Social Construction, Political Power, and the Allocation of Benefits to Endangered Species

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Abstract: Social construction is the virtue ascribed to a subject by the general public; along with political power, it influences the allocation of public policy benefits. Nonhuman species are socially constructed by humans, and political power is held in trust for them by human interest groups. Our goal was to determine if the allocation of benefits to endangered species is consistent with social construction and political power. We assessed the social construction of broad types of species using survey data collected from a national sample of 643 respondents. We found that plants, birds, mammals, and fish have a distinctly more positive social construction than reptiles, amphibians, invertebrates, and microorganisms. Respondents also indicated, however, that all nonhuman species should be conserved and that ecological importance and rarity are the most important factors to consider in prioritizing species for conservation. We gauged the political power affiliated with types of species by the number of nongovernmental organizations representing them. Birds have a substantial advantage over all other types. We employed a political science model that identifies policy subjects based on social construction and political power and identified birds, mammals, and fish as “advantaged” subjects, plants as “dependents,” and reptiles, amphibians, invertebrates, and microorganisms as “deviants.” Numerous exceptions, especially among mammals, are best described as “contendents.” Allocation of the benefits of the U.S. Endangered Species Act is consistent with predictions of the model. A myriad of values converge to favor birds, mammals, fish, and plants in the policy arena. The most promising opportunities for species conservation in the political arena, however, may be with plants and amphibians, for which the ratio of social construction to benefit allocation is highest.

Opinión Pública, Poder Político, y Ubiación de Beneficios para Especies Amenazadas

Resumen: La opinión pública y el poder político influencian la distribución de beneficios hacia los sujetos humanos de la política. La opinión pública sobre especies no humanas está también determinada por el ser humano, y el poder político asociado a estas especies se ejerce a través de grupos interesados en ellas. Nuestro objetivo fue determinar si la distribución de beneficios dirigidos a especies en peligro de extinción es consecuente con la opinión pública y el poder político. Realizamos una evaluación de la opinión pública sobre grupos amplios de tipos de especies usando datos de encuestas nacionales. Encontramos que las plantas, las aves, los mamíferos, y los peces tienen una opinión pública claramente más positiva que los reptiles, los anfibios, los invertebrados y los microorganismos. Sin embargo, las personas que respondieron la encuesta indicaron que es esencial conservar a todas las especies animales no humanas, y que la importancia ecológica y la rareza son los factores más importantes a considerar al priorizar las especies para su conservación. Mediemos el poder político asociado a tipos de especies por medio del número de organizaciones no gubernamentales que los representan. Las aves tienen una importancia substancial en relación a todos los otros tipos. Usamos un modelo desarrollado para ciencias políticas que identifica los sujetos de la política en base a la opinión pública y el poder político, e identificamos a las aves, los mamíferos, y los peces como sujetos “con ventaja,” las plantas como sujetos “dependientes,” y los reptiles, los anfibios, los invertebrados y los microorganismos como sujetos “destiados de lo común.” Numerosas excepciones, especialmente entre mamíferos, son descritas como “contendientes.” Las discrepancias entre la valuación pública y la distribución de recursos para esfuerzos de recuperación son consistentes con las predicciones del modelo. Se concluye que hay un gran

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número de valores que convergen a favor de las aves, los mamíferos, los peces, y las plantas en el terreno político. Sin embargo, las oportunidades más prometedoras para la conservación de especies en el terreno político pueden estar en las plantas y los anfibios, para los que el cociente entre la opinión pública y la distribución de beneficios es la más alta.

Introduction

Species conservation is a function of public policy. Public perceptions of species have a major influence on policy formulation and implementation. Therefore, it is important to identify and understand public perceptions about species. Political science helps develop this understanding, because political science is concerned with public perceptions of groups targeted by public policy.

“Social construction” has long been a topic of philosophers, some of whom deny a reality except as constructed by the experience of humans (Soulé & Lease 1995). This concept has a practical application in political science, in which social construction includes the virtue ascribed to a policy target by the general public. The policy target may be portrayed in positive or negative terms by symbolism, metaphor, and fable. In simplest terms, a policy target may be constructed as “good” or “bad.” Schneider and Ingram (1993:334) proposed that social construction is “. . . an important, albeit overlooked, political phenomenon that should take its place in the study of public policy by political scientists . . . because it contributes to studies of agenda setting, legislative behavior, and policy formulation and design . . . .” They also proposed that, when social construction is assessed in tandem with political power, prediction of policy design and implementation is possible.

