *The Management Regime for Living Resources*, in *THE ANTARCTIC LEGAL REGIME* 219, 220 (Christopher C. Joiner & Sudhir K. Chopra eds., 1988). Those animals which rely on krill as their major food source include most larger baleen whales, crabeater and fur seals, several species of penguins and other birds, several fish species, and probably squid. In turn, squid and other species of fish are a major source of nutrition for sperm whales, elephant seal, and other bird species. *Id.*

[FN2]. Gaston Courter, *The Regime for the Conservation of Antarctica's Living Resources*, in *ANTARCTIC RESOURCES POLICY* 139, 141 (Francis Araguaia Vicuna ed., 1983). The uniqueness of the Antarctic ecosystem is further evident when one considers that most of the species found in this ecosystem are not found north of the Antarctic Convergence. In addition, many of the species in the Southern Ocean--including seals and whales--are particularly vulnerable to over-exploitation due to their relatively low reproductive rates. See generally Gallant, *supra* note 1, at 219.

[FN3]. W.N. Bonner, *Recent Developments in Antarctic Conservation*, in *THE ANTARCTIC TREATY REGIME* 117, 143 (Gillian D. Triggs ed., 1987).

[FN4]. See *Measures in Furtherance of the Principles and Objectives of the Antarctic Treaty*, June 2-13, 1964, Appendix: *Agreed Measures for the Conservation of Antarctic Fauna and Flora*, 17 U.S.T. 991 (1978) [hereinafter *Agreed Measures*].

[FN5]. Arne Naess, *The Shallow and the Deep, Long-Range Ecology Movement*, *Inquiry* 16 (1973).

[FN6]. BILL DEVALL & GEORGE SESSIONS, *DEEP ECOLOGY* 65 (1985).

[FN7]. *Id.* at 67-69.

[FN8]. *Id.* at 71. Possible considerations include differences in climate and related factors, together with differences in the structures of present existing societies. For example, for some Eskimos snowmobiles are necessary to satisfy vital needs in this day and age. *Id.*

[FN9]. LACKSHMAN D. GURUSWAMY ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND WORLD ORDER: A PROBLEM ORIENTED CASEBOOK 295 (1994) (citing Arne Naess, The Deep Ecological Movement: Some Philosophical Aspects, 8 PHIL. INQUIRY 10, 12- 21 (1986)).

[FN10]. DEVALL & SESSIONS, *supra* note 6, at 72. According to The United Nations Fund for Population Activities, the high rate of human population growth in developing countries is deteriorating the standard of life for millions of people. It is estimated that the world population will increase by approximately 93 million people per annum between 1985 and 2000. In response to this increasing human growth rate, most of the developing countries have established as their governmental policy the goal of curtailing the human population increase. *Id.*

[FN12]. *Id.* at 18.

[FN13]. GURUSWAMY, *supra* note 9, at 296.

[FN14]. See DEVALL & SESSIONS, *supra* note 6, at 71.

[FN15]. See GURUSWAMY, *supra* note 9, at 296.

[FN16]. Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, 402 U.N.T.S. 71.

[FN17]. Convention for the Conservation of Antarctic Seals, June 1, 1972, 29 U.S.T. 441, 11 I.L.M. 251 [hereinafter Seals Convention]. See *infra* Part III.C and accompanying notes for a detailed discussion of the Seals Convention.

[FN18]. See Agreed Measures, *supra* note 4, 17 U.S.T. at 116. See *infra* Part III.E and accompanying notes for a detailed discussion concerning the Agreed Measures.

[FN19]. Convention on the Conservation of Antarctic Marine Living Resources, May 20, 1980, 33 U.S.T. 3476, 19 I.L.M. 837 [hereinafter CCAMLR]. See *infra* Part III.F and accompanying notes for a detailed discussion concerning the CCAMLR.

[FN20]. Protocol on Environmental Protection to the Antarctic Treaty, Oct. 4, 1991, 30 I.L.M. 1455 [hereinafter Madrid Protocol]. See *infra* Part III.G and accompanying notes for a detailed discussion concerning the Madrid Protocol.

[FN21]. See Antarctic Treaty, *supra* note 16, art. I, 12 U.S.T. at 795, 402 U.N.T.S. at 72.

