Koala Conservation Policy Process: Appraisal and Recommendations

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Abstract: *Australia's koalas are a global treasure, yet there is growing concern that present policy may not adequately conserve viable, wild populations in abundant habitats. Problems in the content and particularly the process of policy making for koala conservation include integrating reliable knowledge and diverse perspectives. We reviewed the overall decision process involved in developing Koala conservation policy, including the functions of intelligence, promotion, prescription, invocation, application, appraisal, and termination. To date, intelligence (planning) has lacked social science data, and promotion (open debate) has been confrontational. Koala policy has been unclear about prescription (setting rules) and lacks specificity about needed standards, penalties for violating standards, and making resources available. Invocation and application (implementation) have been differentially successful. Appraisal has been adversarial and incomplete, and termination of weak practices has been difficult. We suggest implementation of procedural standards such as timeliness, comprehensiveness, and rationality for a better koala decision process. The 1998 National Koala Conservation Strategy and various state policies can be upgraded to meet these standards. Opportunities exist to improve koala management policy in all seven functions. We recommend a three-part strategy: (1) identify, describe, and appraise successful conservation efforts to find the best practices, (2) disseminate success stories, and (3) open up new opportunities for improvement in all aspects of koala conservation.*

Proceso de las Políticas de Conservación: Evaluación y Recomendaciones

Resumen: *Los koalas australianos son un tesoro universal, sin embrago existe una creciente preocupación de que las políticas actuales podrían no estar conservando adecuadamente poblaciones viables y silvestres en hábitats abundantes. Los problemas en el contenido y, particularmente, en el proceso de elaboración de políticas para la conservación de koalas incluyen aquéllos relacionados con la integración de conocimiento confiable y de diversas perspectivas. Revisamos el proceso general de toma de decisiones usado en el desarrollo de las políticas de conservación de koalas (inteligencia, promoción, prescripción, invocación, aplicación, evaluación, terminación). A la fecha, la inteligencia (la planificación) ha carecido de datos provenientes de las ciencias sociales, y la promoción (el debate abierto) ha sido de confrontación. En cuanto a la prescripción (el establecimiento de reglas) la política sobre koalas no es clara y carece de especificidad en cuanto a las normas necesarias, las condenas impuestas por violar las normas y la disponibilidad de recursos. La invocación y la aplicación (implementación) han sido exitosas de manera diferencial. La evaluación ha sido confrontativa e incompleta y la terminación de prácticas débiles ha sido difícil. Sugerimos que las normas de procedimiento (oportunidad, comprensión, racionalidad) sean implementadas para mejorar el*

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proceso de decisión para los koalas. La Estrategia Nacional de Conservación del Koala de 1998 y las políticas estatales pueden ser actualizadas para alcanzar estos estándares. Existen oportunidades para mejorar las políticas de manejo del koala en todas las siete funciones. Recomendamos una estrategia de tres partes: (1) identificar, describir y evaluar los esfuerzos exitosos de conservación para determinar las mejores prácticas (2) diseminar información sobre experiencias exitosas, y (3) abrir nuevas oportunidades para mejorar todos los aspectos de la conservación del koala.

Introduction

Despite the universal popularity of koalas and the significant scientific attention paid to them, controversy persists about the species' future in the wild and the adequacy of conservation policy. Some critics charge that government policy undervalues evidence of declining populations (Australia Koala Foundation 1997*b*, letter to the minister of the environment, Senator Robert Hill, from Deborah Tabart, executive director of AKF, 26 March). Others believe that social and political influences obstruct measures to manage overabundant populations (Honeysett 1997). Policy defenders cite majority support from the scientific community, not recognizing that effective public policy must encompass a full range of viewpoints, values, and beliefs, not just those of scientists. The fact that much of the debate about koala conservation occurs in the popular media suggests an urgent need for policy improvements (Hart 1996; Johnston 1998).

