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THE MATCHED PAIR — NATIONAL ENVIRONMENTAL POLICY ACT AND THE FISH AND WILDLIFE COORDINATION ACT

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ABSTRACT

Short description of both pieces of legislation highlighting the similarities and differences; the strengths and limitations of each. Based on recent National Marine Fisheries Service's experience concludes that both can be used in a mutually supportive manner to benefit fish and wildlife resources.

INTRODUCTION

Long before the general public awakened to environmental issues, biologists and administrators responsible for fish and wildlife were painfully aware of the impact of man's developmental activities on the resource under their purview. From mammoth Federal projects to private dredge-and-fills on fractions of acres, the cumulative damage has totalled thousands of acres of habitat annually. (Anon.1967). This professional awareness was accompanied by a sense of frustration and impotence, as the environmental-altering developments seemed to move with a dynamism of their own.

Through most of this period there was one channel, however imperfect, for investigating, modifying and, in some cases, opposing this seemingly inexorable developmental thrust. This was the Fish and Wildlife Coordination Act¹ (hereinafter referred to as the Coordination Act). The Act states that "wildlife conservation shall receive equal consideration and be coordinated with other features of water-resource development programs..." It applies to virtually all types of water-resource projects undertaken either directly by a Federal agency or under a Federal permit or license. It requires these agencies to provide for planning participation by the Fish and Wildlife Service and the State fish and game departments and to respond specifically to their reports and recommendations for mitigation and enhancement of fish and wildlife resources (McBroom 1958).

¹16 U.S.C. 661 et seq.

²42 U.S.C. 4321 et seq.

If the Coordination Act represented the best hope for consideration of fish and wildlife resource conservation in water-resources planning and development during the pre-environmental-awareness period, the National Environmental Policy Act² (hereinafter referred to as NEPA) symbolizes a basic thrust of the post-awareness period. It lays down a broad mandate that all Federal agencies direct their policies, plans and programs so as to meet national environmental goals. However, its cutting edge is the requirement in section 102(2)(C) that all Federal agencies prepare detailed environmental impact statements (EIS) on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment and file them, after circulation, with the Council on Environmental Quality (hereinafter referred to as the Council). Executive order 11514³ directs all Federal agencies to implement their responsibilities under NEPA in accordance with guidelines to be issued by the Council.

The Council guidelines (Anon. 1973d) state that the following points are to be covered in the detailed EIS: (1) a description of the proposed action and the environment affect, (2) relationship of the proposed action to land use plans, policies and controls for the affected area, (3) the probable impact of the proposed action on the environment, (4) alternatives to the proposed action, including, where relevant, those not within the existing authority of the responsible agency, (5) any probable adverse environmental effects that cannot be avoided, (6) the relationship between local short-term uses of man's environment and maintenance and enhancement of long-term productivity, (7) any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented, and (8) an indication of what other interests and considerations of Federal policy are thought to offset the adverse environmental effects of the proposed action.

MAGNITUDE OF THE TASK IMPOSED BY NEPA AND THE COORDINATION ACT ON FISH AND WILDLIFE AGENCIES

As of May 31, 1973, a total of 4150 Draft and Final EIS's had been filed with the Council (Anon. 1973c). The National Marine Fisheries Service (NMFS) currently reviews and comments on approximately 500 Draft EIS's annually affecting resource areas for which it has responsibilities. With respect to Coordination Act activities, the annual NMFS caseload that should receive at least preliminary screening is in the tens of thousands. Inclusion of inland sportfish and wildlife situations swells the numbers further. In addition, many states have their own counterparts of the Coordination Act and NEPA covering State and local situations not coming under Federal purview. Since provisions are made for State participation under both the Coordination Act and NEPA, the overall, combined caseload for State fish and wildlife agencies becomes quite heavy. To meet the added workload of preparing EIS's under NEPA, most Federal and State planning, construction and license-granting agencies have greatly expanded their staffs. By contrast, most Federal and State fish and wildlife agencies responsible for reviewing these EIS's to protect and conserve the resource have received little or no additional funds or manpower for this purpose.