Schneider and Ingram (1993) defined four categories of policy subjects. The “advantaged” (e.g., World War II veterans) have a positive social construction and political power, and they receive abundant policy benefits. “Contenders” (e.g., business tycoons) have political power but dubious social construction; they receive numerous benefits, but often covertly. “Dependents” (e.g., mothers) lack political power but enjoy a positive social construction, and the benefits they receive are largely symbolic. “Deviants” (e.g., communists) lack political power, are negatively constructed, and receive virtually no benefits.

With the U.S. Endangered Species Act (16 U.S.C. 1531–1544), the policy subjects are endangered species, broad groups of which may have distinct social constructions that may be assessed with valuation techniques. Furthermore, although nonhuman species cannot participate in the political arena, they do have unsolicited political power held for them in trust by interest groups (e.g., Save the Redwoods, Foundation for North American Wild Sheep, Trout Unlimited), which are the fundamental units of political power in pluralist theories of democracy (Lineberry 1980).

Our objectives were to answer six questions: (1) Are all types of species equally constructed in the eyes of the American public? (2) If not, then which types are valued the most? (3) What types of human demographic factors influence species valuation? (4) What traits of species are used by the public in valuing species? (5) What is the distribution of political representation among types of species? (6) Is allocation of recovery effort predictable with the social construction–political power model of Schneider and Ingram (1993)?

Kellert (1996) summarized answers to the first three questions and speculated on the fourth question. Kellert’s summary, however, stems largely from a 1978 analysis of public attitudes toward 33 species. After two decades of controversial endangered species issues and with over 1000 species listed by the U.S. Fish and Wildlife Service as threatened or endangered (Bender 1996), we were interested in a current valuation of broad categories of species.

Methods

We obtained a random sample of 2500 U.S. residential telephone listings from Survey Sampling, Inc. (Fairfield, Connecticut), and conducted a nationwide mail survey. After three pilot studies of 100 households each, we attempted to survey 2000 households. Selection of pilot study households and final households from the total sample was uniform.

We followed the questionnaire protocol of Salant and Dillman (1994): (1) an introductory letter explained the purpose of the survey; (2) a questionnaire was mailed 3 days later; (3) a reminder postcard was mailed 3 days after the questionnaire; and (4) a second questionnaire, identical to the first, was mailed 9 days after the postcard for those who discarded or lost the first questionnaire. Both questionnaires included a brief introductory or reminder letter on the front cover. Business reply envelopes were enclosed with all questionnaires.

We defined eight types of species (amphibians, birds, fish, invertebrates, mammals, microorganisms, plants, and reptiles) and seven factors for potential use in prioritizing species for conservation (apparent ecological importance, body size, cultural and historical traits, intelligence or behavioral complexity, monetary value, physical attractiveness, and rarity). To determine relative values of species types and prioritization factors, we used visual analog scaling, whereby the respondent indicates rela-
tive value by marking a point along a spectrum ranging from 0 to 100 (from no importance to most importance, respectively). The data obtained were therefore ratio data, allowing for finer distinctions in difference and more precise statistical analyses than do ordinal data such as those obtained with Likert scales (Rubin 1983). Later in the questionnaire, we instructed respondents to rank the same types of species in order of importance, requiring them to prioritize and allowing us to crosscheck the ratio data. If a respondent failed to follow instructions and instead ranked more than one species at the same level, we eliminated that respondent’s data from the rank analysis.

Because we instructed each respondent to rate and rank the importance of several subjects, the survey constitutes a repeated-measures design. When the ratio data did not exhibit sphericity, we used multivariate analysis of variance to test for difference in value among subjects, as Zar (1996) advised, and we used post hoc t tests with Bonferroni alpha adjustments to test for value differences between subjects (Neter et al. 1983). We used Friedman’s test for equivalence of ranks and Wilcoxon signed rank tests with a Bonferroni alpha adjustment to detect differences between the ranks of particular species types (Zar 1996).