[FN22]. See Antarctic Treaty, *supra* note 16, art. II, 12 U.S.T. at 795- 96, 402 U.N.T.S. at 72. In part, Article III states:

In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:

(a) information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;

(b) scientific personnel shall be exchanged in Antarctica between expeditions and stations;

(c) scientific observations and results from Antarctica shall be exchanged and made freely available.

Antarctic Treaty, *supra* note 16, art. III, 12 U.S.T. at 796, 402 U.N.T.S. at 74.

[FN23]. See Antarctic Treaty, *supra* note 16, art. V, 12 U.S.T. at 796-97, 402 U.N.T.S. at 76.

[FN24]. *Id.*

[FN25]. See Jennifer Angelini & Andrew Mansfield, Comment, A Call for U.S. Ratification of the Protocol on Antarctic Environmental Protection, 21 *ECOLOGY L.Q.* 163, 182 n.136 (1994) (citing Yuri M. Rybakov, Juridical Nature of the 1959 Treaty System, in *ANTARCTIC TREATY SYSTEM: AN ASSESSMENT* 33, 36 (Polar Research Bd. ed., 1986)).

[FN26]. See Angelini & Mansfield, *supra* note 25, at 183. The preservation of Antarctica for peaceful purposes may have only an incidental effect of protecting the Antarctic environment because certain activities, although peaceful, may have an adverse effect on the environment. For example, the purely peaceful activity of tourism may pose one of the greatest threats to the Antarctic environment. *Id.*

[FN27]. See Antarctic Treaty, *supra* note 16, art. IX, 12 U.S.T. at 798- 99, 402 U.N.T.S. at 80. The language of Article IX pertaining to the Antarctic living resources reads as follows:

1. Representatives of the Contracting Parties named in the preamble to the present Treaty shall meet at the City of Canberra within two months after the date of entry into force of the Treaty, and thereafter at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their governments, measures in furtherance of the principles and objectives of the Treaty, including measures regarding:

(f) preservation and conservation of living resources in Antarctica. *Id.*

[FN28]. See Angelini & Mansfield, *supra* note 25, at 184. Two of these recommendations "emphasize the need to act in the Antarctic in the interests of all humankind; to plan activities to avoid significant and avoidable environmental damage; and to maintain continuing scientific ... monitoring." *Id.* (citing John A. Heap & Martin W. Holdgate, The Antarctic Treaty System as an Environmental Mechanism-An Approach to Environmental Issues, in *ANTARCTIC TREATY SYSTEM: AN ASSESSMENT*, *supra* note 25, at 195, 204).

[FN29]. Antarctic Treaty, *supra* note 16, art. VII, 12 U.S.T. at 797, 402 U.N.T.S. at 76.

[FN30]. Angelini & Mansfield, *supra* note 25, at 185. The inadequacy of the inspection system is rooted in the lack of a coordinating body for inspections, the absence of adequate reporting provisions, and the absence of a coordinated schedule for inspections. The absence of a coordinated schedule for inspections results in the inspection of some stations on a regular basis, while others are never inspected. *Id.*

[FN31]. Elaine F. Foreman, Comment, Protecting the Antarctic Environment: Will a Protocol Be Enough?, 7 *AM. U. J. INT'L L. & POL'Y* 843, 859 (1992).

[FN32]. *Id.* at 856 (citing Vienna Convention on the Law of Treaties, May 23, 1969, 63 *AM. J. INT'L L.* 875, art. 35). According to principles of international law, a prerequisite to binding a third party is that the parties to the treaty must clearly express their intent to bind the third party. In addition, the third party must express, in writing, its willingness to be bound by the treaty's provisions. *Id.*

[FN33]. Foreman, *supra* note 31, at 858.

[FN34]. Seals Convention, *supra* note 17, 29 U.S.T. 441, 11 *I.L.M.* 251.

[FN35]. Even though this process of exploitation is the dominant pattern of action, other views exist. Specifically in regard to the Antarctic, there exists a group who is interested in declaring Antarctica a World Park, and recognizing Antarctica as part of the "global commons." See Bonner, *supra* note 3, at 145-46.

[FN36]. Couratier, *supra* note 2, at 139.