Obviously then the Coordination Act and NEPA involve a tremendous task of screening, analyzing, investigating, reviewing, commenting, reporting and following-up for both Federal and State fish and wildlife agencies. To what extent is it possible to utilize both approaches jointly to achieve the fullest benefits

³March 5, 1973, 35 F.R. 4247

for fish and wildlife resources with maximum efficiency? First let us examine the similarities and differences between the Coordination Act and NEPA.

SIMILARITIES AND DIFFERENCES BETWEEN NEPA AND THE COORDINATION ACT

Coverage

The Coordination Act covers only the fish and wildlife aspects of Federal water resources planning, development and issuance of Federal permits and licenses. Within this limitation however, the coverage is total. Although extensive screening may be employed, the basic responsibility for review and evaluation of even a minor permit situation remains with the appropriate State and Federal fish and wildlife agencies. However, mere involvement of Federal funding alone is not sufficient to bring the provisions of the Coordination Act into play.

NEPA coverage, on the other hand, is not restricted to water resources but includes all proposed legislation and other major Federal actions significantly impacting the environment with one exception.⁴ However the responsible agency determines within the Council guidelines whether a particular action is of sufficient significance to warrant setting the EIS machinery into motion. This tends to limit use of the machinery in smallscale situations such as often prevails in granting individual permits. For example, only 16 EIS's have been filed on this type of permit for dredge-and-fill activities since NEPA was passed (Anon.1973c). Where permits are concerned, Council guidelines encourage broad generic statements covering numbers of individual actions — in contrast to the individual consideration characteristic of Coordination Act operations.

In terms of coverage, what emerges is a mosaic — with some actions and situations covered by both the Coordination Act and NEPA; some covered exclusively by one or the other; and some by both at different levels. Under these conditions, full protection and conservation of the fish and wildlife resource obviously requires the operation of both systems.

Relationship to Water Resources Planning Process

This is perhaps the most fundamental criterion for separating the basically different operational modes of the two systems. In describing the EIS process, General Richard H. Groves, Deputy Director Civil Works, Corps of Engineers, defines the distinction by stating "Bear in mind that we are not describing the planning process, but one which is an environmental impact check on the recommendations that stem from the planning process" (Groves 1971). Be that as it may, there is little question that the Coordination Act is inseparable from the detailed workings of the planning process. Primarily it supplies a mechanism to build consideration of fish and wildlife into every step of the process from the earliest reconnaissance through feasibility studies up to and including operational phases on Federal Projects and follow-up on Federally-granted licenses and permits. From time to time (if one can be granted a bit of facetiousness) NEPA keeps the game environmentally honest by mandating an overall review of the process up to that point through the EIS system.

This basic distinction having been made, it is possible to examine the strengths and limitations of each approach in a more detailed manner.

1. *Requirements on Lead Agency to Respond to Comments.* The emphasis in NEPA, in Council guidelines and in agency instructions implementing Executive Order 11514³ has been on the production of EIS's which adequately describe the impact on the environment, and the provision of suitable opportunity

⁴Permits issued by the Environmental Protection Agency under the Federal Water Pollution Control Act, as amended (PL 92-500; 86 Stat. 861; 33 U.S.C. 1256)

to review and comment upon them. Relatively little attention has been given to the process of commenting itself. In general the amount, content and quality of review and comment has been left to the initiative of the reviewing agencies and outside groups. The National Oceanic and Atmospheric Administration (NOAA), which includes NMFS, has issued internal guidelines on commenting procedures and quality (Anon.1971a). Council guidelines require that all substantive comments be attached to the Final EIS, which must contain meaningful reference and response to all responsible opposing views.

