

MARINE POLICY DEVELOPMENT: The Impact of a Flagship Species

Sali Jayne Bache

School of Government, University of Tasmania
sbache@postoffice.utas.edu.au

ABSTRACT Marine policy is formed through a combination of scientific information, and community and political imperatives derived from national and individual belief systems. In different cultures, sea turtles are afforded with vastly differing values. In western nations, turtles, along with marine mammals and large sea birds, are the marine life that most capture the public imagination. It is in the context of marine wildlife interactions with fisheries that much international and us domestic attention has been paid to sea turtles. Concerns over interactions between sea turtles and trawls led to the development of new instruments, laws, precedents, and policies. Witness the mandatory use of turtle excluder devices in many trawl fisheries, the extension of this policy globally through the application of trade embargoes, revised interpretations of the legality of such action in the context of the World Trade Organisation, and the creation of new regional species-specific conservation accords. This paper outlines these developments and the growth of a new regime of mechanisms and processes for handling emergent marine bycatch issues. It then considers the potential impact that a single taxon of megafauna may have on the way in which human-wildlife interactions, and more broadly trade-environment relations, are contemplated and managed.

Introduction

In recent years the conservation aspects of marine policy have become part of the mainstream public and political agenda. Although discussed academically, little effort has been put into the creation of a framework with which to explain marine policy initiatives. Instead, attention to such developments has tended to be either descriptive in nature, or else to rely upon the more general policy analysis paradigm. The marine environment however, provides an area of distinct policy development, isolated from other public policy by both organisational structures placing marine affairs in their own government agency or department, and also isolated by geography, hence removing it from the mainstream public and political conscience. In environmental and primary industry agencies, marine issues are often secondary to those of terrestrial orientation: witness the attention afforded fisheries in most countries vis-à-vis agriculture, and protection for rare fish species as compared to their terrestrial counterparts.

This paper examines elements that are considered to be influential in marine policy formation. It then provides a brief history of one case study: that of sea turtles in shrimp trawl bycatch. The problem of incidental or non-target take is one that plagues many marine species. Traditionally it has not found much support as an

agenda item. It has been, by and large, through the attention paid to a few so-called 'charismatic megafauna' acting as flagship species that bycatch finally gained some level of policy attention. Sea turtles sit alongside dolphins and albatrosses as the flagship species that raised bycatch onto the policy agenda in the us and internationally. This has allowed for more recent consideration of incidental fisheries take of less publicly attractive and politically motivating species such as sea snakes, sharks, and a host of fish species. This paper concludes by suggesting the overall impact of sea turtle species on broader marine and environmental policy development.

In Search of a Marine Policy

A greater understanding of the processes and outcomes of marine policy development is needed. At first blush, it is tempting to simply apply the usual environmental policy framework (see below) -- the bulk of which is based upon terrestrial experience -- to marine policy analysis. Despite its attractiveness, such a method is wrong insofar as it fails to acknowledge the intrinsic differences between the marine and terrestrial environments, and hence to the disparity in influences upon marine policy formation. These differences include the vastness of the oceans, the common property nature of marine extractive resources, the omnipresence of multiple use conflicts, the theoretical difficulties faced by scientists working in a highly interconnected, mobile, and fluid environment, and problems arising from overlapping jurisdictions and difficulties in the demarcation of boundaries (Cicin-Sain and Knecht 1985; Miller and Broches 1989). In regard to marine resources, the issue of exploitation versus conservation has strained relationships between otherwise friendly nations, changed trade relations, and divided interest groups (Joseph 1994). To be sure, the issue of marine conservation is complex, and the resulting policy formation process reflects these complexities.

Most studies concerning states' formation of marine policy have focused upon the need for a comprehensive oceans regime (Miller and Broches 1989; Knecht 1994). Those who have considered a particular marine sector in isolation have tended to focus on a small section thereof and upon a single factor as the predominant causal element in related policy action. Little work has been done on explaining nations' actions and the multiple factors that influence these. Several papers in the broader environmental policy field have, however, analysed the reasons behind behaviour with regard to a particular issue in terms of several policy factors (for example, Bergin 1991; Boardman 1991). These identify a number of influences including the financial and natural resources of a nation; bureaucratic actors and conflicts within national governments; government structures, in particular the division of power among levels of government; pressures from domestic interest groups and resultant public and political interest; and individual influence from powerful players. This paper pursues a similar approach for marine policy and isolates and discusses four factors that contribute significantly to policy in that area. These are the (1) role of science, (2) influence of non-government organisations (NGOs), and (3) domestic and (4) international actors and institutions.

The Role of Science as Knowledge

Science both provides the means to produce technological solutions to physical problems and a way of acquiring and conveying information (Ottesen and Woodley 1991). In its first role as the principle developer of technology, science plays a dual role: as the cause of many management problems, and often also the supplier of the technology required to solve these (Underdal 1989).

Insofar as the influence of science on marine policy applies, an increasingly grounded and logically coherent discourse on the subject has developed (see generally, Constable 1991; Ottesen and Woodley 1991; Miller 1993). This literature attempts to explain how scientific research is used in the raising of an issue and the formation of an appropriate policy response in both domestic and international fora. It recognises that science is not the only, or necessarily the predominant, contributor to the information base. Essentially, this material has evolved out of a realization that decision-making and policy setting is ultimately a political imperative. Moreover, recommendations from scientists are not necessarily impartial, nor do decisions always reflect the findings of the research (Andresen 1989a).

There is, nonetheless, no doubt that science provides a crucial contribution to the formation of policies on natural resource conservation and management. Science has two key avenues by which it may influence natural resources policy: diagnostic and therapy roles (Underdal 1989). Firstly, the revelation of new scientific evidence -- and diagnosis of a problem -- may trigger the initiation of the political process and raise onto the agenda a human-derived, previously unknown, and possibly cumulative, problem relating to the environment (Young 1989). Secondly, science may be a key influence on the content and form of the policy generated in response to environmental management needs; that is, the therapy. It is in this role, at the policy interface, that science is most controversial.

However laudable the goal of making marine policy development more scientific, may be there are limits as to how scientific marine policymaking can actually become (Hildreth 1994). If this were not the case, the scientists would, in effect, become the sole policy-makers. This does not happen, because science is a method designed to provide an answer to what is right, or true, or correct, but is unable to determine what is 'better'. 'Better' requires a value judgement, it involves non-scientific considerations, such as the personal values and belief systems of the decision-makers, as well as of those who the decision will affect. Hence, 'better' falls into the decision-making realm of the policy-maker (Caldwell 1991a). When the arrangements proposed by the scientific community do not impinge on the concerns of powerful interest groups, then the implementation of advice is unlikely to be a problem (Young 1989). Indeed, in the policy-making arena, scientific statements are not necessarily believed, because they are scientifically verifiable, but because they lend credence to attitudes or political positions that are held (Godard 1992)

Where, however, groups possessing considerable political influence oppose the scientific community, the situation becomes more complex (Wettestad and Andresen 1990). In polarised settings, gaps in scientific knowledge have been traditionally used to justify inaction, and scientific information used to promote factional purposes. Selective use of scientific information acts to legitimise a particular position, irrespective of the merits of that science, based on the belief that the emergent policy derives its authority from scientific rationality (Andresen and Ostreng 1989).

'Truth' becomes a secondary or auxiliary criterion (Andresen 1989a; Underdal 1989).¹

Ottesen and Woodley (1991) have identified three factors, which may act to limit the contribution of science in the formation of any given policy. These are:

1. a lack of comprehensive results;
2. limited consensus within the scientific community; and
3. a high degree of complexity in the results with a large number of qualifications.

In terms of the marine environment, the first and third of these in particular, are exacerbated. The immense size, fluid nature of the environment and consequentially high biological and physical variability, together with the comparative youth of the academic disciplines engaged in marine research, creates a remarkably high number of unknowns in marine science.

The implications of a lack of definitive results are discussed in environmental policy literature under the broader umbrella of uncertainty. Uncertainty has the effect, in polarised settings, of allowing science to simultaneously validate several opposing arguments; it can be used purposefully to manipulate -- or paralyse -- policy decisions. This may be to obtain premature closure of a debate, or to sustain continued controversy and uncertainty (Godard 1992). Herein lies the danger when scientific analyses of environmental problems are accepted as more factual than is actually warranted (Lemons 1996). According to Andresen (1989b), if uncertainty is pronounced and it cannot be proven who is right and who is wrong, then each player is able to select from the existing, and often diverging, scientific reports or opinions available. Dovers (1995) takes this further and suggests that some decision-makers may not actually want improved information, as uncertainty can be useful in clouding understanding and allowing for greater control of public debate.

The introduction of precaution into science-based decision-making has altered the balance between the scientific and the political influences on policy formation: 'traditional reliance on waiting for scientific "proof" is no longer viable' (Dovers, Norton, and Handmer 1996:1144). The precautionary principle holds that uncertainty is not an adequate reason for postponing environmental protection measures.² It recognises that adequate information to support decisions will rarely, if ever, be achieved and implies an acceptance of the inherent limitations of anticipatory knowledge (Wynne 1992). In theory this would see a reduction in the use of gaps in scientific data as a stalling mechanism (Grey 1990), yet although more than ten years have passed since the worldwide institutionalisation of this principle, there is little evidence of a significant shift in its impact on policy development.

A lack of scientific consensus -- like a high degree of controversy -- allows for the politicisation of science and its use to support particular, rather than universal, interests (Ottesen and Woodley 1991). Even where consensus occurs, the extent to which scientific communities and science impact upon the final policy is tempered by a variety of political and systematic constraints upon implementation.

Highly complex, or detailed, scientific explanations are incompatible with the task of decision-making (Ottesen and Woodley 1991). This incompatibility is representative of the integral differences that exist between scientists and policy makers in terms of time horizons, language, fundamental loyalties, and peer groups

(Bernstein, Thompson, and Smith 1993). Failure of communication between ecology and policy is not only the fault of the scientists. The policy makers must bear equal blame (Dovers, Norton, and Handmer 1996). While ecologists may have a poor understanding of the policy process, the policy-makers often fail to comprehend the scientific method and often, hence, misinterpret or dismiss the conclusions reached.