[FN37]. Gulland, *supra* note 1, at 221. Further evidence of human abuse of the seal populations can be seen in the South Shetland islands, which were discovered in 1819. In the following 1820-21 season, 47 sealing vessels traveled to these islands. The 1821-22 season saw 44 boats return from the islands with few seals. A person who visited the islands ten years later did not find a single seal. *Id.*

[FN38]. *Id.*

[FN39]. *Id.*

[FN40]. Section One of the Annex to the Seals Convention sets the limits for crabeater seals at 175,000, Leopard seals at 12,000, and Weddell seals at 5,000. Seals Convention, *supra* note 17, annex, 29 U.S.T. at 478, 11 I.L.M. at 259.

[FN41]. Section Two of the Annex to the Seals Convention provides that it is forbidden to kill or capture Ross seals, Southern elephant seals, or fur seals. *Id.*

[FN42]. Judith G. Gardam, Management Regimes for Antarctic Marine Living Resources--An Australian Perspective, 15 MELB. U. L. REV. 279, 289 (1985).

[FN43]. See Seals Convention, *supra* note 17, 29 U.S.T. at 443, 11 I.L.M. at 251. In pertinent part, the Preamble states, "[r]ecognizing that this resource should not be depleted by over-exploitation, and hence that any harvesting should be regulated so as not to exceed the levels of optimum sustainable yield." *Id.*

[FN44]. J.A. GULLAND, THE MANAGEMENT OF MARINE FISHERIES 107 (1974). Optimum Sustainable Yield (OSY) is a concept which is based on the fisheries management principle of Maximum Sustainable Yield (MSY). MSY is a statistically determined "index" that has been explained as "the greatest physical yield that [a] stock can produce year after year." and is "[n]early always ... [[defined] in terms of the yield from a particular stock." *Id.* Alternatively, Powell explains MSY as the assumption that naturally occurring populations will grow exponentially to a maximum number which is limited only by the environment's carrying capacity. Management under this concept allows harvesting as long as the population of a species remains near the maximum number and the stock is able to naturally regenerate. D.L. Powell, Scientific and Economic Considerations Relating to the Conservation of Marine Living Resources in Antarctica, in ANTARCTIC RESOURCES POLICY, 111, 116 (Francisco Orrego Vicuna ed., 1983). Optimum Sustainable Yield (OSY) builds on the MSY concept by grafting the consideration of economic, sociological and ecological concerns onto the basic MSY calculus. "The basic tenets of OSY are that the appropriate goal for fisheries management includes a broad range of considerations (not just maximizing physical yield), and that a unique management goal exists for each fishery." Larry A. Nielsen, History of Inland Fisheries Management in North America, in INLAND FISHERIES MANAGEMENT IN NORTH AMERICA 3, 25 (Christopher C. Kohler and Wayne A. Hubert, eds., 1993). The OSY standard was adopted from these fishery management principles and incorporated into the Seals Convention in the Preamble section. See Seals Convention, *supra* note 17, 29 U.S.T. at 443, 11 I.L.M. at 251.

[FN45]. International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, 161 U.N.T.S. 72 [hereinafter Whales Convention].

[FN46]. Anthony D'Amato & **Sudhir K. Chopra**, Whales: Their Emerging Right to Life, 85 AM. J. INT'L. L. 21, 28-29. The early eighteenth century saw the practical extinction of right whales, a whale species of intermediate size, in the North Atlantic. *Id.*

[FN47]. Couratier, *supra* note 2, at 139.

[FN48]. Id.

[FN49]. Gulland, *supra* note 1, at 221-22. The whaling industry began by focusing their hunting on the larger species, with catches of blue whales peaking at about 28,000 whales during the 1930-31 season. As the larger species became scarce, fishermen switched their focus to the smaller species, including fin, sei, and minke whales. During the peak, catches of fin whales reached 25- 26,000 whales during the years from 1954 to 1962. Catches of sei and minke whales peaked during the 1965-66 season at about 20,000 whales. Id.

[FN50]. See D'Amato and **Chopra**, *supra* note 46, at 23. D'Amato and **Chopra** contend that the history of whales and whaling can be divided into six individual historical-analytical stages--free resource, regulation, conservation, protection, preservation, and entitlement. As whales comprise only a section of this paper, the Authors will explain those stages which they believe to be the more distinct stages. Id.