The final repository of the results of the process is the Council which checks that the proper procedures have been followed in preparing and circulating the EIS. There is no requirement on the responsible, originating agency to respond directly to, or interface with, the commenting agency or group. Any agency or individual dissatisfied with the treatment given its comments in the Final EIS can, of course, register a complaint with the Council or the originating agency or consider litigation to accomplish changes. Theoretically the perfect EIS from the standpoint of the originating agency would be one that, after proper circulation, drew no comment whatsoever, thus attesting either to the complete adequacy and balance of its summary and evaluation of the planning process or at least to the absence of opposing views.

Under the Coordination Act system it is mandatory for the Federal planning and construction agency not only to provide State and Federal fish and wildlife agencies an opportunity to examine the plans as they develop but in many instances to solicit the response. In the case of Federally constructed and operated projects the findings of the fish and wildlife agencies must be included in the body of the report (not merely appended) and recommendations specifically accepted or rejected with an explanation in the latter case (McBroom 1958 and Anon. 1954). Until these fish and wildlife reports are received, certain key steps in the planning process (e.g. project authorization) normally do not go forward. In the case of Federally-regulated projects and activities, the regulatory agency may include conditions recommended by the fish and wildlife agencies for the protection and conservation of the resources in the permit or license. At the least, arrangements are made for negotiations between the fish and wildlife agencies and the applicant to attempt achievement of resource protection (Anon.1967b). The Coordination Act facilitates both these sets of interactions by providing for the transfer of funds to the Fish and Wildlife Service.

As previously mentioned, EIS requirements do not apply to effluent discharge permits of the Environmental Protection Agency (EPA) under the Federal Water Pollution Control Act⁴. However such permits are covered by the Coordination Act and provisions made (Anon. 1973b) for interaction and response similar to that of other permit programs.

In summary, under the Coordination Act system, these are strong inducements for the Federal agency contemplating initiation, implementation or permission of water resources actions to obtain, and respond to, careful analyses and concrete recommendations to protect and conserve the fish and wildlife resource.

2. *Relationship to public opinion* - The emphasis in NEPA and the Council guidelines upon maximum provision of information to, and maximum involvement of, the general public in the EIS process is too well known to need much elaboration here. This involvement is facilitated by the requirements respecting the form and content of EIS's. They should be complete, coherent documents, outlining the project and its anticipated impacts in a total manner, thus making relatively easy the task of developing an *informed opinion on the part of the non-technical public*.

Standard public information formalities such as public hearings have long been part of the Federal water resources planning process. Reports at key points

such as project authorization are public documents. This is also true of the formal reports or statements of State and Federal fish and wildlife agencies as they contribute to the process under the Coordination Act. This is not quite the same thing, however, as the deliberate facilitation of the flow of information to fish-and-wildlife-oriented segments of public opinion and the encouragement of responses—so characteristic of the NEPA approach. However, the influence of NEPA has greatly increased the sensitivity of the Corps of Engineers planning process to the need for public involvement (Kelly, 1973).

3. *Major decisions — consideration of alternatives* — NEPA and the Council guidelines require rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions including the alternative of taking no action or postponing actions pending additional study. This, plus the overall thorough analysis mandated, the solicitation of public reaction, and the timing link with the key stage (or stages) of the planning process make the NEPA approach uniquely suitable as a vehicle for examining major decision making. Subsequent entrance into the political process and the courts has been a common consequence.

As previously stated, the Coordination Act is inseparable from the day-to-day operation of the planning process. This does not mean that significant decisions and consideration of major alternatives do not result. Recommendations against project construction or the granting of permits are not uncommon. In general, however, the mechanics of the Coordination Act are geared to participation in a continuing, ongoing planning process, the broad outlines of which have already been laid down. In the majority of situations, the objective tends to be development of incremental changes and modifications to conserve and enhance the fish and wildlife resources within the existing project or permit framework. The changes and modifications recommended may be quite extensive and costly both in monetary terms and in terms of other benefits foregone. However, this is not normally the same thing as the detailed, systematic analysis of all reasonable major alternatives with an “outside the system” perspective such as characterizes the EIS approach of NEPA.