NGO and Interest Group Involvement

Environmentalism first emerged as a popular movement in the 1960s in North America, and gained political and international legitimacy at the 1972 UN Conference on the Human Environment, or Stockholm Convention (Caldwell 1991b). The involvement of non-government organisations has since become a distinctive characteristic of environmental politics. NGOs make impacts upon the formation of policy both through their direct interactions with states, and also by their influence over the behaviour of collectives and through their shaping of public opinion (Wapner 1996). Indeed names such as Greenpeace, the Audubon Society, World Wide Fund for Nature (WWF), and the Sierra Club are familiar internationally, as are those of locally active NGOs in the places where they work.

The role and significance of environmental NGOs has increased markedly in recent years (Caldwell 1991b, Hewison 1996). Due to their established role as representatives of the public interest and large community memberships, as well as their longevity, and policy-makers' familiarity with the organisations and individual players, it is the larger NGOs that have the greatest impact on the formation of national and foreign policy. Since the 1990s, they have commanded multi-million-dollar budgets, and had in their employ a corps of full-time lobbyists, lawyers, and scientists (Dunlap and Mertig 1991).

NGOs play a significant role in the raising of environmental issues, in relation to the form or nature of the policy response, as well as in the implementation of policy. The successful placing of an issue on the agenda, as is often facilitated by NGOs, is particularly important given Caldwell's (1991b) assertion that governments (and private corporate organisations as well) seldom act in the absence of organised public demand.

Most NGOs have dual strategies to bring pressure to bear on institutions once the issue has been successfully raised: firstly, through the generation of public support and hence political pressure; and secondly by gaining direct access to negotiations. Non-governmental organisations are able to gain direct access to the policy process due to their status as independent actors, and their possession of their own, often unique, bargaining assets. Such bargaining assets are fourfold: (1) their access to considerable funds (WWF 1991; Princen 1994); (2) their ability to command media attention and generally involve the public (Underdal 1989; Mazur and Lee 1993); (3) their ability to lobby political decision makers and provide alternative fora for communication; and (4) their provision of information and 'earth-centred perspectives' for decisions (Princen 1994).

Although publicity, political pressure and negotiations have been the principle strategies of NGOs, an ultimate goal of NGOs has been to institutionalise their objectives into laws in national and international fora (Caldwell 1991b). The creation of new bureaucracies to administer these laws may result in the co-option

or incorporation of NGO members into the newly formed regimes and authorities. Interestingly, while often sought after by NGOs and providing close proximity to decision-makers, co-option may actually be used by agencies or governments to reduce the level of interest-group involvement in the policy process (Haward 1986). The co-option of members from one NGO, but not another may also serve decision-makers by generating conflict between previously allied organisations, and hence weaken their common stance.

Domestic Political Influences

The domestic political influences within a state have an obvious role to play in the formation of national policies. A variety of players may be involved, including bureaucrats, politicians, and industry interest groups (Allison 1971). The development of agreements accommodating sundry interests can also be seen as taking the form of moves within a game where each set of actors attempts to maximise their return from the bargaining table (Peterson 1992).

Two theories for understanding a nation state's behaviour build upon the earlier model of rational choice (Friedheim 1996). Rational choice argues that states will act in a manner that will optimise the benefits they accrue, and if, despite their best tactical efforts, they cannot arrange a better outcome, then they will withdraw from the negotiations and maintain the status quo. The first theory is that of cultural moulding, which accepts the rational choice model, but adds to it the variables of cultural and individual behaviour or personality. The second theory considers the impact of domestic constraints upon the negotiator and emphasises the importance of the structure of the domestic system (Friedheim 1996). Domestic constraints have also been conceptualised as a two-level game where the negotiator bargains at both the domestic and the international levels (Putnam 1988; Iida 1993; Mo 1994). The domestic level negotiations are concerned with arriving at a conclusion, which will be acceptable to all domestic parties, and thus implemented domestically. All these players have a direct influence upon both national policies and domestic foreign policies, although their impact upon the process of international negotiations is less apparent and it is often difficult to distinguish differences between the policies developed at the two levels (Hershman 1994). Levels of government below the national level can also influence federal decision-making, depending on a variety of considerations, such as the issue area and the division of powers in respect thereto, the individual personalities involved, the degree of state and federal interest in the issue, the ruling party's federalist philosophy, and how strong a coalition exists between the states. Consequently, patterns of state-federal relations at any phase, contrary to popular theories, which identify distinctive characteristics for particular periods of time, do not conform across sectors to a single dominant model (Cicin-Sain 1986). Very different patterns have tended to prevail across coastal zone management, fisheries governance, marine mammal and endangered species protection, and offshore oil development (Cicin-Sain 1986). Open ended interpretation of state and federal responsibilities can lead to a merging of boundaries and, at times, active conflict between the two levels of jurisdiction.

Domestic political and bureaucratic agendas are a major factor in explaining the emergence of, and support provided for, particular policies. In spite of it often being overlooked in earlier analyses of both multi-national agreements and unilat-

eral conservation actions, the domestic political situation, and agenda, has increasingly been acknowledged as an influence on international and domestic behaviour (Bergin 1991). This assumes that politicians will be sensitive to the demands of the electorate and select those policies most congruent with public opinion as they seek re-election (Bergin 1991). Consequently factors that do not obviously relate to the issue area may impact upon the decision of political and bureaucratic actors. Significant events, such as elections, worker strikes, public sector downsizing, policies towards exchange rates, or government nationalisation of foreign investment, are of potential relevance. Acknowledgment of these factors takes into consideration that a particular focus sector is only one small part of a larger political system, and that the broader context must be understood (Ross 1981). Other political pressures with which leaders must contend may also have an impact; for example, a lack of media support, or opposition from colleagues or other political factions or parties, or upper house or legislature rejection of a Bill, may retard or generally alter policy decisions. Bureaucratic decisions or actions may also be influenced by ethical rules, organisational patriotism or rivalry, pressures towards proper social behaviours, and personal promotion criteria (Ross 1981). Indeed in many jurisdictions, legislation provides sufficiently broad discretion such that it is not only the elected politicians who have considerable control over the direction and goals of any specific policy field, but also appointed individuals, such as key bureaucratic actors (Knecht 1994).

Internationality and the International Influence

The international system exercises a variety of restraints upon the behaviour of nation states, and conversely intergovernmental regimes can be exploited by governments or interest groups for their own purposes. Ordinary principles of international law limit the prescriptive authority of a nation state to the jurisdiction of its own territory and the activities of its own nationals, thus providing countries a certain freedom of manoeuvrability. The basic theory behind this is that it subjects most people to an exclusive jurisdiction and, hence, clarifies legal obligations, and limits the potential for conflicts over sovereign authority that can lead to the disruption of world order. Problems, however, arise with respect to common heritage, precisely because no such clear jurisdiction exists.

Given this situation, nation states may perceive a clear deficiency in some aspect of the international governance of a global common or resource. It is, however, well recognised that 'in the field of international environmental diplomacy, progressive policies of individual nations can serve as a catalyst to global awareness and consensus' (Kibel 1996:61). This does not necessarily require direct action by one state against another. Rather, it has been shown that historically environmental progress has benefited from a 'follow-the-leader' dynamic conforming to higher standards (Shrybman 1991-92).

Where such a process of emulation does not occur, there are two options by which a nation state may actively work towards the internationalisation of a domestic goal. A country can attempt to negotiate a settlement or treaty with other states, so as to create an acceptable international benchmark, or else it can try to impose its will upon other nations through unilateral action, commonly either by military force, trade sanctions, or by granting or withholding assistance (Spracker and Lundsgaard 1993). Different operational alternatives each have benefits and shortfalls for agen-

cies or states. A nation state may choose to pursue several of these options to further a goal. Alternatively, where there is no specific directive from central leadership, domestic agencies of state may concurrently pursue different objectives through different means in several fora.

The option of multilateral arrangements has many supporters who contend that effective and enforceable conservation will be better served by cooperation than confrontation (Spracker and Lundsgaard 1993).³ New goals and principles, which emerge at this level, in either formal or informal arrangements, can influence national ocean governance systems such that they are modified to comply therewith (Knecht 1994). Moreover, a littoral state's exploitation of its commercial fisheries may also fall within the jurisdiction of, and hence be influenced somewhat by, such agreements, even though the international community does not have direct control over the resources within a sovereign nation's waters: domestic issues are often not merely domestic (Fairley 1980).

Regardless of the preferability of a negotiated settlement over the imposition of one state's will upon another, there are a number of problems which may arise in multilateral negotiations, and which may act to impede or even halt the process. If one or more parties dissent outright, it leaves only the options of either negotiating around a new set of boundaries, or else excluding the dissenting parties. Negotiating down to the limit of the dissenting nation may mean that the outcome, which is being sought, may not be achieved. Alternatively, if the choice is made to exclude a nation, then the harmful practice, which is being sought to be curtailed, may continue unabated. This option of exclusion also creates the problem of the free rider nation, which is both an economic and an environmental hazard. Not only does the free rider nation not have to contribute directly to the preservation of the resource, but as it has less controls on the related industry, the free rider nation is able to manufacture at a lower cost, and thus charge less for the end product, gaining a competitive advantage over the remaining – compliant – nations. In such situations multilateral sanctions or unilateral embargoes may result.

The use of unilateral arrangements is criticised as being a scenario wherein powerful nations provide prescriptive authority over other nations, or else as a system of piecemeal multilateral regulations. More broadly the issue can be considered in terms of tension between trade and environment goals. Opinions with regard hereto generally fall into one of two categories.

Free trade advocates feel that allowing the market to set prices through the opening of national economies and unhindered trade will help strengthen the economies of developing countries. They argue that environmental degradation is linked to poverty; thus, as developing countries get richer through free trade, the world environment will improve. On the other side of the debate, environmentalists and domestic industries in nations with relatively high environmental standards advocate the use of trade restrictions to induce adoption and enforcement of environmental protection laws in other nations (Hurwitz 1995:502).

There are, to be sure, both positive and negative effects of trade upon the environment. The disadvantages include the potential undermining of environmental laws

by trade liberalisation agreements, the competitive advantage provided to nations with more lax environmental laws in an open market situation, and the link between high economic growth (as encouraged by trade liberalisation) and unsustainable consumption of natural resources (Brack 1995). In favour of free trade as an environmental tool are the arguments, which hold that it supports specialisation, and hence maximum output in relation to the resources consumed, and encourages the spread of new and (presumably) environmentally friendly technology (Brack 1995). Perhaps the most persuasive argument though, is one offered in favour of unilateral actions which holds that trade embargos and sanctions by one nation upon another often have a catalytic effect upon the development of multilateral management regimes (Spracker and Lundsgaard 1993).