[FN51]. See Whales Convention, *supra* note 45, 62 Stat. 1716, 161 U.N.T.S. 72. The Whales Convention covers all whaling vessels registered in and flying the flags of member states as well as those that enter their fisheries jurisdiction or territorial waters. PATRICIA BIRNIE, INTERNATIONAL REGULATION OF WHALING 173 (1985). The Convention also extends to "all waters in which whaling operations take place." Since whales are fished in almost all waters of the world, it has been the practice of the Whaling Commission to apply it universally. Id.

[FN52]. Bonner, *supra* note 3, at 144. The Whales Convention set up an International Whaling Commission which is in charge of regulating the whaling industry. Id.

[FN53]. See Whales Convention, *supra* note 45, 62 Stat. at 1716-17, 161 U.N.T.S. at 74-76.

[FN54]. Id. (emphasis added).

[FN55]. Id.

[FN56]. Id.

[FN57]. United Nations Convention on the Law of the Sea, Dec. 10, 1982, 21 I.L.M. 1261 [hereinafter UNCLOS III].

[FN58]. UNCLOS III, *supra* note 57, art. 65, 21 I.L.M. at 1282.

[FN59]. See Whales Convention, *supra* note 45, 62 Stat. at 1717-18, 161 U.N.T.S. at 76-78.

[FN60]. Id. This provision also states that this representative has the option of being accompanied by additional experts or advisers. Id.

[FN61]. Id.

[FN62]. Gare Smith, The International Whaling Commission: An Analysis of the Past and Reflections on the Future, 16 NAT. RESOURCES J. 543, 548 (1983). The main function of the Scientific Committee is to establish data concerning whale catches and make recommendations to the IWC regarding research needs, yield quota, and the rate of stock depletion. Id.

[FN63]. Id. The Technical Committee has the responsibility of drafting amendments for consideration by the IWC and reviews alleged infractions of IWC rules. Id.

[FN64]. Id. The Finance and Administration Committee is in charge of personnel, expenditures, and the budget. Id.

[FN65]. See Gulland, *supra* note 1, at 224.

[FN66]. Id. at 225.

[FN67]. Id.

[FN68]. Id.

[FN69]. Id. In 1958, the Soviet Union agreed to 20 percent of the total, and by 1962 negotiations with the other countries were completed and a system of allocation established. Id.

[FN70]. See Smith, *supra* note 62, at 548.

[FN71]. See Whales Convention, *supra* note 45, 62 Stat. at 1720, 161 U.N.T.S. at 84.

[FN72]. See Smith, *supra* note 62, at 549 (citing Michael M'Gonigle, The "Economizing" of Ecology: Why Big, Rare Whales Still Die, 9 *ECOLOGY L.Q.* 119, 135 (1980)).

[FN73]. Gulland, *supra* note 1, at 227. Over the years, the general view on whaling has changed dramatically. Due to the increased influence of conservation groups and an increase in new International Whaling Commission (IWC) members who are not connected with whaling, the balance in the Commission has moved against whaling. Id.

[FN74]. Agreed Measures, *supra* note 4, 17 U.S.T. at 991. Article I of the Agreed Measures sets its area of application as the area south of 60 degrees South Latitude. Additionally, Article I expressly includes in the application area all ice shelves south of 60 degrees South Latitude. Id.

[FN75]. Bonner, *supra* note 3, at 144.

[FN76]. Agreed Measures, *supra* note 4, 17 U.S.T. at 998.

[FN77]. Id.

[FN78]. WILLIAM BUSH, *ANTARCTICA AND INTERNATIONAL LAW* 149-50 (1982).

[FN79]. Measures may become binding on parties provided that the measures are ratified by the parties.

[FN80]. See Foreman, *supra* note 31, at 860 (citing F.M. AUBURN, *ANTARCTIC LAW AND POLITICS*

272 (1982)). The Agreed Measures offer few guidelines as to who may issue permits, and what area those permits cover. *Id.*

[FN81]. Agreed Measures, *supra* note 4, 17 U.S.T. at 997-98.

[FN82]. *Id.* at 999.

[FN83]. CCAMLR, *supra* note 19, 33 U.S.T. at 3476, 19 I.L.M. at 837.

[FN84]. In contrast, Article I of the Agreed Measures sets its application area as the "area to which the Antarctic Treaty is applicable (hereinafter referred to as the Treaty Area) namely the area south of 60 degrees South Latitude, including all ice shelves." See Agreed Measures, *supra* note 4, at 991.