4. *Secondary decisions - project alteration* — If the EIS is defined as basically an impact check on the planning process, its limitations in directly influencing the step-by-step operation of the process are apparent. The mandated thoroughness of the EIS analysis requires that the planning reach a sufficiently definitive stage so that the EIS approach may be applied. Normally this stage is well down the planning process road and the interval to the next equivalent decision stage may be lengthy. The Council guidelines urge application of the EIS approach as early as possible and set as a limit “prior to agency decision concerning recommendations or favorable reports on proposals.” At the same time, the guidelines also urge attachment of cost-benefit analyses to EIS documents thereby tacitly acknowledging the existence of earlier, intermediate planning stages. In short, then, the NEPA process may be regarded as a “point contact” approach somewhat unwieldy in terms of effecting continuous incremental project or permit adjustments over extended periods of time.

The Coordination Act is primarily a mechanism for equal partnership of fish and wildlife in the water resources planning process (McBroom 1958). Over the years, its implementation has developed a highly varied and flexible set of concurrent planning capabilities. Reports may range from detailed, overall analyses of large, complex projects to brief reconnaissance-type letter reports. The response mechanism may concern itself solely with one critical feature such as development of a schedule of minimum flows for downstream fisheries conservation and enhancement. The Coordination Act's basic authority may be linked with obligations under the Water Resources Planning Act⁵ to produce

⁵42 U.S.C. 1962 et. seq.

projections and recommendations for fish and wildlife over entire river basins. Frequent meetings and conferences, both formal and informal, are an important part of this concurrent planning system. Development of an enduring communications network between key people in the Federal and State fish and wildlife agencies on the one hand and Federal water resources planning, construction and permit-granting agencies on the other is required. Specific recommendations for conservation and enhancement of fish and wildlife resources are the immediate output and concrete implementation in specific project or permit situations is the ultimate goal.

Table I summarizes the differences and similarities between the NEPA and Coordination Act mechanisms. It is apparent that (a) these are certain clear-cut differences — certain obvious strengths and limitations — between the two systems as far as conserving and enhancing fish and wildlife are concerned and (b) there are also areas where the objectives, and mechanics of each not only interact but almost seem to merge. With regard to (b), the Council guidelines themselves cite this inter-relationship and suggest a single document if possible. Certainly if one postulates future project situations under NEPA with very frequent impact checkpoints, with close and continuous assistance from the fish and wildlife agencies to the planning and construction agency in the preparation of this EIS series — the two mechanisms would tend to converge and blend. This is not generally the case at the present time, however.

ILLUSTRATIVE EXAMPLES

It may be useful to trace this inter-relationship through two actual situations in the Southeast. A definitive case history description of neither is intended in this paper. Neither is it the objective to evaluate the positions (sometimes conflicting) of the various agencies concerned and involved. What is intended is an almost schematic presentation of the actual NEPA and Coordination Act mechanisms in action to illustrate their interrelationships with one another. This may shed some light on what the most efficient combination of both may be — from the standpoint of achieving the maximum results for fish and wildlife.

Sabine River Diversion, Louisiana and Texas

Description of project — The Department of Public Works, State of Louisiana, applied in 1971 for an Economic Development Administration grant to improve and enlarge an existing irrigation canal. The proposed canal enlargement would permit the diversion of 450 cubic feet per second throughout the year from the Sabine Basin to the Lake Charles, Louisiana area in the adjacent Calcasieu Basin. Depletion of ground water due to industrial withdrawals in the Lake Charles area has led to saline water intrusion which the new supplies of Sabine water are expected to remedy. Previous flows through the existing canal had averaged 220 cubic feet per second, largely concentrated in the irrigation season.

Sequence of Events

(1) In 1967 the Corps of Engineers completed a comprehensive study of the Sabine River Basin (Anon. 1967). The Fish and Wildlife Service (which then comprised both the Bureau of Sport Fisheries and Wildlife (BSF&W) and the Bureau of Commercial Fisheries (now NMFS) participated in this study under the Coordination Act. Its report recommended allocation of 1.1 million acre-feet for fish and wildlife flows into the Sabine estuary. During the plan formulation stage this allocation was revised to 934,000 acre-feet and remained at that level in the Final Plan Report which was signed by the involved Federal agencies and the States of Louisiana and Texas.