Case Study -- Turtles and Trawls

The case study described below outlines the progression of what is commonly known as the turtle-shrimp dispute. The issue begins with recognition of an ominous decrease in turtle populations -- notably the critically endangered Kemp's ridley (*Lepidochelys kempii*) -- in the US and neighbouring Mexico, and concerns over shrimp trawling as the major cause of mortality. It follows through to the issue's international implications. In the chronology outlined below many of the concepts highlighted in the above section are demonstrated. The role science played features in particular in the US domestic situation: in raising the problem; the use of uncertainty in delaying a response; the finding of a technical solution; and the ultimate application of science in resolving the debate. Less obvious, but equally significant, is NGO influence which emerges throughout the case study. In the domestic arena, state influence is significant as is that of industry organisations during the early years. More recently, federal agency policies, preferences, and behaviour have been influential. Also reflected, is the interaction of the domestic and international spheres. This is particularly apparent in regard to US sanctions and to the parallel domestic litigation and international trade cases. The result of this was the development of several negotiated international arrangements.

TEDS in the US

A decline in sea turtle populations and increase in strandings⁴ along the Atlantic and Gulf of Mexico coasts of the US were first widely recognised as problems requiring policy attention in the early 1970s. Soon thereafter the *Endangered Species Act* (ESA) was enacted and it became recognised as the 'only protection against a complete loss of sea turtles in the United States' (Weber *et al.* 1995). Unlike many other species listed under the ESA, sea turtles had been part of a small, but valuable commercial fishery (Weber *et al.* 1995), which was active as recently as the early 1970s (Witzell 1994). One method of capture was as bycatch in shrimp trawls. Despite whether or not a turtle is to be consumed, once captured in a trawl net the reptiles are unable to surface: if the length of the tow time exceeds the turtles' diving capacity then they will drown. While shrimpers were few and fishing effort relatively low, the incidental capture of sea turtles and their commercial sale caused little apparent concern (Witzell 1994). Expansion of the trawl fishery was a major contributor to a significant

decline in sea turtle populations. Thus, the catch and bycatch of turtles in shrimp trawling operations became an issue of policy and political concern (Weber *et al.* 1995). The issue as with all bycatch problems was not only the reduction of turtle capture, but also how to do so while sustaining a viable shrimp fishery.

At the time, bycatch was not a well recognised problem; previously there had been a high level of utilisation of bycaught turtles, for either commercial sale or personal consumption. Moreover, there was little or no awareness of other – now well known – bycatch issues. The only other significant and high profile fishery-marine wildlife interaction was the tuna purse-seine fishery and its incidental capture of small cetaceans, which occurred off the Pacific coast, mainly in far offshore areas, outside the eye of both the public and media, and concerned international as much as domestic policy (Andersen, Anderson and Searles 1978; Black 1992; Porter 1992; Spracke and Lundsgaard 1993; Joseph 1994; Joyner and Tyler 2000; Hedley 2001). The sea turtle bycatch problem was highly visible due to the stranding of dead turtles on beaches. The shrimp trawl industry operated mainly in domestic waters and was both important economically and politically significant. Sea turtles provided a test case for a domestic US fishery having to contend for the first time with a significant and persistent environmental issue. Although the introduction of turtle excluder devices (TEDS) into the US fishery provided far from a best practice model, consideration and resolution of the issue did pave the way for a general change in community, agency, and industry understanding of the conservation-oriented requirements and expectations in regard to commercial fishing operations. The progress and influences of US domestic adoption of TEDS is traced below.

Though catalysed and ultimately resolved by scientific information and NGO mobilisation, domestic influences had an enormous, largely delaying impact on both the legal recognition of sea turtles as threatened, and on actions to reduce their take in shrimp trawl operations. The first of these related by and large to bureaucratic, interagency wrangling. The problem of shrimp-turtle bycatch was first raised in the early 1970s by turtle biologists (Frazier 2000). Government agencies -- prodded by environmental NGOs -- had identified the declining number of sea turtles and the link between this phenomenon and the activity of shrimp trawls. Independently, on 2 June 1970 the hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) sea turtles were listed as endangered throughout their ranges, and in December the Kemp's Ridley sea turtle was similarly listed. Listing occurred under predecessor statutes to the 1973 ESA. Endangered status is applied to a species considered to be in danger of extinction through all or a significant portion of its range; and threatened refers to those species that without protection are likely to become endangered in the foreseeable future. The listing of species as endangered under the ESA effectively outlawed their capture. Thus, the take of those species of sea turtle that had been listed in 1970 was prohibited.⁵

Under the ESA, those species found to require protection must first pass through a complex nomination and listing process. It was during this process that lengthy delays in turtle protection arose. A struggle for jurisdiction on the part of both the National Marine Fisheries Service (NMFS -- Department of Commerce) and Fish and Wildlife Service (FWS -- Department of the Interior) led to the frequent stalling of turtle species' listing. In the end FWS retained control inland from the low water mark, and NMFS held jurisdiction over sea turtles in marine areas. Although

eventually resolved, this scenario demonstrates the importance of assigning specific jurisdiction to certain agencies for the administration of particular statutes. In 1978 the remaining species of sea turtles were listed for protection under the ESA: the green turtle (*Chelonia mydas*) as endangered, and the Pacific ridley (*Lepidochelys olivacea*) and loggerhead (*Caretta caretta*) both as threatened.⁶

The ESA's 'section seven' provisions placed a duty to conserve upon all federal agencies, such that any actions financed, authorised, or undertaken by the federal government must not jeopardise the continued existence of an endangered or threatened species. A 'biological opinion' from the responsible agency that such a jeopardy was likely to exist would lead to the prohibition of the activity in question, which by implication also confers a mandate to recover endangered and threatened species by all possible methods (*Defenders of Wildlife v. Andrus* 1976).

During the 1970s it became clear that in order to achieve economic success in the shrimp fishery a drastic reduction in the effort, and the number of active vessels, was needed (GOMFMC 1981). Moreover, increased fuel costs had resulted in a rise in the production costs. The exclusion of US shrimpers from rich Mexican waters greatly reduced the resource base available to the US fleet, and increased competition from cheap foreign imports had led to depressed prices. Figures vary, but all reports agree that there was an escalation in the importation of foreign shrimp from the 1970s through the 1980s. One author reports that the proportion of imported shrimp consumed in the US had risen from forty-eight per cent in 1977 to seventy-two per cent by 1989 (Weber *et al.* 1995). An alternate source states that in 1980, thirty-one per cent of fresh shrimp sold in the US was imported, which ten years later had risen to seventy-two per cent (Roberts 1990). Also during the 1970s there was an influx of Vietnamese migrants into the US, and most notably into its shrimp industry. Instead of decreasing the number of active vessels, this resulted in increased effort in the fishery, the number of operational vessels increasing from 8,074 in 1970 to 13,042 in 1986, placing much greater pressure on shrimp resources (Weber *et al.* 1995). By 1980 the situation had deteriorated such that the Secretary of Commerce declared the shrimp fishery to be in a critical situation (Durrenberger 1988). The political climate for raising the issue of sea turtle interactions and requiring shrimpers to modify gear or method was not favourable.

It was initially unclear what degree of influence shrimping and various other human impacts had upon sea turtle populations. Potential factors contributing to the declining numbers of sea turtles were:

- the loss of nesting sites to coastal development;
- activities associated with offshore energy projects;
- changes in climatic conditions;
- pollution and ingestion of marine debris;
- predation of eggs and hatchlings on nesting beaches;
- capture for human consumption; and
- incidental capture in fishing gear.

Science was relied upon to provide the answers. In 1973 the shrimp fishing industry was identified as the principal threat to Kemp's ridley sea turtle (Pritchard and Marquez 1973). Evidence of the negative impact of trawling upon sea turtles included:

- the rise in the proportion of dead and comatose turtles hauled aboard in shrimp trawls when the tow time increased. This ranged from very few at forty minutes, to a situation in which about seventy per cent of sea turtles were unable to be revived at tow times of about ninety minutes or more;
- an increase in the number of stranded carcasses on the beaches when shrimp fisheries opened each season in South Carolina and Texas, and a similar decrease at the close of seasons. Data suggests that seventy to eighty per cent of turtles stranded during these periods were caught and killed in shrimp trawls; and
- a decline in loggerhead turtle populations in areas of heavy trawling, but maintenance of their numbers in other regions where trawling is rare or absent (NRC 1990).

In a pattern to be witnessed in many other bycatch cases, uncertainty was emphasised and utilised as a means to delay any action. Shrimpers complained that evidence such as the relatively large numbers of sea turtles washed ashore during shrimping season was purely circumstantial, and this could be a result of a range of other factors such as water temperatures or increases in other seasonal activities in the Gulf. Due to this, further research was conducted. An impressive record of studies demonstrated a linkage between shrimp fishing and the depletion of sea turtle species, and went so far as to attempt to quantify sea turtle bycatch (Anonymous 1976; Anonymous 1977; Hillestad *et al.* 1978; Ulrich 1978; Rothmayr and Henwood 1982). Between 1979 and 1981, NMFS conducted its own studies into sea turtle bycatch and mortality (Rothmayr and Henwood 1982).⁷ Precise quantification of trawling-induced turtle mortality is, however difficult to obtain. Using observer data NMFS estimated that 47,973 sea turtles were captured annually in offshore shrimp trawling operations, and more than 11,179 died as a consequence of their capture (Henwood and Stuntz 1987). Shrimpers disputed these figures (Mialjevich 1987). They claimed that little over 12,000 turtles were captured each year and that of these only 572 die (Durrenberger 1988).

In 1978, recovery plan provisions were introduced to the ESA under section five, effectively codifying an extant agency process (Greenwalt 1978). The one serious shortcoming the plans suffered was that they were implementation schedules rather than regulatory documents and, as such, were unenforceable (Cheever 1996). The preparation of a sea turtle recovery plans was assigned to species specific Marine Turtle Recovery Teams. Various options for the reduction of turtle bycatch were available, including seasonal or area closures, the modification of gear, or the reduction of tow times. The most feasible of these was the latter option, though it proved very difficult to enforce. Meanwhile, alternate gear research was conducted, initially as a three-year programme, the intention of which was to design an apparatus for turtle exclusion that could be used in conjunction with existing trawl gear (Tucker, Robins, and McPhee 1997).