[FN85]. CCAMLR, *supra* note 19, 33 U.S.T. at 3476, 19 I.L.M. at 837.

[FN86]. The exact economic importance of the krill fishery is presently uncertain. See Gardam, *supra* note 42, at 291.

[FN87]. Gulland, *supra* note 1, at 222-23. The most serious constraint on developing the krill fishery is the lack of a suitable market. The majority of countries that experimented with krill fishing in the 1970s have since ceased operations. However, Japan and the Soviet Union continue to fish krill. Japan has developed a small economically successful market, with catches that reach approximately 40,000 tons. On the other hand, the Soviet Union is responsible for the largest catches of krill, which reached 492,000 tons during the 1981-82 season. This large catch has since decreased, presumably due to a market which is unable to handle such quantities. *Id.* (citing Report of the 4th Meeting of the Scientific Committee of CCAMLR, para. 5.25) (on file with Ocean and Coastal Law Journal).

[FN88]. CCAMLR, *supra* note 19, 33 U.S.T. at 3476, 19 I.L.M. at 837. Article I of CCAMLR sets the jurisdictional area as the area south of 60 degrees South latitude and the area north of 60 degrees South latitude up to the Antarctic Convergence. This is an expansion of previous treaties related to the Antarctic which set 60 degrees South latitude as their northernmost boundary. *Id.* CCAMLR, *supra* note 19, art. I, 33 U.S.T. at 3479, 19 I.L.M. at 842.

[FN89]. CCAMLR was negotiated in accordance with Article IX(1)(f) of the Antarctic Treaty. This provision vested the treaty parties with the power to draft CCAMLR. The Antarctic Treaty Consultative Parties began CCAMLR negotiations in 1976 and concluded in 1980. See Antarctic Treaty, *supra* note 16, 12 U.S.T. at 798, 402 U.N.T.S. at 71.

[FN90]. Negotiations for the CCAMLR began in 1976. The original deadline for the CCAMLR's conclusion was 1978, and the actual 1980 conclusion date was not far off. This two year period includes five months during which CCAMLR was open for signature. Powell, *supra* note 44, at 111. To truly appreciate the CCAMLR's speed it is necessary to draw a comparison to other treaties. There were 61 preparatory meetings before the Antarctic Treaty was signed in 1959. In addition, negotiations for the Seals Convention took six years, and the ratification process took another six years. See Gardam, *supra* note 42, at 294.

[FN91]. Similar to the Agreed Measures, one of the CCAMLR's most important aspects is that it was able to institute conservation measures before over-exploitation. See Gardam, *supra* note 42, at 291. This is in contrast to the traditional practice of failing to institute conservation measures until the respective species were nearly extinct.

[FN92]. CCAMLR, *supra* note 19, 33 U.S.T. at 3482, 19 I.L.M. at 845. Full members of the Commission

include Argentina, Australia, Belgium, Chile, the European Community, France, the Federal Republic of Germany, the German Democratic Republic, Japan, New Zealand, Norway, Poland, South Africa, the United Kingdom, the United States, and the Soviet Union. GILLIAN D. TRIGGS, *THE ANTARCTIC TREATY REGIME* 114 (1987).

[FN93]. See CCAMLR, *supra* note 19, 33 U.S.T. at 3483, 19 I.L.M. at 846.

[FN94]. CCAMLR, *supra* note 19, 33 U.S.T. at 3487, 19 I.L.M. at 850. The Scientific Committee comprises scientists and fisheries experts whose primary responsibilities are to organize data collection and research. Data available to the committee will include catch and effort statistics made available by members of the Commission pursuant to CCAMLR. See Powell, *supra* note 44, at 112.