Table i. Summary comparison between NEPA and the Fish and Wildlife Coordination Act.

<u>Criteria</u>	<u>Coordination Act</u>	<u>NEPA</u>
Coverage	Only Federal water resources projects and Federally-granted permits and licenses	All Federal actions significantly affecting the environment
Relationship to Water Resources Planning Process	Built into the planning process on a continuing basis	Overall check on the planning process at widely spaced intervals
Requirements on Lead Agency to Respond to Comments	Direct responses to fish and wildlife agency with attempts at resolution required	Direct responses to fish and wildlife agency not required
Involvement of the Public	Limited involvement but increasing due to influence of NEPA	Heavy emphasis on public involvement
Effect on Major Decisions - Consideration of Alternatives	Scope often limited by project framework	Emphasis on consideration of major alternatives
Effect on Secondary Decisions - Project Alterations	Mechanism geared to negotiating secondary or incremental decisions	Mechanism not primarily geared to negotiating incremental decisions.

(2) In 1971 Louisiana made application for an EDA grant. Since funding was the only Federal involvement, the Coordination Act was not applicable but requirements for preparation of an EIS by EDA did apply. A draft EIS was filed with the Council (Anon.1972b) with NOAA/NMFS comments appended. These comments pointed out deficiencies in treatment of potentially adverse effects on estuarine fishery resources as well as a lack of reference to the existing Sabine Basin Comprehensive Plan. In the final EIS, (Anon.1972c) these deficiencies were partly remedied, particularly by inclusion of a condition to the EDA grant, linking the diversion with fish and wildlife flows into the estuary as stipulated by the comprehensive plan, pending studies to determine magnitude and timing of these flows more precisely.

(3) The Texas Water Rights Commission subsequently became concerned that the condition to the grant affected its share of basin water. This culminated in formal objection that (a) the Sabine Basin Comprehensive Plan was not binding in Texas, (b) that the scientific basis for the fish and wildlife allocations was questionable and (c) that none of Texas's share of Sabine Basin water could be used to meet the EDA grant condition. The condition in the EDA grant was subsequently revised to state simply that the proposed canal would not in the future divert more than 450 cubic feet per second or approximately its capacity after completion of the proposed construction. A supplemental final EIS was prepared, circulated and filed with the Council (Anon.1973a) with the Texas position and Interior (BSF&W) and NOAA (NMFS) comments appended. The Interior and NOAA comments restated the former position on the inadequacy of the EIS in view of the major change in the grant condition.

(4) It would seem that NEPA procedures did not lead to a positive, concrete fish and wildlife result in this case. However, recognition of the problem of maintaining estuarine quality in relation to flow management has gotten greater recognition. The need for adequate studies to determine magnitude and distribution of flows to protect and conserve the estuarine fish and wildlife resource has also gained broad recognition by the interests involved.

(5) Since the intake works for the proposed diversion will be located in navigable waters a permit under Section 10 of the River and Harbor Act approved March 3, 1899⁶, will have to be obtained from the Corps of Engineers. This will return the situation to the normal planning process and the Coordination Act will once again apply. All parties concerned will approach this stage with their knowledge and understanding broadened by the NEPA impact checkpoint experience.

(6) In the meantime, the informal interaction between the agencies involved, characteristic of the Coordination Act approach, has begun to function with EDA encouragement to seek a reasonable accommodation.

Cameron-Creole PL 566⁷ Small Watershed, Louisiana

The Description of Project — Plan for this 113,000-acre watershed, adjacent to Calcasieu Lake, is pointed towards more rapid removal of surface waters as well as protection against wind tide flooding and saltwater intrusion. Planned structures consist of levees and water control installations (including tidal control structures). Much of the watershed consists of estuarine-wetlands habitat of high fish and wildlife value. The Sabine National Wildlife Refuge is located within the watershed.