Thus, the incidental capture of sea turtles in trawl fisheries was initially attended by the search for a barrier device to prevent turtles from entering fishing gear. These barriers excluded approximately seventy-five per cent of turtles; however, catch loss was also high, averaging between fifteen and thirty per cent (Margavio *et al.* 1993). As a consequence, a second strategy was engaged: the modification of gear

to allow turtles to escape through a release device. This was based upon an adaptation of a pre-existing device, which over time proved to be a technical success, with a ninety-seven per cent turtle exclusion rate and minimal loss of target catch. It was not, however, embraced by the fishing industry.

An initial 1980s version of the TED was heavy and unwieldy. Subsequent to changes suggested by the shrimpers who had volunteered to test the devices, the decision was made to pursue voluntary adoption of TEDs. Early analysis of the TED suggested that the use of such a device would pay for itself within two years of use, through lowered fuel and other costs and increased quality of shrimp catch due to reduced crushing. In addition, the government attempted to convince fishers that only the widespread adoption of TEDs could avoid disastrously expensive legal confrontations that would result from environmentalists' determination to see the ESA enforced. The environmental NGOs had agreed that the pursuit of a voluntary approach to TED implementation was preferable. A TED Voluntary Use Committee was formed to coordinate activities, and agreed to a goal of fifty per cent TED coverage by the end of 1986, with 100 per cent coverage in areas of critical importance to sea turtles, in particular that of the Kemp's ridley (Margavio *et al.* 1993). By 1983 the strength of opposition to TEDs was becoming apparent: 200 TEDs built by a government contractor, made available largely free to shrimpers, were met with a resounding lack of interest. Even in the state of Georgia where 80,000 US dollars in fuel rebates were offered to shrimpers, who agreed to use TEDs, little interest was attracted.

Field trials were concluded in 1984, when federal appropriations for the programme were dramatically reduced. By this time NMFS had spent somewhere between 2 million US dollars and 3.4 million US dollars on the TED research (Conner 1987; Margavio *et al.* 1993). In November 1985 NMFS reported that it had perfected a lightweight collapsible TED that all but eliminated sea turtle bycatch, maintained shrimp harvest and reduced finfish take by fifty to seventy per cent.

Notwithstanding these impressive results, industry organisations still refused to commit their members to the use of the device. By this stage, less than one percent of shrimpers in the fishery were using TEDs (Henwood and Stuntz 1987). The original device's poor reputation had retarded the adoption of subsequent models -- TEDs were thus tainted (Conner 1987). Moreover, many shrimpers were concerned that a significant economic loss would be imposed upon them due to reduced catches. Resistance to TEDs stemmed from a belief that they would add to the litany of woes that fishers already faced such as cheap imports, farm-bred shrimp, rising fuel and insurance costs, falling prices and a crowded fishery (Dyer and Moberg 1992; Margavio *et al.* 1993). On the other hand, the benefits believed by NMFS to be offered by TEDs, such as fuel reduction, were considered by fishers to be slight (Durrenberger 1990). Finally, shrimpers believed that the devices were unnecessary. They did not consider shrimping to be a major threat to sea turtles (Mialjevich 1987; Tucker, Robins, and McPhee 1997). Once the industry opinion had formed, it proved nearly impossible to alter. The sea turtle came to symbolise to the shrimpers all external factors that were negatively impacting their industry at the time.

A major concern expressed by shrimpers was the validity of the science upon which the regulations were based. They considered the season on which the study had been based was inappropriate for the gathering of credible data because the catch had been too small to be reliable. Other criticisms stemmed from the fact

that TEDs had not been adequately tested in inshore regions or in the Gulf itself. They believed that the science was being used to validate a policy position and legitimise regulatory actions and decisions, and that any uncertainty was thus concealed. Such doubts surrounding data may have been exaggerated by a perception that scientists involved were partisan. In this regard, the turtle-shrimp controversy at the domestic level well reflects how scientific uncertainty can be used to delay action as well as to progress the formation of a particular policy.

It is clear that shrimpers' perceptions of TEDs contrast sharply with those of NMFS, though it is important to distinguish that shrimpers' problems were with TEDs and not the turtles. Individual shrimpers encountered the animals relatively infrequently (Webber *et al.* 1995). Yet, notwithstanding the occasional nature of encounters, the cumulative effect of the industry as a whole was devastating for sea turtle populations. However, because of the dwindling turtle numbers, many shrimpers no longer had first hand evidence that shrimp fishing was a major cause of sea turtle mortality; hence, they saw no need for any modification to their practices.

The failure to achieve significant TED usage through voluntary means led to the decision that mandatory TED requirements were needed to reduce turtle take and meet ESA requirements. In August 1986 NMFS held a briefing in Washington DC for shrimp and NGO representatives to unveil and explain proposed mandatory TED regulations. Perhaps unsurprisingly the draft regulations received criticism from all participants. Two days later, environmental groups served notice of an impending lawsuit on the basis that NMFS had failed to mandate the use of best available technology to prevent the take of endangered and threatened sea turtles, and hence was in breach of the ESA. Dissatisfied with the proposed rule and alarmed over the prospect of a fishing closure as threatened by NGOs, the shrimping industry requested mediation.

An untried alternative of negotiated rule making was proposed, whereby the two sides met -- supplied with all the scientific information available and the government's recommendations -- and worked to develop a solution. Notwithstanding their beginning with vastly disparate positions, the parties eventually agreed on two principles: firstly that endangered sea turtles should be protected by whatever means were available; and secondly that this should be done as far as practicable without adversely affecting the shrimping industry. In numerical terms this was ninety-seven per cent exclusion of turtles with ninety-seven per cent retention of target (shrimp) catch. The need for concomitant efforts to save sea turtles was also emphasised. A three-year phase-in of TEDs was agreed upon. In light of this, so long as shrimp vessels were installed with exclusion devices, their operators would not be prosecuted for capturing endangered or threatened sea turtles (52 Fed. Reg. 6179 [1987]).

Some shrimpers outright rejected this solution when they heard about it, and a grass roots mobilisation began, both through denial that there was a problem in the first place, or that TEDs worked, and secondly, through legal and political means of resistance (Mialjevich 1987). Meanwhile, unrest within the environmental community saw them again threaten to sue if NMFS did not carry out the actions agreed to at the negotiations.

After a number of delays, a final rule commenced operation in mid-1989. The rule included altered requirements as to where and when TEDs would be

required, with an exemption granted to vessels under twenty-five feet operating in offshore waters, provided that a maximum ninety minute tow time was observed. The details required approximately 7,000 out of the 20,000 operating shrimp trawlers to use TEDs. By this stage several models of TEDs had been approved by NMFS, each of which cost about 400 US dollars for both materials and labour.

Although the process of negotiated rulemaking in terms of this fishery was a controversial and lengthy one, as a concept it was considered a useful model. Many years later, with the 1994 reauthorisation of the Marine Mammal Protection Act (MMPA), such a process was enshrined in law (Bache 2001). The TED process of mediated decision-making was not, however, part of a statutory regime. Controversy over the use of TEDs continued even after a negotiated solution was agreed to. The degree of difference in opinion is reflected in the varied reaction of different states. Some state governments backed dissident shrimpers and filed suit seeking an injunction against the enforcement of the final TED rule (Conner 1987; Wilkins 1987). Other states, having grown weary of the ongoing uncertainty and federal delays, adopted their own regulations requiring the use of TEDs in all state waters (Conner 1987).

Those shrimpers still opposed to the federal government's rule responded with civil disobedience, such as blocking the Houston shipping channel. A familiar pattern ensued with the suspension of TED regulations; the launching of a suit by environmental NGOs; and finally a court order to reinstate the TED regulations or adopt an alternate means of protecting sea turtles from bycatch.

As seen in this scenario, inconclusive scientific data and the failure to compellingly dismiss beliefs that data were biased led to the development of a stalemate. When this occurred, politics became the main factor in the progress of the policy. Political lobbying by both environmental NGOs and industry groups generated considerable Congressional interest. There was a need for a final decision to settle this saga of turtles and TEDs. The solution to this unpalatable situation in which any decision was difficult to defend, was the requisitioning of an independent report on the status of sea turtles and the extent of impact that shrimp trawling had upon them. The need for this information was apparent. Both parties strongly believed in the validity of their evidence and bias of the other's data, notwithstanding that one was more scientific and the other more anecdotal.

This same basic methodology has been applied to resolve other similar situations. In the case of turtles, Congress decided to create a panel of independent scientists in conjunction with the National Academy of Science (NAS) to assess the information. In April 1990 the NAS issued its long-awaited report on sea turtles. Its investigations found that as many as 55,000 sea turtles were captured incidentally in shrimp trawls, and that NMFS's estimates may have been as much as four times too low. The report confirmed that turtle bycatch from shrimp trawling threatened the survival of sea turtles more than all other human activities combined, and that TEDs are the single most important action needed for sea turtle recovery (NRC 1990). The NAS report called for the use of TEDs in most places at most times of the year, including areas that were not within extant regulations, thus demonstrating the role that a definitive scientific assessment can play. In mid-1991, NMFS proposed regulations to implement the NAS's recommendations, requiring the use of TEDs on trawlers in offshore areas and larger inshore trawlers by January 1993, and for smaller inshore trawlers by December 1994.

Import Restrictions for Turtle Protection and International Negotiations

The one issue that industry and environmental representatives united on was with respect to imported shrimp products. A powerful coalition of commercial and recreational fishers, animal protection and environmental organisations, labour unions, and consumer protection bodies formed in the us. These parties maintained that the imposition of regulations on the domestic fleet without a comparable arrangement being required in nations exporting shrimp into the us market was unacceptable. Environmentalists highlighted the inadequacy of protecting turtles in one jurisdiction when they were subject to incidental capture in another. Fishers were also concerned about a further reduction in their price competitiveness on the market, given the extra production costs they were incurring through compliance with us TED requirements.