[FN95]. Although the CCAMLR was the first convention to utilize the ecosystem approach, other fisheries commissions have since begun to take account of species interaction. Included in this group are the International Whaling Commission and the International Commission for the Conservation of Atlantic Tunas. *Id.* True analysis of the effectiveness of the CCAMLR's novel ecosystem approach is difficult due to the long-term nature of CCAMLR's goals. See Angelini & Mansfield, *supra* note 25, at 191. It is impossible for scientists to conduct research concerning the interaction among species unless they are allowed the time to conduct long-term, multidisciplinary research. *Id.*

[FN96]. CCAMLR, *supra* note 19, 33 U.S.T. at 3479, 19 I.L.M. at 842 (emphasis added). The exact area of the Antarctic Convergence is variable, but generally corresponds closely to the area of responsibility set by the CCAMLR. See Gulland, *supra* note 1, at 220 The area south of the Convergence is a primary source of nutrients, and in the summer, this area accounts for some of the highest production of microscopic plants (phytoplankton) in the world. *Id.* Interestingly, the short food chain in the Southern Ocean means that there exists only two steps between these microscopic plants and the large baleen whales--phytoplankton to krill, and krill to baleen whales. *Id.*

[FN97]. CCAMLR, *supra* note 19, 33 U.S.T. at 3478-80, 19 I.L.M. at 837.

The Contracting Parties,

RECOGNISING the importance of safeguarding the environment and protecting the integrity of the ecosystem of the seas surrounding Antarctica.

CCAMLR, *supra* note 19, 33 U.S.T. at 3478, 19 I.L.M. at 841 (emphasis added).

Article II [Objective]

3. Any harvesting and associated activities in the area to which this Convention applies shall be conducted in accordance with the provisions of this Convention and with the following principles of conservation:

(c) prevention of changes or minimization of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources (emphasis added).

CCAMLR, *supra* note 19, 33 U.S.T. at 3479-80, 19 I.L.M. at 843.

[FN98]. All of the conventions preceding the CCAMLR which make up the Antarctic Treaty system have ignored the possible existence and importance of the Antarctic ecosystem when designating their application area. These conventions have set their application area as the area south of 60 degrees South latitude. See, e.g., *Agreed Measures*, *supra* note 4, 17 U.S.T. at 996.

[FN99]. CCAMLR, *supra* note 19, 33 U.S.T. at 3479, 19 I.L.M. at 842.

[FN100]. Gulland, *supra* note 1, at 220.

[FN101]. CCAMLR, *supra* note 19, 33 U.S.T. at 3482, 19 I.L.M. at 845.

[FN102]. CCAMLR, *supra* note 19, 33 U.S.T. at 3482, 19 I.L.M. at 846.

[FN103]. CCAMLR, *supra* note 19, 33 U.S.T. at 3494, 19 I.L.M. at 845.

[FN104]. For a complete list of the Commission's duties, see CCAMLR, *supra* note 19, 33 U.S.T. at 3483-85, 19 I.L.M. at 846-48.

[FN105]. CCAMLR, *supra* note 19, 33 U.S.T. at 3483, 19 I.L.M. at 846.

[FN106]. CCAMLR, *supra* note 19, 33 U.S.T. at 3479, 19 I.L.M. at 839.

[FN107]. CCAMLR, *supra* note 19, 33 U.S.T. at 3479-80, 19 I.L.M. at 843. Article II, paragraph III states, in part:

3. Any harvesting and associated activities in the area to which this Convention applies shall be conducted in accordance with the provisions of this Convention and with the following principles of conservation:

....
(c) prevention of changes or minimization of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.

Id. (emphasis added).

The principles embodied in Article II represent a modified version of the ecosystem approach proposed by the United States. This standard met with initial hostility from the Soviet Union and Japan, because these nations desired more emphasis on the utilization of marine living resources. See BUSH, *supra* note 78, at 402 (citing James N. Barnes, *The Emerging Convention of Antarctic Marine Living Resources: An Attempt to Meet the New Realities of Resource Exploitation in the Southern Ocean*, in *THE NEW NATIONALISM AND THE USE OF COMMON SPACES* 239, 271-75 (Jonathan I. Charney ed., 1982). Interestingly, the Soviet Union and Japan are the two leading fishing nations.

[FN108]. CCAMLR, *supra* note 19, 33 U.S.T. at 3483-84, 19 I.L.M. at 847. The Commission's power to institute these conservationist measures is rooted in Article IX paragraph 1. Article IX paragraph 1 states that the Commission, in giving effect to the objectives of Article II of the CCAMLR, shall "formulate, adopt and revise conservation measures on the basis of the best scientific evidence available." *Id.*

[FN109]. In its report to the Ninth Antarctic Treaty, the Working Group on Antarctic Marine Living Resources specifically stated that "the regime [CCAMLR] would exclude catch allocation and other economic regulation of harvesting." See Gardam, *supra* note 42, at 295.