⁶30 Stat. 1151; 33 U.S.C. 404

⁷Watershed Protection and Flood Prevention Act, 16 U.S.C. et seq.

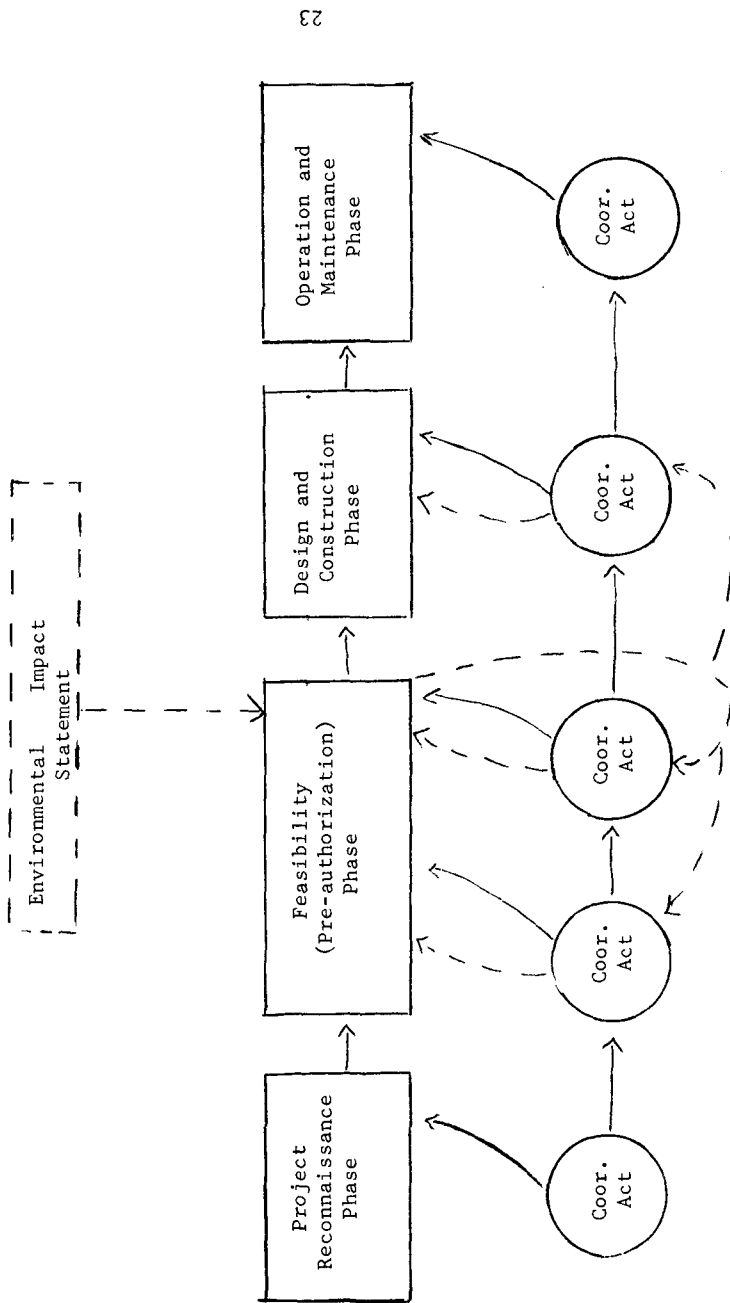


Figure 1. Schematic representation of fish and wildlife interactions between the Coordination Act and NEPA mechanisms and the water resources planning process.

Sequence of events

(1) During the early planning stages of the project, BSF&W worked closely with the Soil Conservation Service (SCS) under the Coordination Act. This phase culminated in a fish and wildlife report (Gresh 1967) which concentrated on analysis of project effects within the limits of the watershed, particularly those associated with the Sabine National Wildlife Refuge. The general conclusion was that fish and wildlife losses within the watershed could be held to acceptable levels if agreed-upon procedures were carried out. Concern about effects upon marine and estuarine organisms was expressed but not addressed in any detail.