Unlike several other us natural resource and conservation laws, the ESA itself does not authorise the imposition of trade sanctions upon nations that do not comply with its provisions. Remedies contained therein are restricted to criminal and civil proceedings. However, when a problem of a market advantage for foreign exporters due to the imposition of strict environmental conditions upon domestic shrimpers arose, trade sanctions were invoked by Congress as the means, by which to equalise this situation. It is likely that this instrument was chosen due to the familiarity of the tool.

In 1989 Congress increased the protection offered to sea turtles.⁸ Attached as a rider to an appropriations bill, section 609 *Conservation of Sea Turtles: Importation of Shrimp* conditioned the importation of shrimp on the meeting of certain conservation practices. To be sure, as well as hoping to reduce the unnecessary bycatch of turtles by encouraging foreign countries to upgrade their sea turtle protection practices and technology, it was hoped that this measure would create a level playing field between domestic shrimp fishers and shrimp fishers in foreign nations whose catch is exported to the us market. Through enactment of these conditions relating to imported shrimp, Congress recognised the huge threat that the us shrimp market places upon sea turtle populations outside the us.

Known as section 609, this law prohibits the importation of shrimp into the us that is caught in ways that are harmful to sea turtles, unless the government of the harvesting nation adopts measures to protect sea turtles in the course of shrimp trawl fishing that are comparable to the us measures. Interestingly, section 609 was enacted as a rider to an appropriations bill. Appropriations riders allow significant changes in policy to occur without public input or legislative accountability, and have been criticised for being a circumvention of the democratic process. They are often used to avoid confronting fundamental conflicts in public values (Zellmer 1997).

Two directives were contained in section 609. The first, subsection a, required the Secretary of State, in consultation with the Secretary of Commerce, to initiate negotiations with foreign countries to develop agreements to protect sea turtles and to report to Congress on such negotiations. Subsection b(1) then prohibits the importation of shrimp or shrimp products harvested with commercial technology that may adversely affect sea turtles from all nations that fail to mandate conservation practices that provide a level of protection comparable to that offered under us counterpart laws. It is worth noting that although the language makes such

actions mandatory, when the President signed the bill into law he made it patently clear that the administration interpreted section 609(a) requirements as discretionary, stating:

under our constitution it is the President who articulates the Nation's foreign policy and who determines the timing and subject matter of our negotiations with foreign nations. Accordingly, keeping with past practice, I shall treat these provisions as advisory, not mandatory (Anonymous 1989).

Subsection b(2) created a process under which nations desiring to export shrimp to the US must be certified by the President (acting through the Secretary of State), and must be supported by credible evidence. Certification was available to fishing nations whose take rate was comparable to that of the US, as judged by meeting the following conditions:

- countries with a fishing environment that does not pose a threat of incidental takings of sea turtles because of:
 - a. an absence of the species within their respective jurisdictions,
 - b. exclusive use of harvest methods which do not pose a threat to sea turtles, or
 - c. whose commercial harvest occurs exclusively in areas where sea turtles do not occur; or
- harvesting nations that provide documentary evidence of the adoption of a regulatory programme governing the bycatch of turtles in shrimp trawling operations to the effect that:
 - a. requirements for the use of TEDs are comparable in effectiveness to those in the US, and
 - b. a credible enforcement effort, including monitoring compliance and appropriate sanctions, is in place (56 Fed. Reg. 1051 [1991]; 58 Fed. Reg. 9015 [1993]; and 61 Fed. Reg. 173342 [1996]).

The actual process of shrimp certification was delayed due to recognition that both the responsible federal departments, and nations, which wished to comply with the requirements, would need some time to get themselves economically and administratively equipped.

When section 609 was applied, guidelines promulgated by the State Department interpreted the Act as only applicable to shrimp fishing nations in the Western Atlantic and Caribbean regions. The Department justified this restriction of geographic scope by contending that Congress had intended the TED requirement to apply only to sea turtles that were harvested in, or migrate through, US coastal waters. Consequently section 609 was initially applied only to sixteen nations. Certification was based upon a minimum requirement for TEDs to be installed on a significant number of shrimp trawl vessels. Of these, only two nations were found to be compliant and certifiable. The State Department then delayed the application of embargo provisions on the remaining fourteen nations. It was later reported that the State Department had been concerned about the economic hardship this would cause to these nations, who, combined, exported three billion US dollars worth of shrimp to the US each year (Anonymous 1996). It has alternatively been suggested that the real

impetus behind the Department of State's limitation of the application of these legislative requirements was political (Donnelly 1996; Kibel 1996; Kaczka 1997). Some also argued that, given the ten years that it took for the United States (a highly developed country) to adopt and enforce mandatory TED requirements, implementation of the section 609 should allow shrimp exporting nations (the majority of which are developing countries) a reasonable period to do the same.

Action subsequent to the enactment of section 609 well reflects how agency opposition to a policy can impact upon its implementation. Section 609 was interpreted to apply only to specific nations, and even then was not applied as strictly as it might have been. Moreover, in the application of domestic turtle bycatch policy the implementing agency can be seen to act in contempt of Congressional edicts, a view confirmed by the courts in their strict interpretation of these laws.

Even after this delay, fourteen states were found not to have provisions, which met the comparability test, and, thus, were embargoed under the new law. The Department stalled its enforcement of section 609, and affected nations were granted three years to bring their regulations up to US standards. Thus, under this arrangement, by 1994 TEDs were to have been installed on those shrimp trawlers falling under section 609 requirements. Most countries did not seem to have difficulties gaining certification.⁹

It was also at this point in time that environmental NGOs began to dominate the domestic progress of the issue of shrimp trawl bycatch. Environmental groups were unsatisfied by the limited geographical application of section 609, and hence sought remedy through the courts. The case was heard before the Court of International Trade (CIT) in New York City (*EII v. Christopher* 1995). In 1995, the Earth Island Institute (EII) had lodged a challenge to the government's decision to limit the application of section 609 to Atlantic and Caribbean shrimp fishing nations, claiming that the resultant inaction in other regions was inconsistent with the intent of the law. In its complaint, EII sought two remedies: firstly an order compelling the State Department to initiate negotiations regarding sea turtle protection with all foreign governments that export shrimp to the US; and secondly an order compelling the State Department, as well as other federal agencies, to apply shrimp certification requirements to all foreign countries, regardless of geographic location. In finding for the plaintiff, the CIT held that the State Department had limited the intended geographic scope of the legislation, and that, as such, the interpretation was invalid. The CIT issued a statement to compel the government to implement an import ban upon all shrimp and shrimp based products from uncertified nations by May 1996.

From this point on, domestic legal action and NGO activity became interwoven with international legal action at the World Trade Organisation (WTO). These seesawing domestic and international court cases had a significant impact upon the jurisprudential consideration of the interaction of environmental and world trade laws. Newly affected foreign states responded to the CIT decision, and in March 1996, the Association of South East Asian Nations (ASEAN), along with India, Pakistan, Hong Kong, Korea, Australia, Mexico, and Venezuela, protested the US ruling to the WTO. Subsequently four nations, India, Malaysia, Pakistan, and Thailand, requested consultations. Unsatisfied with the outcome of consultations, a dispute settlement board was formed to consider the legality of section 609 embargoes under world trade rules.

In April the following year, the WTO established a three-person dispute settlement panel. Findings were passed down a little over twelve months later (WTO 1998a). This decision very much followed the spirit of earlier tuna-dolphin General Agreement on Trade and Tariffs (GATT) disputes.¹⁰ The United States' measures (that is, the implementation of section 609) were found to be inconsistent with Article XI of the GATT, which maintains that WTO members shall not impose import restrictions on like products, and the law was found not to fall within the Article XX exceptions. Hence the US was required to amend its law. The United States also had the option to appeal the panel's decision back to the WTO.

Meanwhile, in 1996 the State Department promulgated new regulations, intended to place the US in compliance with the WTO decision (Kibel 1996).¹¹ These regulations required shipment-by-shipment certification of shrimp caught with TEDS. They provided that all shipments of shrimp and shrimp products into the US had to be accompanied by a declaration that the harvest was either under conditions that do not adversely affect sea turtles, or in waters subject to the jurisdiction of a nation currently certified by the President.

Once again the Department of State's interpretation was met with domestic resistance. NMFS is on record as opposing a shipment-by-shipment basis on the grounds that such regulations would be completely unenforceable. In addition, the Department of Commerce was of the opinion that greater turtle protection would be achieved by insisting that other governments adopt comparable policies. Once again, the EII sought redress from the CIT. The plaintiff claimed that the regulations allowed for countries to evade the law's embargoes by exporting shrimp caught by a few designated vessels equipped with TEDS, while maintaining a predominantly turtle-unsafe fleet. Yet again the CIT held for the plaintiff (*EII v. Christopher* 1996a). A subsequent CIT opinion further clarified this in stating that shrimp harvested by means not requiring TEDS (for example in aquaculture facilities or by using tow time restrictions) could be imported regardless of the nation's certification status, but that shrimp harvested by shrimp trawlers could only be imported if the nation of origin was certified under section 609 (*EII v. Christopher* 1996b).

In June 1998 the Department of State appealed the CIT decision in *EII v. Christopher* (1996a) to the US Court of Appeals for the Federal Circuit (*EII v. Albright* 1998). The grounds of appeal were procedural rather than substantive, and the court found in favour of the Department. In August 1998 the Department of State reaffirmed its April 1996 regulations. New guidelines for the assessment of comparability and certification were issued, such that shrimp imports could be assessed on a shipment-by-shipment, rather than on a nation-by-nation, basis.

The Department attempted to address concerns that nations that had been certified as comparable to the US would abandon their programmes given the new shipment-by-shipment assessment provisions, or that uncertified nations would see no benefit in expanding their policies as their product was already granted US import access. The Department stated its policy position that TEDS should be used wherever there is a danger of sea turtle bycatch, and that there was no evidence to suggest that a lack of incentive by the US government would cause nations to revoke, or refrain from adopting such policies. However, in case of such an occurrence, the Department of State committed to reviewing the effect of the decision every six months, over a three year period, and to redressing the decision should TED programmes be

abandoned or their adoption dwindle.