[FN110]. *Id.*

[FN111]. See CCAMLR, *supra* note 19, 33 U.S.T. at 3486, 19 I.L.M. at 849.

[FN112]. *Id.*

[FN113]. See Gardam, *supra* note 42, at 296.

[FN114]. *Id.*

[FN115]. See TRIGGS, *supra* note 92, at 114.

[FN116]. *Id.* Although the CCAMLR itself is not a binding agreement, there has been strong political will to demonstrate that the Antarctic Treaty System is responsible and effective. Therefore, it seems likely that member states will act consistently with those measures adopted by the Commission. *Id.*

[FN117]. See CCAMLR, *supra* note 19, 33 U.S.T. at 3487, 19 I.L.M. at 850.

[FN118]. *Id.*

[FN119]. *Id.* Article XIV paragraph 3 specifically states that "[t]he Scientific Committee may seek the advice of other scientists and experts as may be required on an ad hoc basis." *Id.* (emphasis added). The only real strength of this provision is in the important role it might play in those situations when various members of the Scientific Committee disagree on matters. In fact, at least one author has already stated that the addition of outside experts apart from the member states will improve the scientific quality of the analytical work, as well as remove suspicion that the conclusions of the CCAMLR are those of a closed group, acting in their own self-interest. See Gulland, *supra* note 1, at 235.

[FN120]. See CCAMLR, *supra* note 19, 33 U.S.T. at 3492, 19 I.L.M. at 854. These inspectors are under the jurisdiction of the Contracting Party of which they are nationals, and must report to the Member of the Commission by which they have been designated which in turn must report to the Commission. *Id.*

[FN121]. See Gardam, *supra* note 42, at 297. The Antarctic Treaty is the only international agreement to establish a system of rights of unilateral inspection granted to all parties. *Id.*

[FN122]. TRIGGS, *supra* note 92, at 115.

[FN123]. See *supra* Part III.C and accompanying notes. See D'Amato & **Chopra**, *supra* note 46, for a further discussion of the history of whaling.

[FN124]. Those nations which are parties to the Antarctic Treaty are Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Ecuador, Finland, France, Germany, Greece, Hungary, Italy, the Democratic People's Republic of Korea, the Netherlands, New Zealand, Norway, Peru, Poland, Romania, South Africa, Spain, Sweden, Switzerland, the Union of Soviet Socialist Republics, the United Kingdom, the United States of America, and Uruguay. See Madrid Protocol, *supra* note 20, 30 I.L.M. at 1455.

[FN125]. Angelini & Mansfield, *supra* note 25, at 194. Examples of agreements which are not superceded by the Madrid Protocol include the Antarctic Treaty, the Seals Convention, the Whales Convention, the Agreed Measures, the CCAMLR, and UNCLOS III. The principles and mechanisms created by these conventions are still in effect despite the creation of the Madrid Protocol.

[FN126]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1463. Due to its vast comprehensiveness, some have claimed that the Madrid Protocol has the practical effect of supplanting parts of the previous Antarctic Treaty System. Steve T. Madsen, A Certain False Security: The Madrid Protocol to the Antarctic Treaty, 4 COLO. J. INT'L ENVTL. LAW & POL'Y 458, 464 (1993) (citing S.K.N. Blay, New Trends in the Protection of the Antarctic Environment: The 1991 Madrid Protocol, 86 AM. J. INT'L L. 377, 388 (1992)).

[FN127]. Angelini & Mansfield, *supra* note 25, at 194.

[FN128]. The Madrid Protocol prohibits all mineral resource activity, except for scientific research. Article 7 of

the Madrid Protocol expressly addresses the mineral ban by stating that "[a]ny activity relating to mineral resources, other than scientific research, shall be prohibited." See Madrid Protocol, *supra* note 20, 30 I.L.M. at 1464. Since the focus of this Article is on the Antarctic Treaty System's effect on Antarctic marine living resources, a complete discussion of the Antarctic mining agreement is beyond the scope of this Article. For a detailed analysis of the Madrid Protocol's effect on Antarctic mining, see Andrew F. Neuman, Note, Closing the Frozen Treasure Chest: Antarctica's New Environmental Protocol, 3 FORDHAM ENVTL. L. REP. 57 (1991).