We describe the historical development of koala conservation policy, identify problems that have arisen, discuss possible reasons for them, and suggest a strategy for improving koala conservation policy. We use the policy sciences as a framework in which to identify and resolve policy problems by taking account of the human expectations, beliefs, values, and information that influence the effectiveness of all policies (Lasswell 1971; Lasswell & McDougal 1992; Brunner 1996, 1997). Our case material includes Australian federal and state laws, strategies, and management plans and practices. We draw on draft and final publications as well as discussions with wildlife professionals, government officials, and koala advocates across Australia.

Persistent Problems in the Policy Process

Improving koala conservation depends in part on understanding the policy process (Weiss 1989). Policy is a human social dynamic, a sequence of many actions by many actors, each with potentially different perspectives, values, and strategies (Ascher & Healy 1990). The policy process apportions who gets what, how, when, and why and is thus neither simple nor entirely rational because people tend toward what is emotionally satisfying in support of their interests (Lasswell 1971). Policy is more than formal mechanisms such as legislation or government action, and it includes the informal, collective, and often unconscious actions of many people and institutions.

The governments in the four Australian states where koalas occur (New South Wales, South Australia, Queensland, and Victoria) are the key policymakers. Between 1983 and 1998 these states produced policy prescriptions and management plans and strategies. Because Australia's federalist system emphasizes states' rights, the federal government has tended not to dictate a strongly coordinated national koala policy. Nevertheless, in 1998 the federal government produced a National Koala Conservation Strategy to complement state protections and to provide a national framework (Australian and New Zealand Environment and Conservation Council [ANZECC] 1998). In Victoria today, koalas occur widely at low densities and at high densities in some locales. The species is limited in South Australia and is classified as rare, but here also it occurs in high densities in some areas (Koala Management Task Force 1996). In New South Wales koalas are declining, having already disappeared from 50–75% of their former range, and they are listed as vulnerable (ANZECC 1998). Although the Queensland population is considered by some to be high density and the species is listed as "common wildlife," it is declining as a result of habitat destruction (ANZECC 1998; Melzer et al., this issue). The Australian Capital Territory, surrounded by New South Wales, is concerned with managing captive populations in reserves. Despite some significant improvements, including New South Wales's State Environmental Planning Policy, SEPP 44, threats to koalas and their habitat remain, and public concerns continue to grow.

Five main areas of current policy could be improved. First, most koala policies lack clarity and specificity. For example, the National Koala Conservation Strategy (ANZECC 1998) makes a general plea for retaining viable populations of koalas but does not specify which populations or at what size they should be secured. Profound differences also exist in perspectives about the nature of the problem. Newspaper headlines such as "Kill koalas and save an island," "Many moved by koala conundrum," and "Our $1bn koalas. . .we can't afford to lose them" (Hogarth 1997; Reiner 1997; Hurrell 1998)

allude to an array of opinions. Different organizations and individuals emphasize certain threats to koalas while ignoring more comprehensive views of short- and long-term threats. For example, the Australian Koala Foundation (AKF) emphasizes habitat loss and population decline (Hogarth 1997), whereas the Queensland government in its Koala Coast initiative focuses on koala welfare with the provision of koala hospitals and ambulances (Queensland Government 1995). There is also no consensus on defining the problem—koalas are viewed either as a species under threat or as an impediment to development—and thus there is no consensus on how to solve it. This lack of agreement, even within the conservation community, has led to excessive concern about whose views are "right" or "wrong," and issues of organizational or personal legitimacy and justification have alienated participants and prevented effective organization of a broad coalition for conservation.

Second, many policies lack consensus on technical detail. Some prescriptions, such as Victoria's Draft Koala Management Plan (Martin 1989) or protocols for management by New South Wales's state forests, have not garnered broad acceptance. They lack sufficient scientific evidence to build confidence in the predicted effects of management practices on koalas. Third, few mechanisms exists to deal with scientific uncertainty. Fourth, few policies incorporate social and economic values and people's attitudes about the animals and their habitat. Finally, most policies do not include mechanisms for reviewing, assessing, and correcting the policies themselves.