Although the court decision had found in the government's favour, it was based on procedural issues and a further appeal from NGOs was possible. This was compounded by a concerted campaign by NGOs urging the government to appeal the WTO Dispute Settlement Panel determination (WTO 1998a). The campaign was successful: the US appealed.¹²

The WTO Appellate Body issued its surprise findings on 12 October 1998 (WTO 1998b). It largely rejected the Panel's original decision, describing its earlier interpretation as 'a result abhorrent to the principles of interpretation we are bound to apply'. The Appellate Body interpreted its governing Convention in light of its general preamble, which endorses sustainable development and environmental protection. They found that sea turtles were endangered world wide, that shrimping was the greatest source of mortality, and that TEDs were the best, inexpensive way to eliminate that mortality.

Although upholding the application of GATT Article XX(g) to section 609,¹³ the Appellate Body was nevertheless critical of the US' application of the law, saying that it resulted in arbitrary and unjustified discrimination against the four complainant nations. Its criticisms took issue with several aspects of the US' implementation of the law, including that:

- the four complainant nations had received a significantly shorter compliance time than had other nations;
- insufficient account was taken of the conditions in the different nations from which the shrimp export originated; and
- that the US had made inadequate efforts to secure international agreements with the complainant nations.

The Appellate Body decision was adopted by consensus by the 132 member nations of the WTO on 6 November 1998.

Although cases continued in both the CIT (*EII v. Daley* 1999), where a compromise solution was finally reached, and the WTO, where Malaysia unsuccessfully protested the US' implementation, it was the WTO Appellate Body finding that was the most significant for setting marine policy.

Prior to the turtle-shrimp case, dispute settlement action under the GATT had appeared openly hostile to the use of trade sanctions to achieve environmental goals. One particular aspect of the controversy was the legal distinctions drawn between regulations based on a product itself and that of its method of production. That is, where different processes or production methods produced goods that appeared in characteristics to be no different to other like products, then the products could not be discriminated upon based on the differing methodologies. There had, however, been some dialogue that perhaps this strict interpretation was a misunderstanding and misapplication of Article III of the GATT (Charnovitz 1994). Indeed, an examination of the background of the GATT suggests that it sought not eliminate the use of trade restrictions to impose environmental or health requirements, but simply to establish a set of the rules under which such requisites could be applied (Kibel 1996). It was the turtle-shrimp Appellate Body decision that gave the necessary reinterpretation of the relevant articles. The decision paved the way for the exemption of legitimate environmental regulations, including those based

on environmentally deleterious processes, or production methods, exemptions that may have otherwise been in contravention of world trade rules. Though turtles were perhaps given attention in the US due to their 'flagship' status, this WTO finding was a genuine reinterpretation of GATT/WTO rules irrespective of the 'charismatic' nature of the fauna in question.

Notwithstanding international displeasure with the US' use of sanctions, this form of unilateral action has in some cases been effective in propelling an issue into the limelight and even in creating multilateral negotiated regimes. To be certain, this is the scenario in terms of TEDS and sea turtles.

In the international arena, the first set of multi-lateral negotiations for a consensus-based sea turtle protection regime was commenced in the Americas. The Department of State, not relishing its new role mandated by section 609 as international enforcer of sea turtle preservation standards, and mindful of its mandate from Congress to seek international sea turtle conservation agreements, pursued a cooperative arrangement. Reportedly, the US government's strategy was to create a treaty that would not only promote sea turtle conservation throughout the Western Hemisphere, but also contain TEDS rules that, if followed by signatory nations, would automatically result in their certification (Bache 2003). The Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) entered into force on 2 May 2001. The use of TEDS was mandated so as to prevent sea turtle bycatch in all but a few rare circumstances. Each nation was assigned responsibility for the enforcement of TED regulations within its own jurisdiction and in regard to its flag vessels (Articles III and IV 1(b)). Given that there is little means of enforcing the IAC, section 609 may act to function as a defacto enforcement measure in at least the short term (Bache 2000). Though many details of the functioning of the Convention have yet to be determined, the agreement is a testament to the motivation that sanction actions can generate.

Similarly, in the Indian Ocean/South East Asian region and the West coast of Africa, sea turtle Memoranda of Understanding (MOU) were negotiated (Bache and Rajkumar 2003).¹⁴ The MOU on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA) is particularly significant due to its location in the region where the plaintiffs of the WTO turtle-shrimp cases are located. To be sure, determinations by the WTO on implementation of the Appellate Body's findings closely considered US efforts to negotiate an international solution. Not only did the sanction action of section 609 and subsequent WTO cases generate interest in the Asian region regarding negotiation for sea turtle conservation agreements, it also assisted in making appropriations available in the US to fund the negotiations. The two WTO implementation findings had only provisionally allowed the US to maintain their sanction action. This was to be pending the conclusion of a Southeast Asian regional agreement. In their findings, the WTO highlighted the IAC as a positive model of international agreement for sea turtle conservation.¹⁵ In this regard, not only can sea turtle management impact on other species and the wider environmental area, but also action in one region may lead to the development of similar regimes in other geographic areas.

Conclusion

Mitigation of sea turtle shrimp trawl bycatch in the us was one of the very first incidental take issues to be contemplated not only domestically, but internationally; and the progress and details of this have done much to shape policies for other types of bycatch reduction. Bycatch has become increasingly viewed as unacceptable, not because of any substantial alteration in public or private philosophies since the issue's emergence in the 1970s, but rather due to greater recognition of the finite nature of marine resources and the need for their conservation. Seen as inherently wasteful, bycatch's condemnation is thus explained. Through an examination of the role of various factors in bycatch policy development, an idea can be gained of the impact turtles have had on bycatch mitigation, and on environmental and natural resource conflicts more broadly.

Bycatch mitigation actions for sea turtle trawl bycatch have occurred at both domestic and international levels. At the domestic level, the sea turtle-trawl issue has encouraged the emergence of a more consultative framework for fisheries and environmental management policy in the us. There has been an increasing realisation of the persistence of the issue of bycatch, and as a consequence industry resistance to bycatch as an agenda item has been reduced, though not eliminated. Those addressing sea bird longline bycatch off the northwest coast of the us learnt from the mismanagement and failure of us implementation of TEDS, as did Australia in its introduction of TEDS (Matsen 1997; Tucker, Robins, and McPhee 1997; Cousins, Dalzell, and Gilman 2000). As one of the very first instances of concerted bycatch policy action, the case of turtle exclusion from shrimp trawls in the us has become an anti-best practice model around the world.

The TED case along with a handful of other issues had the early task of tackling the fishery-conservation divide. Its progress contributed to the maturation of bycatch mitigation as an issue, and has in turn allowed science to play a greater and more constructive role in policy development. An increased acceptance by fishers of the use of technology-based science as a means to create viable bycatch mitigation gear has led to a reduced resistance to the use of science more broadly in fisheries policy formation.

Linking the domestic and international, is the us' use of unilateral economic sanctions. Although unilateral embargoes have had some success internationally in spreading us conservation efforts, their impact has been limited by both international resistance and domestic failure to implement Congress' mandate. A more positive pattern is, however, beginning to emerge in regard to us sanction action. The intermittent use since the 1960s of trade embargoes as a means of extending regulations to limit the environmental impacts of select commercial operations has had a long term impact on foreign states' own domestic policies. That is, many states now monitor the us' actions in regard to marine issues and in anticipation of possible us extension of its domestic measures through unilateral sanctions, some foreign states are trying to pre-empt such action with their own domestic laws.

It is important, however, to recognise that the international situation is not uniformly characterised by us application of its will upon reluctant foreign nations. Indeed, almost contemporaneously with early American regulations, Indonesia introduced national TED requirements. Moreover, considerable efforts have been

made by several foreign nations towards the use of TEDs in their shrimp fisheries, often in cooperation with US agencies. An approach using encouragement rather than enforcement, and placing money into training programmes rather than legal fees, may be a potentially more useful means by which the US can extend their bycatch minimisation policies.

Sea turtles have had a considerable impact in the international arena in regard to legal interpretation of trade-environment interactions. Sea turtle-fisheries conflicts emerged at a time when new tools were evolving to deal with the trend of globalisation and the interaction of development with conservation. Although the use of unilateral sanction action to extend a state's domestic legislation abroad remains contentious on both ethical and legal grounds, the balance between trade and conservation was altered by virtue of the turtle-shrimp decision, wherein a substantial reversal of policy occurred. Though still relegating environmental concerns as secondary to trade and tariff laws, the WTO turtle-shrimp Appellate Body case has provided some additional leeway in the use of trade measures for conservation purposes. This is in regard both to its allowance of extraterritorial conservation action, and in relation to discrimination between products based on the process of their production, even when the products are themselves like in nature. The WTO turtle-shrimp appellate decision has done nothing to discourage the use of section 609-type approaches. Indeed, if anything, it has strengthened the perception that unilateral economic sanctions are the single most effective means of making foreign states adopt stricter environmental standards.

Notes

¹ The best example of this situation comes from the International Whaling Commission (IWC). The situation has not altered much since in the late 1980s. Andresen (1989a:38) noted that 'there is little room for independent and open-minded scientific discussions ... the line often does not go between scientists and decision-makers but between an alliance of scientists and diplomats from whaling and non-whaling nations respectively. ... This has nothing to do with the ability or skills of the scientists involved, as there are excellent scientists on both sides.'

² The precautionary principle is enunciated in, *inter alia*, the *Rio Declaration on Environment and Development* (1992) Principle 15 and the *United Nations Framework on Climate Change* (1992) Article 3.3. The *United Nations Agreement relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks* (1995) also articulates a 'precautionary approach' to fisheries management in its Article 6 and Annex II.

³ Examples of international regimes governing migratory species and high seas fishing operations include the Convention for the Conservation of Migratory Species of Wild Animals (CMS) (1983), The Food and Agriculture Organisation's Code of Conduct for Responsible Fisheries (1995), and the United Nations Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1995).

⁴ The term 'stranding' is used to refer to individuals of marine wildlife that wash ashore, live or dead, normally as the result of some life-threatening event; in this paper it refers mainly to animals caught in fishing gear and then washed ashore.

⁵ 35 Fed Reg 8495; 35 Fed Reg 18320. Listing occurred under the *Endangered Species Conservation Act of 1969* (Pub. L. No. 91-135, 83 Stat. 275), transitional provisions allowed that any species listed under this statute would be designated as endangered under the 1973 Endangered Species Act.

⁶ In 1978, green, loggerhead and Pacific ridley were also listed under the Endangered Species Act (43 Fed Reg 32808). The threatened status of the loggerhead and Pacific ridley meant that incidental catch was not entirely prohibited as it would have been had they been listed as endangered (Yaffee 1982).