For each respondent we totaled the visual analog values ascribed to each species type to create a continuous variable called “total value,” and we tested the effects of demographic parameters on total value using linear regression and analysis of variance. When demographic factors helped to explain total value variance, we used Tukey tests (Zar 1996) to determine which levels within those factors were explanatory.

To gauge the political power held in trust for species, we compiled a database of the 632 nongovernmental conservation organizations (NGOs) listed by Gordon (1996) and identified those devoted to the conservation of less than four types of species. Most organizations are devoted to either one type of species (n = 126; e.g., Hawk and Owl Trust) or to broad issues of conservation (n = 481; e.g., American Conservation Association); however, five are devoted to two types of species (e.g., Game Conservation International is concerned with mammals and birds), and one (American Society of Ichthyologists and Herpetologists) is devoted to three types of species (fishes, reptiles, and amphibians). None were devoted to more than three types unless they were concerned with wildlife in general (e.g., Native American Fish and Wildlife Society), in which case we classified them as having a broad interest in conservation.

As a measure of allocation of recovery effort, we used federal and state expenditure data from fiscal year 1993 (Babbitt 1995, the most recent data available). For comparison purposes, we transformed relative values of species ascribed by respondents into amounts comparable with endangered species program expenditures.

Results

We received 643 survey responses. Of the potential respondents, 373 were unavailable due to postal delivery problems (e.g., change of address), death, or debilitating illness. The lowest estimate of response rate was 40% (643/[2000–373]). Responses were obtained from all states (Fig. 1), and the distribution of respondents closely resembled that of the U.S. population and therefore members of Congress (O’Malley 1995).

Demographics of the respondents closely resembled those of the U.S. voting public (Stanley & Niemi 1995). For example, 38% of respondents were Democrats and 35% were Republicans, the same percentages as the voting public. College graduates comprised 43% of respondents and 40% of voters. The mean age of respondents was 51.6, 5 years older than the mean age of voters. The greatest difference was in gender: 70% of respondents were male, whereas 46% of voters are male (U.S. Bureau of the Census 1996).

The species valuation data did not exhibit sphericity (Mauchly criterion = 0.346, p < 0.0001), and we rejected the null hypothesis (H0) that there is no difference in public valuation of the eight types of species (n = 577, Wilks’ lambda = 0.534, p < 0.0001). Plants, birds, and mammals, among which there were no significant differences in public valuation, were valued significantly higher than fish, reptiles, amphibians, invertebrates, and microorganisms (Table 1). Fish, however, were valued significantly higher than reptiles, amphibians, invertebrates, and microorganisms. Microorganisms were valued significantly lower than all other species types. There were no significant differences among reptiles, amphibians, and invertebrates.

Similarly, we rejected the H0 that there is no difference among the ranks of the eight types of species (n = 510, χ2 = 1012.60, p < 0.0001). All differences from

![Figure 1. Geographical distribution of respondents. Numbers of respondents from most states are explicit. Darker shading corresponds with higher response.](image-url)
one rank to the next were significant except for those
to differences in importance of species types ascribed by the public.

<table>
<thead>
<tr>
<th>Pairs of species types</th>
<th>Means of importance</th>
<th>t ratio (degrees of freedom)</th>
<th>Type 1 error probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants/birds</td>
<td>72.19/71.25</td>
<td>0.93</td>
<td>1.10 (605)</td>
</tr>
<tr>
<td>Plants/mammals</td>
<td>72.19/70.87</td>
<td>1.36</td>
<td>1.37 (604)</td>
</tr>
<tr>
<td>Plants/fish</td>
<td>72.19/68.15</td>
<td>4.06</td>
<td>4.83 (603)</td>
</tr>
<tr>
<td>Birds/mammals</td>
<td>71.25/70.87</td>
<td>0.43</td>
<td>0.62 (604)</td>
</tr>
<tr>
<td>Birds/fish</td>
<td>71.25/68.15</td>
<td>3.14</td>
<td>4.37 (603)</td>
</tr>
<tr>
<td>Mammals/fish</td>
<td>70.87/68.15</td>
<td>2.95</td>
<td>3.89 (603)</td>
</tr>
<tr>
<td>Fish/reptiles</td>
<td>68.15/59.32</td>
<td>8.71</td>
<td>9.84 (602)</td>
</tr>
<tr>
<td>Reptiles/amphibians</td>
<td>59.32/58.51</td>
<td>0.93</td>
<td>1.19 (598)</td>
</tr>
<tr>
<td>Reptiles/invertebrates</td>
<td>59.32/57.23</td>
<td>2.12</td>
<td>2.73 (603)</td>
</tr>
<tr>
<td>Reptiles/microorganisms</td>
<td>59.32/52.05</td>
<td>7.42</td>
<td>7.28 (586)</td>
</tr>
<tr>
<td>Amphibians/invertebrates</td>
<td>58.51/57.23</td>
<td>1.26</td>
<td>1.67 (600)</td>
</tr>
<tr>
<td>Amphibians/microorganisms</td>
<td>58.51/52.05</td>
<td>6.20</td>
<td>6.71 (582)</td>
</tr>
<tr>
<td>Invertebrates/microorganisms</td>
<td>57.23/52.05</td>
<td>4.85</td>
<td>5.96 (588)</td>
</tr>
</tbody>
</table>