Effective policy must deal with interstate issues and garner broad support. In the past, each state has developed its own policies with different standards and prescriptions, and despite the National Koala Conservation Strategy's intentions to integrate these to instigate a national focus, most policy concerning koalas continues to be contentious (e.g., Bryan 1995). The controversies have attracted worldwide media, scientific, and conservation attention (e.g., Harding 1990; Payne 1995; Koala Management Task Force 1996; R. Smith 1996; Starick & Weir 1996). Some participants have concluded that the overall decision-making system is inadequate to protect the species (e.g., Australia Koala Foundation 1997*b*, letter the minister of the environment, Senator Robert Hill, from Deborah Tabart, executive director of AKF, 26 March). To compound matters, the koala policy process is linked intimately to other arenas of natural resource policy, including forest use, urban land development, transportation, tourism, and agriculture (Dovers 1997). Without practical mechanisms to reach a common problem definition or to address related issues, differences in perspectives, values, and strategies may be irreconcilable and will obstruct adequate protection for koalas. The inability to secure long-term, widely supported, common goals can be attributed largely to malfunctions in the decision-making process—weaknesses that can be corrected.

Appraising the Decision Process

A decision is a commitment to a course of action intended to realize goals in a particular context (Clark & Brunner 1996). All decision-making processes entail seven interrelated activities: intelligence (planning), promotion (open debate and recommending), prescription (setting guidelines or rules), invocation (initial implementation), application (final implementation), appraisal (review), and termination (ending). This scheme has been used widely in many policy areas (e.g., Johnston 1965; Sahurie 1991). People are most likely to achieve their goals if they understand the decision process as a whole and can assess how well it is working. Lasswell (1971) offered standards for evaluating these seven functions, which we use along with existing data to review decision making about koalas.

Intelligence

Intelligence is the gathering and processing of information to be brought to the attention of decisionmakers. Ideally, knowledge from all relevant sources is collected, integrated, and disseminated to all affected parties. Information gathering in the koala decision process, however, has tended to be selective and incomplete, focusing on koala distribution, biology, and ecology. It has fallen short in assessing trends in population status, habitat relationships, population viability, management outcomes, and the causes and conditions of these trends (Phillips 1990; Melzer et al., this issue; Sherwin et al. this issue; Stratford et al., this issue). Cork et al. (this issue) argue that although information on habitat relationships could be a useful basis for adaptive management of koala habitat, the inordinate conflict among participants in the debate places unreasonable demands on the precision and accuracy of habitat information. Furthermore, lack of research on human dimensions has greatly restricted our ability to address decision-making dysfunctions at the heart of koala conservation.

This social science deficit probably occurs because those in charge of developing policy are scientists who see the problem primarily as a biological one (Schön 1983; Dryzek 1990; Healy & Ascher 1995). Traditional, positivistic science presumes that the aim of science is precise prediction, that predictions are prerequisites for public policy choices, and that scientists are objective, value-free participants in policy processes (Brunner & Ascher 1992).

The efficiency of intelligence gathering on koalas has been limited by the interests of individual scientists, the availability of research opportunities, the agendas of or-

ganizations, the interests of politicians, and other factors (e.g., Philpott 1965; Eberhard 1972; Cork 1995; Cork et al. 1995; Koala Management Task Force 1996). A lack of significant resources from either government or nongovernmental organizations (NGOs) has prevented comprehensive, policy-oriented intelligence activity. The few efforts to synthesize research have tended to overestimate the capacity of "objective" biological information to influence policy and resolve value differences. In addition, many pro-koala NGOs, striving for legitimacy, use scientific information to justify and promote their ideological positions. This is acceptable to a point, but policy must be justified in terms of broad community values, not just by the standards of positivistic science. These political uses of information reveal the intense competition among those involved in the koala policy process. Finally, the role of the media in intelligence has been mixed; they do report news about koala matters, but their promotional activities are problematic in that they tend to highlight controversy and downplay the complexity of relevant situations.