⁷ Trained fishery observers were placed onboard shrimp trawlers in the Gulf of Mexico and Southwestern Atlantic region, logging 26,734 observer hours.

⁸ Although this amendment was technically not a formal amendment to the ESA, as it was adopted and codified as free standing legislation, it has subsequently been treated in court as part of the ESA regime due to its partial basis upon the ESA listing of turtles and habitat scheme, and because it furthered the policy objectives of the Act (*Departments of Commerce, Justice and State, the Judiciary and Related Agencies Appropriations Act of 1999*, Pub. L. No. 101-162, 103 Stat. 1988, 1037 (1989), §609, *Conservation of Sea Turtles: Importation of Shrimp*).

⁹ Sea turtles were not the first animals to be protected through import restrictions adopted unilaterally by the United States. This had occurred in a number of direct harvest cases and in terms of bycatch also in regard to dolphin interactions with tuna purse-seine fisheries. The situation of sea turtles differed from the dolphin case in a number of ways (see Bache 2003).

¹⁰ The WTO was established following agreement to the Final Act of the Uruguay Round of multilateral trade negotiations in 1994. These negotiations consolidated a number of elements of the multilateral trade system. The new regime was established under the GATT of 1947, as well as creating some new elements.

¹¹ 61 Fed. Reg. 173342 (1996).

¹² The Appellate Body hearing differed considerably from that of the panel in that *amicus curie* (3rd party) briefs were accepted. Initially when several NGOs sought to submit comments to the panel, the Secretariat refused these requests on the grounds that the groups were not member parties to the WTO. Subsequent to an appeal it was determined that individual panels were the correct bodies to decide the issue of allowing *amicus cutriae* briefs. This was based in part upon the Secretariat acting beyond their jurisdiction, and failing to provide the panel with the opportunity to solicit additional information as is provided under the WTO.

¹³ Article XX of the GATT contains those articles that may be potentially acceptable grounds for commercial discrimination. In relation to the environmental impacts of fisheries, Article XX sub-sections (b) and (g) set out certain provisions. These read:

Subject to the requirements that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting Party of measures: ...

(b) necessary to protect human, animal or plant life or health: ...

(g) relating to the conservation of exhaustible resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.

¹⁴ These were Agreements under the Convention for the Conservation of Migratory Species of Wild Animals, which provides under Article IV for the creation of subsidiary, species-specific agreements.

¹⁵ The WTO's reference led in part to detailed discussions on the whether the IOSEA ought to be a binding or non-binding accord. Although ultimately concluded as a non-binding MoU, the IOSEA does contain a commitment to consider a timeline for its transformation into a legally binding treaty -- a wording specially devised so as to be amenable to both Malaysia and the US who were battling out implementation hearings in the WTO at the time.

References

Allison, G.

1971 *Essence of Decision: Explaining the Cuban Missile Crisis*. Boston, Massachusetts: Little, Brown and Company.

Andresen, S.

1989a Science and Politics in the International Management of Whales. *Marine Policy* 2:99.

1989b Increased Public Attention: Communication and Polarization. In: S. Andresen and W. Ostreng (Eds.), *International Resource Management: The Role of Science and Politics*. London, UK: Belhaven Press. Pp. 25-45.

- Andresen, S. and W. Ostreng
 1989 International Resource Management: The Role of Science and Politics. In: S. Andresen and W. Ostreng (Eds.), *International Resource Management: The Role of Science and Politics*. London, UK: Belhaven Press. Pp. 1-6.
- Andersen, S., R. Anderson, and B. Searles
 1978 The Tuna-Porpoise dilemma: Is conflict resolution attainable? *Natural Resources Journal* 18:505-519.
- Anonymous
 1976 *Incidental Capture of Sea Turtles by Shrimp Fishermen in Florida*. Preliminary Report of the Florida West Coast Survey, Gainesville, Florida: University of Florida Marine Advisory Programme.
- Anonymous
 1977 *Alabama Shrimp Fishermen Interviews for 1977-1978*. Marine Resources Office, Mobil, Alabama: Alabama Cooperative Extension Service.
- Anonymous
 1989 Statement by President George Bush upon Signing H.R. 2991 21 November 1989. *Weekly Compilation of Presidential Documents* 1808, 25, November 27.
- Anonymous
 1996a Judge Says Law to Save Turtles Prevents Most Imports of Shrimp *New York Times*, January 8.
- Anonymous
 1996b Ruling Seen Barring Most Shrimp Imports to US, Reuters (3 May 1996b) available in LEXIS, News Library, Wires file.
- Bache, S.
 2000 International Bycatch Policy: Options for Sea Turtle Conservation. *International Journal of Marine and Coastal Law* 15(4):333-353.
 2001 A Primer on Take Reduction Planning under the Marine Mammal Protection Act. *Ocean and Coastal Management* 44:221-239.
 2003 *Marine Wildlife Bycatch Mitigation: Global Trends, International Action and the Challenges for Australia*. Sydney, Australia: University of Wollongong.
- Bache, S. and S. Rajkumar
 2003 Marine Wildlife Bycatch Under the CMS: Progress and Prospects. *International Journal of Marine and Coastal Law* 18 (2):215-240.
- Bergin, A.
 1991 The Politics of Antarctic Minerals: The Greening of White Australia. *Australian Journal of Political Science* 26:216-239.
- Bernstein, B., B. Thompson, and R. Smith
 1993 A Combined Science and Management Framework for Developing Regional Monitoring Objectives. *Coastal Management* 21:185-195.
- Black, D
 1992 International trade vs. environmental protection: The case of the U.S. embargo on Mexican tuna. *Law and Policy International Business*. 24:123-156.
- Boardman, R.
 1991 Approaching Regimes: Australia, Canada and Environmental Policy. *Australian Journal of Political Science* 26:446-471.
- Brack, D.
 1995 Balancing Trade and the Environment. *International Affairs* 71(3):497-514.

- Caldwell, L.
- 1991a Analysis-Assessment-Decision: the Anatomy of Rational Policymaking. *Impact Assessment Bulletin* 9:81.
- 1991b Globalizing Environmentalism: Threshold of a New Phase in International Relations *Society and Natural Resources* 4:259.
- Charnovitz, S.
- 1994 Green Roots, Bad Pruning: GATT Rules and their Application to Environmental Trade Measures *Tulane Environmental Law Journal* 7:299.
- Cheever, F.
- 1996 The Road to Recovery: A New Way of Thinking About the Endangered Species Act. *Ecology Law Quarterly* 23 (1):1-78.
- Cicin-Sain, B.
- 1986 Ocean Resources and Intergovernmental Relations: An Analysis of the Patterns. In: M. Silva (Eds.), *Ocean Resources and U.S. Intergovernmental Relations in the 1980s*. Boulder, Colorado: Westview Press. Pp. 241-261.
- Cicin-Sain, B. and R. Knecht
- 1985 The Problem of Governance of U.S. Ocean Resources and the New Exclusive Economic Zone. *Ocean Development and International Law* 15(3/4):289-317.
- Conner, D.
- 1987 Turtles, Trawlers, and TEDS: What Happens when the Endangered Species Act Conflicts with Fishermen's Interests. *Water Log* 7(4):3-27.
- Constable, A.
- 1991 The Role of Science in Environmental Protection. *Australian Journal of Marine and Freshwater Research* 42:527-538.
- Cousins, K. P. Dalzell, and E. Gilman
- 2000 Managing Pelagic Longline-Albatross Interactions in the North Pacific Ocean .In: B Flint, K. Swift, D. Duffy, P. Tummons and S. Yong (Organisers), Workshop presentation at *The Second International Conference on the Biology and Conservation of Albatross and other Petrels*. Honolulu, Hawaii: US Fish and Wildlife Service.
- Donnelly, M.
- 1996 Evolution of the Western Hemisphere Sea Turtle Treaty *Marine Turtle Newsletter* 72:18.
- Dovers, S.
- 1995 Information, Sustainability and Policy. *Australian Journal of Environmental Management* 2 (September):142-156.
- Dovers, S., T. Norton, and J. Handmer
- 1996 Uncertainty, Ecology, Sustainability and Policy. *Biodiversity and Conservation* 5:1143-1167.
- Dunlap, R. and A. Mertig
- 1991 The Evolution of the U.S. Environmental Movement from 1970 to 1990: An Overview *Society and Natural Resources* 4:209.
- Durrenberger, P.
- 1988 Shrimpers and Turtles on the Gulf Coast: The Formation of Fisheries Policy in the United States. *Maritime Anthropological Studies* 1(2):196-214.
- 1990 Policy, Power and Science: The Implementation of the Turtle Excluder Device Regulations in the U.S. Gulf of Mexico Shrimp Fishery. *Maritime Anthropological Studies* 3(1):69-86.
- Dyer, C. and M. Moberg
- 1992 The 'Moral Economy' of Resistance. *Maritime Anthropological Studies* 5(1):18-35.