[FN129]. See Angelini & Mansfield, *supra* note 25, at 192-95. The 1991 Protocol's provisions relating to marine pollution, environmental impact assessment, and designated area protection may add limited coverage to the Antarctic marine living resources. Since the 1991 Protocol's provisions do not directly effect marine living resources, the CCAMLR will continue to provide comprehensive coverage to the Antarctic marine living resources. *Id.* at 191.

[FN130]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1461.

[FN131]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1462.

[FN132]. *Id.*

[FN133]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1462-63. The Madrid Protocol advocates protection of the "Antarctic environment and dependent and associated ecosystems," whereas the CCAMLR merely advocates protection of either the "marine ecosystem," or "ecosystem." See CCAMLR, *supra* note 19, 33 U.S.T. at 3479, 19 I.L.M. at 837.

[FN134]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1462 (emphasis added).

[FN135]. See DEVALL & SESSIONS, *supra* note 6, at 70. In their article discussing deep ecology, Devall and Sessions cite as one of the basic principles of deep ecology, "[t]he well-being and flourishing of human and non human Life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the non- human world for human purposes." *Id.* See also Naess and DEVALL AND SESSIONS, *supra* notes 5-6.

[FN136]. See DEVALL & SESSIONS, *supra* note 6, at 67-69.

[FN137]. *Id.* at 67.

[FN138]. Membership in the CEP is available to each state that becomes a party to the Protocol in that they may appoint one representative. See Madrid Protocol, *supra* note 20, 30 I.L.M. at 1465. This appointed representative may be accompanied by other experts and advisers. Any state who is a party to the Antarctic Treaty but not the Protocol has the option of observer status. *Id.*

[FN139]. Blay, *supra* note 126, at 389.

[FN140]. Madrid Protocol, *supra* note 20, 30 I.L.M. at 1466. In establishing the role of the CEP, Article 12 states that "[t]he functions of the Committee shall be to provide advice and formulate recommendations to the Parties in connection with the implementation of this Protocol, including the operation of its Annexes, for consideration at Antarctic Treaty Consultative Meetings." *Id.* Some of the matters which the CEP is to advise on are:

- (a) the effectiveness of measures taken pursuant to this Protocol;
- (b) the need to update, strengthen or otherwise improve such measures;

- (c) the need for additional measures, including the need for additional Annexes, where appropriate;
 - (d) the application and implementation of the environmental impact assessment procedures set out in Article 8 and Annex I;
 - (e) means of minimising or mitigating environmental impacts of activities in the Antarctic Treaty area;
 - (f) procedures for situations requiring urgent action, including response action in environmental emergencies;
 - (g) the operation and further elaboration of the Antarctic Protected Area system;
 - (h) inspection procedures, including formats for inspection reports and checklists for the conduct of inspections;
 - (i) the collection, archiving, exchange and evaluation of information related to environmental protection;
 - (j) the state of the Antarctic environment; and
 - (k) the need for scientific research, including environmental monitoring, related to the implementation of this Protocol.
- Id.

[FN141]. For a complete discussion regarding the proposal offered by the French and Australians, see Blay, *supra* note 126, at 384-87.

[FN142]. Unlike the 1980 CCAMLR, the Madrid Protocol did not provide for a secretariat. Instead, individual states are responsible for transferring to other states that information necessary to determine compliance with the individual provisions of the Protocol. See Angelini & Mansfield, *supra* note 25, at 200. For example, each state has the responsibility of notifying other states of (1) the adoption of laws, regulations, administrative actions, and other enforcement mechanisms implemented to ensure compliance with the Protocol; and (2) those efforts, consistent with the United Nations Charter, taken to make sure that others do not engage in activities contrary to the Protocol. *Id.* at 200-01 (citing Madrid Protocol, *supra* note 20, 30 I.L.M. at 1466).

[FN143]. See Blay, *supra* note 126, at 389.

[FN144]. *Id.*

[FN145]. *Id.* at 390.

[FN146]. See Foreman, *supra* note 31, at 877 (citing Madrid Protocol, *supra* note 20, 30 I.L.M. at 1464-66).

[FN147]. Neuman, *supra* note 128, at 78 n.148 (citing Jon Bowermaster, *Hands Off This Pristine Continent*, N.Y. *NEWSDAY*, Oct. 1, 1991, at 95).

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