Science needs to be made more relevant to policy. Many people in government agencies, NGOs, and universities are focused on intelligence gathering and dissemination. Organizing them and their research to enhance policy relevance is a task that can be achieved only by cooperation among governments, social and physical scientists, and representatives of the general community. Information about koalas must be made dependable, comprehensive, selective, and readily available to all interested parties and the general public. Specifically, participants need to determine what type of information is needed and when; by which means, to which audiences, and for what purposes information is made available; and what process may be required to reconcile differences in the face of inevitably incomplete intelligence.

Uncertainty in the intelligence function should not be viewed as a shortage of "objective, scientific knowledge." Uncertainty is socially constructed and politically negotiated (Smithson 1989). In any decision process, uncertainty exists in nonscientific forms, such as distortion or perceived irrelevance, which underscores the need for social science and policy perspectives to be included in the discourse. In Australian environmental policy, the increasing use of the "precautionary principle" is directing attention to uncertainty (Deville & Harding 1997) and the creation of techniques capable of supporting decision making in the face of uncertainty (Dovers et al. 1996).

Promotion

Promotion is the mobilization of opinion toward particular policies. Recommended policies should address fundamental problems, but a lack of reliable intelligence often prevents this, and too often participants promote policies that serve their special interests rather than a common interest. Much of the promotional activity in the koala policy arena has focused on koala protection (Phillips 1990; Plant 1990); the ending of hunting was the goal during the first half of this century. In the last 15 years, promotion has become more organized as a result of increased public awareness of environmental issues and the rise of planned promotional exercises such as the "Save the Koala" campaigns (Harding 1990). Koala welfare, including the health of individual animals, has been promoted, as have long-term issues such as habitat loss, forest restoration, and the preservation of koalas as part of long-term biodiversity conservation and national sustainability (ANZECC 1993). Other promotional activities, such as attempts to classify the koala as endangered or threatened under federal laws of Australia and the United States, have been unsuccessful (e.g., Australians for Animals & The Fund for Animals 1994). Yet promotional activities in general have enhanced koala conservation policy by the states beginning in 1983 and by the federal government in 1996.

Nongovernmental organizations actively promote koala conservation in diverse ways. The AKF has increased public awareness of koala problems and has commanded relatively large financial resources in support of education, lobbying, and research regarding koala conservation and ecology. This organization wields influence largely through promotion, but it is also active in intelligence and appraisal functions. The AKF's strategy of direct challenges to government officials through the media may compound the difficulty of finding common ground through voluntary, cooperative partnerships, given the defensive reactions from government.

The media also play a role in raising public visibility of koala problems. Coverage of koala issues in Australian media outlets has risen dramatically. For example, in four major newspapers, four articles about koala conservation were run in 1986. That figure had risen to 10 by 1992 and jumped to 130 in 1996, with 63% of those articles appearing in a South Australian newspaper. Ideally, the media inform the public, but too often articles are selective in the information they deliver and biased in prescribing what people should believe (Doyle & Kellow 1995; Ward 1995; Maney & Plutzer 1996). They often seem to magnify controversy by creating caricatures of conflict on specific issues, as illustrated by headlines such as "Koalas could be extinct by 2000" (Milburn 1995), "Koalas saved from the bullet—for now" (Starick 1996), and "Shoot this face?" (AKF 1997*b*). This kind of reporting politicizes the decision process.

Improving the promotion function in koala policy is both possible and necessary. Biological and social scientists in the conservation community need to reassess their roles in promotion. The challenge is to make promotion more accurate and effective by making it more

constructive, integrative, and comprehensive. Many resources currently used for promotion could be allocated to program reviews or other decision-process functions.

Prescription

Prescription is the authoritative establishment of guidelines and rules for community behavior. Prescriptions are set through formal mechanisms such as laws, strategies, or plans or through informal, customary practices of society and thus differ greatly in their content and enforceability. In recent years there has been a move toward less regulatory and more cooperative or self-regulatory policy instruments. Although many environmental policy prescriptions in Australia are not implemented vigorously (Walker 1994; Dovers & Lindenmayer 1997), governments still have the authority to make and enforce prescriptions.