- Fairley, H.
1980 Canadian Federalism, Fisheries and the Constitution: External Constraints on Internal Ordering *Ottawa Law Review* 12:257.
- Frazier, J.
2000 Kemp's Ridley Sea Turtle. In: R. P. Reading and B. Miller (eds.) *Endangered Animals: A Reference Guide to Conflicting Issues*. Westport, Connecticut: Greenwood Press. Pp. 164-170.
- Friedheim, R.
1996 Moderation in the Pursuit of Justice: Explaining Japan's Failure in the International Whaling Negotiations. *Ocean Development and International Law* 27:349-378.
- Godard, O.
1992 Social Decision-Making in the Context of Scientific Controversies: the interplay of environmental issues, technological conventions and economic stakes. *Global Environmental Change* 2(3):239-249.
- Gray, J.
1990 Statistics and the Precautionary Principle *Marine Pollution Bulletin* 41:174.
- Greenwalt, L.
1978 Fish and Wildlife Service, U.S. Department of the Interior. Statement to the *Endangered Species Act Authorisation: Hearings before the Subcommittee on Fisheries and Wildlife Conservation and the Environment, Committee on Merchant Marine and Fisheries, 95th Cong., 2d Sess.* (1978).
- GOMFMC (Gulf of Mexico Fishery Management Council)
1981 *Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters*. Tampa, Florida: Gulf of Mexico Fishery Management Council.
- Haward, M.
1986 *Institutions, Interest Groups and Marine Resources Policy*. Hobart (unpublished): University of Tasmania, Masters of Arts Dissertation.
- Hedley, C.
2001 The 1998 Agreement on the International Dolphin Conservation Program: Recent developments in the tuna-dolphin controversy in the Eastern Pacific Ocean. *Ocean Development and International Law* 32:71-92.
- Henwood, T. and W. Stuntz
1987 Analysis of Sea Turtle Captures and Mortalities During Commercial Shrimp Trawling. *Fishery Bulletin* 85(4):813-817.
- Hershman, M.
1994 Ocean Management Policies and the Shift of Power to Subnational Units: Examples for the United States. In: B. Cicin-Sain and L. Denno (Eds.), *Moving Ahead on Ocean Governance*. Newark, Delaware: Center for the Study of Marine Policy, Graduate College of Marine Studies, University of Delaware.
- Hewison, G.
1996 The Role of Environmental Non-Governmental Organisations. In: T. Mensah(Ed.), *Ocean Governance: Strategies and Approaches for the twenty-first Century*. Honolulu, Hawaii: Law of the Sea Institute.
- Hildreth, R.
1994 The Roles of Science in U.S. Marine Policy: Some Regional Applications. *Coastal Management* 22:163-170.
- Hillestad, H., J. Richardson, and G. Williamson
1978 Incidental Capture of Sea Turtles by Shrimp Trawlmen in Georgia. *Proceedings of the Annual Conference of the Southeast Association of Fish and Wildlife Agencies* 32: 167.

- Hurwitz, D.
 1995 Fishing for Compromises through NAFTA and Environmental Dispute-Settlement: The Tuna Dolphin Controversy. *Natural Resources Journal* 35(summer):501-540.
- Iida, K.
 1993 When and how do Domestic Constraints Matter? *Journal of Conflict Resolution* 37(3, September): 403-426.
- Joseph, J.
 1994 The Tuna-Dolphin Controversy in the Eastern Pacific Ocean: Biological, Economic, and Political Impacts. *Ocean Development and International Law* 25:1-30.
- Joyner, C. and Z. Tyler
 2000 Marine Conservation versus international free trade: Reconciling dolphins with tuna and sea turtles with shrimp. *Ocean Development and International Law*. 31:127-150.
- Kaczka, D.
 1997 A Primer on the Shrimp-Sea Turtle Controversy. *RECIEL* 6(2):171-180.
- Kibel, P.
 1996 Justice for the Sea Turtle: Marine Conservation and the Court of International Trade. *Journal of Environmental Law* 15(1):57-81.
- Knecht, R.
 1994 Essay: Emerging International Goals and Principles and Their Influences on National Ocean Governance. *Coastal Management* 22:177-182.
- Lemons, J.
 1996 Introduction. In: J. Lemons (Ed.), *Scientific Uncertainty and Environmental Problem Solving*. Oxford, UK: Blackwell Science. Pp.1-11.
- Margavio, A., S. Laska, J. Mason *et al.*
 1993 Captives of Conflict: The TEDS Case. *Society and Natural Resources* 6:273-290.
- Matsen, B.
 1997 For the Birds. *National Fisherman* 77:20-23.
- Mazur, A. and J. Lee
 1993 Sounding the Global Alarm: Environmental Issues in the US National News. *Social Studies of Science* 23: 681.
- Mialjevich, T.
 1987 Sea Turtles and TEDS: A Misdirected and Counterproductive Effort to Save Turtles. *Water Log* 7(4):28-31.
- Miller, A.
 1993 The Role of Analytical Science in Natural Resource Decision Making. *Environmental Management* 17:563.
- Miller, M. L. and C. Broches
 1989 Congress, Issue Networks, and Marine Affairs. *Coastal Management* 17:263-293.
- Mo, J.
 1994 The Logic of Two-Level Games with Endogenous Domestic Coalitions. *Journal of Conflict Resolution* 38(3, September):402-422.
- NRC (National Research Council)
 1990 *Decline of the Sea Turtle: Causes and Prevention*. Washington DC: National Academy Press.
- Ottesen, P. and S. Woodley
 1991 Great Barrier Reef Marine Park - Research for Better Management. Paper presented at *Science and the Management of Protected Areas*. Acadia, Nova Scotia: Elsevier. Pp.37-45.

- Peterson, M.
 1992 Whalers, Cetologists, Environmentalists, and the International Management of Whaling. *International Organisation* 46(1):147-186.
- Porter, S.
 1992 The Tuna/Dolphin Controversy: Can the GATT become environmentally-friendly? *The Georgetown International Environmental Law Review*. 5(1):91-117.
- Princen, T.
 1994 NGOs: Creating a Niche in Environmental Diplomacy. In: T. Princen and M. Finger (Eds.), *Environmental NGOs in World Politics: Linking the Local and the Global*. London, UK: Routledge. Pp. 29-17.
- Pritchard P. and M. Marquez
 1973 *Kemp's Ridley Turtle or Atlantic Ridley, Lepidochelys kempii*, IUCN Monograph No. 2 Marine Turtle Series. Washington DC: IUCN.
- Putnam, R.
 1988 Diplomacy and Domestic Politics: The Logic of Two-Level Games. *International Organisation* 42(3):426-460.
- Roberts, K.
 1990 Shrimp Imports ... Out of Control? *Commercial Fisherman* 1: 9.
- Ross, S.
 1981 Organising for Marine Policy: Some Views from Organisation Theory. In: F. Hool, R. Friedheim and T. Hennessey (Eds.), *Making Ocean Policy - The Politics of Government Organization and Management*. Boulder, Colorado: Westview Press. Pp. 91-111.
- Rothmayr, C. and T. Henwood
 1982 *Incidental Catch and Mortality Report: Final Report to Southeast Fisheries Center*. Miami, Florida: NMFS.
- Shrybman, S.
 1991-92 Trading Away the Environment. *World Policy Journal* Winter: 93.
- Spracker, S. and D. Lundsgaard
 1993 Dolphins and Tuna: Renewed Attention on the Future of Free Trade and Protection of the Environment. *Colombia Journal of Environmental Law* 18:385-418.
- Tucker, A., J. Robins, and D. McPhee
 1997 Adopting Turtle Exclusion Devices in Australia and the United States: What are the Differences in Technology Transfer, Promotion, and Acceptance? *Coastal Management* 25(4):405-421.
- Urlich, G.
 1978 *Incidental Capture of Loggerhead Turtles by South Carolina Commercial Fisheries*. Unpublished Report of the National Marine Fisheries Service, Contract No. 03-7-042-35151.
- Underdal, A.
 1989 The Politics of Science in International Resource Management: A Summary. In S. Andresen and W. Ostreng (Eds.), *International Resource Management: The Role of Science and Politics*. London, UK: Belhaven Press. Pp. 253-268.
- Wapner, P.
 1996 *Environmental Activism and World Civic Politics*. New York: State University of New York Press.
- Webber, M., D. Crouse, R. Irwin, and S. Iudicello
 1995 *Delay and Denial: A Political History of Sea Turtles and Shrimp Fishing*. Washington DC: Center for Marine Conservation.

- Wettestad, J. and S. Andresen
 1990 Science and North Sea Policy-Making: Organisation and Communication. In D. Freestone and T. Ijlstra (Eds.), *The North Sea: Perspectives on Regional Environmental Co-operation* London, UK: Graham and Trotman. Pp.111-122.
- WWF (World Wide Fund for Nature)
 1991 *WWF Annual Report 1991*. Gland: World Wide Fund for Nature.
- Wilkins, J.
 1987 TEDS and the Endangered Species Act of 1983. *Louisiana Coastal Law* 65:1.
- Witzell, W.
 1994 The Origin, Evolution, and Demise of the U.S. Sea Turtle Fishery. *Marine Fisheries Review* 56(4):8-23.
- Wynne, B.
 1992 Uncertainty and Environmental Learning-Reconceiving Science and Policy in the Preventive Paradigm. *Global Environmental Change* 2:111-127.
- Yaffee, S.
 1982 *Prohibitive Policy: Implementing the Federal Endangered Species Act*. Cambridge, Massachusetts: MIT Press.
- Young, O.
 1989 Science and Social Institutions: Lessons for International Resource Regimes. In: S. Andresen and W. Ostreng (Eds.), *International Resource Management: The Role of Science and Politics*. London, UK: Belhaven Press. Pp.7-24.
- Zellmer, S.
 1997 Sacrificing Legislative Integrity at the Altar of Appropriations Riders: A Constitutional Crisis. *Harvard Environmental Law Review* 2(1):457-534.

Cases Cited

- Departments of Commerce, Justice and State, the Judiciary and Related Agencies Appropriations Act of 1999*, Pub. L. No. 101-162, 103 Stat. 1988, 1037 (1989), §609, *Conservation of Sea Turtles: Importation of Shrimp*.
- Defenders of Wildlife v. Andrus*, 428 F. Supp. 167 (D.D.C. 1976)
- Earth Island Institute v. Christopher*, 913 F. Supp. 559 (Ct. Int'l Trade 1995) (hereafter "*EII v. Christopher*").
- Earth Island Institute v. Christopher*, 942, F Supp. 579 (Ct. Int'l Trade 1996a): No. 96-165, slip op. (Ct. Int'l Trade, 8 October 1996a).
- Earth Island Institute v. Christopher*, 948 F. Supp. 1062 (Ct. Int'l Trade 1996b).
- Earth Island Institute v. Albright*, 147 F. 3d 1352 (Fed. Cir. 1998).
- Earth Island Institute v. Daley*, WL 224602 (Ct. Int'l Trade, 1999).
- World Trade Organisation, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/R (15 May 1998), reprinted in 37 I.L.M. 832 (1998).
- World Trade Organisation, Report of the Appellate Body, *United States - Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, 12 October 1998, reprinted in 38 I.L.M. 118 (1998).

Federal Register

- 35 Fed. Reg. 8495 (1970).
- 35 Fed. Reg. 18320 (1970).
- 43 Fed Reg 32808 (1978).
- 52 Fed. Reg. 6179 (1987).

56 Fed. Reg. 1051 (1991).
58 Fed. Reg. 9015-16 (1993).
61 Fed. Reg. 173342 (1996).