(2) Although there were some changes in the plan as a follow-up to the fish and wildlife report, the Coordination Act mechanism did not lead to satisfactory resolution of the apprehensions concerning impacts on marine and estuarine resources.

(3) Enactment of NEPA on January 1, 1970 resulted in a request by interested outside conservation groups and the Department of Interior for preparation of an EIS by the SCS. A draft EIS was produced (Anon. 1971b) which received highly critical review and comment from both Commerce (NMFS) and Interior (BSFW). The broader scope of the NEPA mechanism and the mandated consideration of alternatives enabled NMFS to stress the impacts on the marine and estuarine ecosystem outside the watershed boundaries and point out the inadequate consideration that had been given to them (Anon. 1972a).

(4) As a result of these adverse comments, an ad hoc fish and wildlife advisory committee was established in August 1972 to attempt to resolve the difficulties. Included were the SCS, NMFS, BSFW and the Louisiana Wildlife and Fisheries Commission. This committee agreed upon a General Plan of Study, designed to fill the information gaps responsible for the reservations expressed regarding the adequacy of the EIS and the Small Watershed Plan. However, the committee was unable to resolve problems of timing of these studies in relation to initiation of project construction. The final EIS was filed with the Council with the major issues unsettled (Anon. 1972a).

(5) The project sponsors applied for a Corps of Engineers permit to emplace project structures in navigable waters as required by Section 10 of the Rivers and Harbors Act approved March 3, 1899.⁶ This moved the situation squarely back to the Coordination Act mechanism. A Public Hearing was held in December 1972 at which statements were filed by both NMFS and BSFW. The NMFS statement (Gehringer 1972) recommended that the permit not be granted unless certain conditions were included. These conditions primarily stipulated that construction not be initiated prior to completion of at least two years of the proposed three-year study; that certain features of the project particularly critical from the marine and estuarine fisheries standpoint not be initiated prior to the completion of the full three-year study; and that modifications in project construction and operation be made as soon as demonstrated to be necessary by the studies. There was heavy participation by outside conservation groups at the public hearing.

(6) To date no action has been taken on the permit application by the Corps of Engineers.

CONCLUSIONS

Generalizing from these examples against the background of the previous discussion, the following conclusions can be drawn:

(1) Both projects began the planning process before NEPA and so were dominated in their early stages by the Coordination Act approach. (In the case of the Sabine Diversion this views the project as a specific extension or manifes-

tation of the earlier Sabine Basin Comprehensive Plan). Under present conditions EIS's would doubtlessly have been produced at a much earlier stage than was actually the case. Nevertheless there would still have been a period of concurrent, preliminary planning and investigations prior to generation of enough information to make the EIS process operable. During this formative stage the Coordination Act mechanism would have been the logical tool to represent the fish and wildlife interest in any case.

(2) During these early stages the Coordination Act mechanism tended to address a framework already laid down by the project concept. In the case of the Sabine Basin Comprehensive Study it was the system of structural measures contemplated by the developmental agencies. Little consideration of alternatives was possible. In the case of the Cameron-Creole Small Watershed, both project planning and Coordination Act responses tended to be restricted within the boundaries of the watershed, with resultant limited detailed consideration of external impacts on the marine and estuarine environment.

(3) Whatever the limitations and inadequacies, the end product of concurrent planning under the Coordination Act mechanism was specific recommendations for fish and wildlife at definitive stages of project planning. Parenthetically, continuous participation in the process, over an extended time period gave State and Federal biologists a background and familiarity with the projects that proved most useful when the NEPA (EIS) process, with its usual 30-day review period, began.