Formal and informal state-level prescriptions for koala conservation have had mixed results. Koalas and their habitat do receive some protection in all states and the Australian Capital Territory. Formal policies this century have restored koalas in South Australia and Victoria. Koalas still exist in Queensland and New South Wales, and new habitat protection measures are in place for New South Wales. Although previous prescriptions have been effective in slowing koala declines (Department of Planning 1995), significant problems remain. The overall population in Queensland is thought to be declining and habitat protection there is feeble, and in New South Wales koalas have disappeared from large areas (Patterson 1992; ANZECC 1998). Nationally, koalas are still declining (ANZECC 1998). One index of Australia's commitment to biological conservation is its prescriptions for threatened species, which have been assessed as weak, discretionary, and lacking in public-standing provisions (Bradsen 1994; E. G. Smith 1996), despite some innovative elements such as efforts to ameliorate threatening processes and conserve communities (Wilson & Clark 1995).

The policy literature describes standards for effective prescriptions (Reisman 1981; Lasswell & McDougal 1992). Good prescriptions should (1) set norms or rules and crystallize general expectations (2) describe conditions or contingencies under which they will be applied, and, (3) specify sanctions or penalties for noncompliance. Furthermore, they should (4) mobilize assets to achieve the goals and apply the sanctions, (5) carry an authoritative signature, and (6) continuously communicate to the public the government's intent to implement them. Some prescriptions for koala conservation do not meet these criteria. For example, Victoria's draft Koala Management Plan (Martin 1989) offers a lengthy list of biological problems and alternatives and largely promotes further biological research. But because its goals are not explicit, there is no basis on which to decide actions to pursue and no way to assess the program's success or failure. The plan does not adequately address contingencies, sanctions, or assets for implementation. Furthermore, after 10 years, the document remains in draft status, so it lacks both the authoritative signature and communication of the government's intent to implement this prescription.

The National Koala Conservation Strategy of ANZECC (1998) conveys an authoritative message, but it also may not succeed in conserving koalas because it lacks the power to control koala policy (Toyne 1994; Bates 1995), and it remains to be seen whether the government intends to support this prescription. Because compliance with the strategy is voluntary, penalties for failing to support it will be mild at best. The document acknowledges the need to improve koala management nationally, but as with Victoria's plan, its diffuse aim—"to conserve koalas by retaining viable populations in the wild across their natural range"—lacks the specificity concerning both process and content necessary for practical implementation of its numerous objectives. The strategy also seeks to conserve koalas without compromising other values such as economic growth, but its success will depend on addressing conflicting interests. Finally, it does not specify contingencies, sanctions, or financial and other support that will be available for implementation.

Measured against the standards for prescription, both the Victoria and ANZECC prescriptions seem to be as much promotional as prescriptive exercises. Both could be upgraded so that they clarify the expectations of government officials, the research community, koala preservation groups, and the general public about what will be done, who is in charge, and how it will be implemented. Without purposeful implementation, koala policy may remain in the realm of rhetoric and symbolism where, it has been claimed, too much Australian environmental policy dwells (Dovers & Lindenmayer 1997).

Invocation and Application

Invocation and application can be conceived of as the "implementation" function of the decision process for which all preceding activities have set the stage. Invocation is the initial carrying out of a prescription, which often leads to disputes that are then settled by the application function (e.g., dispute resolution, courts). Implementation is a crucial activity that often proceeds quite differently than intelligence, promotion, or prescription activities might have predicted.

Despite recent prescriptions for ameliorating threats to koalas, and despite some local successes, there is still a strong concern for the species' future, suggesting that implementation may not be as effective as hoped. In Queensland, for example, the overall population continues to decline because prescriptions for habitat protection outside reserves are generally poor and implementa-

tion has been weak (ANZECC 1998). To compound matters, only a small proportion of prime koala habitat nationwide is in reserves. Habitat in New South Wales is poorly represented in the state reserve system, and areas outside reserves are increasingly fragmented by agricultural clearing and urban development (ANZECC 1998). In New South Wales implementation by local governments of the state environmental planning policy (SEPP 44s and subsequent legislation), which requires that they prepare management plans before permitting development, may not be adequate in practice to stop development, especially in coastal areas (ANZECC 1998). The large public debate about koala management in South Australia and Victoria also demonstrates concern about the effectiveness of current implementation efforts.

For koalas that live in high densities in limited, isolated habitat, implementation poses a special management challenge. The usual response to localized overpopulation in Victoria and South Australia is to translocate animals to other areas, often where there are existing populations (Crabb 1997; Hewitt 1997). Among the problems with this approach, which authorities recognize, are that translocation sites may already be at or above carrying capacity and that introduced koalas may die, disperse into marginal habitat, or overbrowse limited habitat. Other management actions include sterilization, which is extremely costly, labor intensive, and unlikely to remedy overpopulation and long-term habitat degradation (Koala Management Task Force 1996; Honeysett 1997). Culling animals was also proposed (Koala Management Task Force 1996) but was found to be unacceptable politically and socially (Department of Natural Resources & Environment 1997; ANZECC 1998).

Delays in implementation can also limit the effectiveness of policies (Clark 1997). For example, overbrowsing by koalas on Kangaroo Island, South Australia, was recognized some time ago (Philpott 1965; Eberhard 1972), but it was not until koala numbers had far exceeded the capacity of the local ecosystem that the state took definitive corrective measures. Other implementation challenges include minimizing road deaths, injuries and killings by dogs and related welfare issues, protecting existing habitat, restoring habitat, and managing diseases (ANZECC 1998). The challenge of making implementation dependable, realistic, and timely should be the highest priority.

Appraisal

Appraisal is evaluation of the decision process function by function and provides information about how outcomes might be improved. Despite these benefits, systematic reviews are seldom carried out. Appraisals of policies such as the National Koala Conservation Strategy typically focus on technical issues rather than the dynamics of all seven decision functions. The South Australia Koala Management Task Force Report (1996) does emphasize technical and biological matters, but it also provides an assessment of the Kangaroo Island situation and an overview of South Australia koala management. South Australia's management strategy (Department of Natural Resources and Environment 1997) lays out a scheme for rectifying problems but does not provide criteria for judging the effectiveness of individual activities, much less the overall process. The Victoria draft management plan similarly lacks clear appraisal standards (Martin 1989).

Appraisal of government koala policy has come from NGOs such as the AKF and Australians for Animals, both of which campaigned unsuccessfully to have koalas listed as vulnerable or threatened. Such appraisals tend to be incomplete, focusing on only a few aspects, issues, or locations of koala problems. They are generally adversarial and highly critical of government officials, management agencies, and other NGOs, and they offer few constructive designs to improve the policy process (e.g., Bryan 1995). The media also offer appraisals but tend to politicize koala policy rather than promote better understanding of the complexity of the problems.

Many decision processes have cumulative, contradictory, and negative effects on koalas. The phenomenon of conflicting policies is not uncommon; indeed, intersecting policy processes are a major feature of contemporary industrial society. Many natural resource policies promote particular patterns of land-use practices rather than setting regional conservation priorities or integrating conservation and production. These policies have facilitated national development but have caused losses of koala populations and habitat. Over half of Australia's forests, for example, have been cleared or severely modified since 1788, and rates of deforestation remain high in some areas, many of which are important to arboreal marsupials such as koalas (Norton & Kirkpatrick 1995). In response, some prescriptions in the last decade have called for integrating koala protection and regeneration of habitat with other land-use policies at regional and national scales. Although policies harmful to koalas have existed for decades and appear intractable, they might be integrated with koala policy through economic incentives for habitat retention or through vegetation retention efforts to reduce soil erosion or salinity or otherwise improve land productivity. In another example of conflicting public policies, proposals to remedy overbrowsing by culling koalas are rejected partly because of fears that tourists might boycott the country or organize other economic reprisals against the killing of a national icon.