(4) Initiation of the NEPA (EIS) process in both cases broadened the scope of fish and wildlife analysis, thus permitting it to transcend the limitations of the Coordination Act mechanism. Comments on the inadequacy of information and need for additional studies suggested that the time for an irrevocable environmental decision had not arrived. In future situations, knowledge that the NEPA (EIS) checkpoint waits down the planning process road will be a powerful inducement for both project sponsors and biologists to broaden their investigations in the early Coordination Act stages to prepare for the inevitable questions that will surface in the NEPA (EIS) process.

(5) Having performed its function of impact checkpoint, the NEPA (EIS) mechanism faces a problem of ambiguity regarding the next step. In some cases this problem is settled by outside groups taking the situation to the courts. Purely from a logistical (magnitude of caseload) standpoint, this is a limited option. More often (as in the two examples) the course followed by the responsible agency is to attempt resolution of differences by meetings with fish and wildlife representatives, formation of ad hoc committees and consideration of studies to fill information gaps revealed by the NEPA (EIS) process. In short, the mode of operation returns to the form characteristic of the Coordination Act process.

(6) The existence of a definitive, subsequent checkpoint in the planning process makes these post-EIS deliberations more fruitful from the fish and wildlife standpoint. In the two examples, this point was (or will be) application for a Federal Section 10⁶ permit which will be either granted or denied. Under these conditions, the Coordination Act mechanism becomes reactivated as the major direct tool to protect and conserve fish and wildlife resources.

Figure 1 shows these interactions schematically.

SUMMARY

Once the fish and wildlife biologist and administrator recognize that the Coordination Act mechanism provides the basic continuity with the sponsor's planning process, punctuated by widely-spaced impact checks provided by the NEPA (EIS) mechanism with its emphasis on consideration of major alternatives and its channels to public opinion, the outline of a rational strategy

for joint use of both legislative tools is readily apparent. Flexible adaptation to local conditions will, of course, be required. Since continuity is so important, either the same Federal and State organizational component should work with both NEPA and Coordination Act responsibilities or, if these responsibilities are separately handled, they should be very closely coordinated.

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AGE AND SIZE COMPOSITION OF COMMERCIAL CATCHES OF BLUEBACK HERRING AND ALEWIFE IN ALBEMARLE SOUND, N.C. AND ITS TRIBUTARIES¹

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ABSTRACT

Data on commercial catches of blueback herring and alewife were collected at eight locations in the Albemarle Sound area. Scale samples were taken from 1,214 bluebacks and 787 alewife. Bluebacks ranged in age from three to nine years. Alewife ranged in age from three to eight years. Age groups IV and V dominated catches of both species. Data from all locations combined indicated that virgin fish comprised 50 and 57 percent of the landings of blueback and alewife respectively. Samples from Scuppernong River contained 78 percent virgin bluebacks and 92 percent virgin alewife. Data from Scuppernong River were compared to data from Alligator River in 1973. Blueback samples from Scuppernong River contained 79 percent virgins while samples from Alligator River contained 45 percent virgin bluebacks. A possible problem of over-exploitation exists in Scuppernong River.

INTRODUCTION

Albemarle Sound provides an exceptionally favorable habitat for spawning and nursery areas of anadromous fishes. This body of water is located in northeastern North Carolina (Figure 1). Currituck Sound and eight rivers, including the Roanoke and Chowan, are tributary to Albemarle Sound which in turn drains into northern Pamlico Sound through Coratan and Roanoke Sounds. Large volumes of freshwater input from rivers and lack of seawater exchange make Albemarle Sound an essentially freshwater habitat. Salinities in the eastern portion of the sound occasionally reach 1 to 2 parts per thousand depending upon wind direction and rainfall.

Seven species of anadromous fishes occur in North Carolina: Striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), hickory shad (*A. mediocris*), blueback herring (*A. aestivalis*), alewife (*A. pseudoharengus*), Atlantic sturgeon (*Acipenser oxyrhynchus*), and shortnose sturgeon (*A. brevirostrum*). Spawning migrations of these species during the spring support large commercial and recreational fisheries in Albemarle Sound and its tributaries.