More appraisals and intelligence are needed to analyze relevant social factors in koala management and offer interdisciplinary insights and recommendations. One such study was conducted by Harding (1990), who recog-

nized complex social issues in koala policy and presented a framework for continuing analysis, highlighting important components in the decision process, their interrelationships, and likely significance. Harding (1990) and Buchanan (1996) noted that the charisma of certain fauna attracts funds for endangered species conservation from the private sector and that these corporatized conservation measures may increase funding for "cute and cuddly" animals at the expense of other, less appealing taxa; both suggest that the koala may be receiving an undue amount of financial resources. Many people recognize that current limits on koala conservation are more political and financial than technical or scientific (1997 letter to the minister of the environment, Senator Robert Hill, from Deborah Tabart, executive director of AKF, 26 March; Norton 1990). In other examples, Bryan (1995) explored the political, psychological, and ecological factors affecting koala management in South Australia, and Clark and Ahern (1995) concluded that effective koala policy depends on social process and offered a framework to assist decisionmakers in refining their aims, standards, and evaluative procedures.

Termination

Termination is the cancellation of a particular prescription and the arrangements established by that rule. This function sets criteria to determine whether past policies have been successful and sets the stage for new prescriptions. Several participants in the koala policy process are calling for termination of past ineffectual practices (e.g., Tabart 1996). The ANZECC's National Koala Conservation Strategy serves in part as a termination document: it recommends ending certain actions that are not working as well as expected and initiating more promising activities. For example, it would replace limited communications among the states with more communicative approaches. Identifying practices that need to be terminated constitutes a large part of the current koala debate, although few participants think of it that way.

The National Koala Strategy reflects official recognition of the importance of koala policy and management problems and the need for more coordinated, comprehensive plans and actions. The challenge is to ensure that termination of weak or insufficient practices is timely, comprehensive, dependable, balanced, ameliorative, and accompanied by adequate explanations for those served or affected by the changes. Ending unsuccessful practices is prerequisite to starting new ones, and it must be prompt, fair, reliable, and justified.

Both the successes and the failures of koala conservation in the past are direct products of the functioning of the decision process and not simply a result of the biology of the animal or of uncaring developers. Weaknesses can occur in all seven decision functions, but once they are diagnosed accurately, it may be possible to address them systematically.

Strategic Recommendations to Improve Koala Conservation Policy

Policy is a complex system of smaller, interconnected decision processes. It would be a formidable task to comprehend how all relevant policy processes in Australia actually affect koalas. Consequently, the key to improving koala conservation policy is to focus attention and limited resources on select components of the system. Much of the debate assumes that policy can be improved only from the top down by the federal and state governments (e.g., AKF 1997*a*, 1997*b*, letter to the minister of the environment, Senator Robert Hill, from Deborah Tabart, executive director of AKF, 26 March, 1997 ab). Although this approach can be helpful, significant improvements to koala conservation can also occur at the "bottom" or operational level because conservation problems stem from myriad private and public policy decisions in different sectors of society that predated contemporary government koala policy. Although prescriptions such as the National Koala Conservation Strategy should be considered means to koala conservation and not ends in themselves, a well-crafted national document could support needed change at lower levels and convince local people that the loss of koalas is contrary to their own interests. It is unlikely, however, that many people will modify their behavior unless faced with a major environmental disaster. In the hope that no such precipitating crisis will occur, koala conservation ultimately depends on numerous, small-scale private and public policy decisions and actions that are accepted according to diverse standards (e.g., business planning and suburban development decision processes). These decision processes are the appropriate selective focus for improving koala policy.

We recommend a three-part strategy to reform koala conservation: (1) find and describe successful koala conservation efforts, (2) adapt and diffuse them widely, and (3) open up new opportunities to build further program successes. Individual local programs need to be identified, described, and reviewed critically to determine the formal and effective reasons for their success (Clark 1996). This is called a "practice-based" approach to policy improvement because successful policies are actual, not theoretical, cases (Brunner & Clark 1997). For example, a developer might take koala conservation into account when planning a new subdivision, or a shire government might devise a successful vegetation retention policy that supports koala habitats. These field-tested models can be used to set "best practice" standards to be adapted and replicated elsewhere. Such con-

structive, positive examples shift attention away from the aggregate "failure" of koala policy and motivate and inform better conservation actions on a continual basis.

Identifying and describing koala programs can best be done through independent and continuous appraisal (Lasswell 1971). Independence reduces the prospect that appraisal will be used to promote public or private partisan interests. It is enhanced by engaging multiple, even competing, teams of appraisers, some of which should be outside the influence of the agency that commissions the appraisal so that it has no direct stake in the results. Regularity of appraisal (quarterly, semiannually, or annually, depending on the situation) ensures the establishment, clarity, and diffusion of good field practices. Independent and continuous appraisal obliges practitioners to adopt "best practices" as they emerge. Appraisals must be conducted over several years to glean lessons, and participants need to be aware that ongoing reviews may be compromised by shifts in policy, budgets, government, and other factors.

Successful management cases across Australia can be considered prototypes (Clark et al. 1995). For example, New South Wale's SEPP 44 legislation enables local governments to undertake land-use planning to conserve koala habitat. Other cases that should be examined include Kangaroo Island in South Australia; French and Snake Islands, Tower Hill, Framlingham Forest, the Grampians and Brisbane Ranges in Victoria; the Redland and Logan Shires in Queensland; and Port Stephens and Port Macquarie in New South Wales. Even though these programs were not specifically set up to provide information on which to base future improvements, many prototypical lessons can be drawn from them to invent, evaluate, select, and enact alternative conservation and management measures.

Successful prototypes must be disseminated. Case studies or stories can be one source of information for participants in other policy arenas—forestry, private land management, transportation, other wildlife or natural resources—who can then adapt the prototypes to their local circumstances. State and federal governments can provide leadership by endorsing and supporting successful innovations. In a policy field with few institutional mechanisms for appraisal, prototyping, and dissemination, a key task is to create structures and processes to enable ongoing communication of experiences, practices, and examples. These may be formal, such as intergovernmental and NGO task groups for practical management issues, or less formal, such as management networks (or electronic forums). They might even fall somewhere in between, such as a regular koala management workshop held every 1 to 2 years.

New opportunities for success need to be facilitated both politically and geographically. Resources to do this might become available through termination of activities with only limited or short-term benefit to koalas. Combining economic strategies for private and business interests with koala conservation should be considered. Greiner (1996) suggested coupling koala habitat needs with the environmental and economic needs for managing salinity problems through strategic tree planting in the Liverpool Plains catchment in northern New South Wales. This example shows that a network of landholders, different levels of government, research organizations, and environmental NGOs can work toward a common goal in conservation and land management. Better communication between state and local participants could assist problem-solving efforts. Effective means are needed to diffuse the vast amount of professional and organizational experience and to overcome policy, scientific, and management hurdles.

Koala management problems encompass numerous geographical areas and varied ecological, political, and economic dynamics. Therefore, a decentralized, operational-level approach using practice-based strategies of appraising and prototyping is most appropriate. The particulars or context of each koala situation should dictate how programs are conducted. In addition to increasing the use of case-specific strategies and avoiding rigid, top-down approaches and bureaucratic hierarchies, there is a need to shift to more progressive action plans. Numerous successful problem-solving exercises are under way, and their collective concepts and practices can provide valuable learning opportunities.

A systematic process for appraising koala management systems across Australia should be organized. There are many knowledgeable practitioners and researchers in both the social and biological sciences whose combined expertise could be channeled into appraisal, diffusion, and innovation. Although administrative support and funding must facilitate collaboration among diverse participants, such an appraisal system need not consume vast resources. Successful appraisal depends on establishing creative means to encourage cooperation among diverse parties. For example, traditional public and private funding patterns that favor biological research and short-term management solutions could be redirected toward practice-based approaches.

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