*For each pair, H₀ = no difference in importance of species types for conservation.

There was no effect of age, gender, region, type of residence, hectares of property owned, education, or type of employer on total value, given the traits defined for each of these factors (Table 3). (For example, only two regions, one east of the Great Plains and one from the Great Plains westward, were defined.) There were, however, significant effects associated with environmental organization and political party membership. Not surprisingly, members of environmental organizations valued nonhuman species at a level ($503.03, n = 31) not significantly different from the valuation of the three common parties.

We rejected the $H₀$ that there is no difference in the importance of the seven specified factors in the valuation of species by the public ($n = 576, \text{Wilks' lambda} = 0.285, p < 0.0001$). Each factor was significantly different from the others in its importance for evaluating species for conservation, except for physical attractiveness and body size, which were the two least important factors (Table 4). The most important factors were apparent ecological importance and rarity.

For plants, amphibians, and invertebrates, spending is far less than that congruent with public valuation (Fig. 2). For reptiles, birds, and fish, spending is far more than congruent. More political power is held in trust for birds, which are represented by more NGOs (57), than

<table>
<thead>
<tr>
<th>Pairs of species types</th>
<th>Mean rank difference</th>
<th>Wilcoxon sign-rank value</th>
<th>Probability of Type 1 error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammals/plants</td>
<td>2.66/3.02</td>
<td>0.3549</td>
<td>8659</td>
</tr>
<tr>
<td>Mammals/birds</td>
<td>2.66/3.45</td>
<td>0.7843</td>
<td>23561</td>
</tr>
<tr>
<td>Plants/birds</td>
<td>3.02/3.45</td>
<td>0.4294</td>
<td>11317</td>
</tr>
<tr>
<td>Birds/fish</td>
<td>3.45/3.74</td>
<td>0.2922</td>
<td>9947</td>
</tr>
<tr>
<td>Fish/amphibians</td>
<td>3.74/5.24</td>
<td>1.5059</td>
<td>38693</td>
</tr>
<tr>
<td>Amphibians/reptiles</td>
<td>5.24/5.75</td>
<td>0.5098</td>
<td>17536</td>
</tr>
<tr>
<td>Reptiles/microorganisms</td>
<td>5.75/5.98</td>
<td>0.2314</td>
<td>5574</td>
</tr>
<tr>
<td>Reptiles/invertebrates</td>
<td>5.75/6.15</td>
<td>0.4000</td>
<td>12742</td>
</tr>
<tr>
<td>Microorganisms/invertebrates</td>
<td>5.98/6.15</td>
<td>0.1686</td>
<td>1999</td>
</tr>
</tbody>
</table>

*For each pair, H₀ = no difference in rank of importance of species types for conservation.

| Values follow order established in previous column. |
| n = 510. |
| Reject H₀ if p < (0.05/9) = 0.0056. |
| Reject H₀. All pairs of species types not shown had significantly different mean ranks. |
are mammals (40), fish (32), plants (19), reptiles (5), invertebrates (4), amphibians (1), or microorganisms (0).

**Discussion**

**Survey Response**

Dillman (1978) noted that response rates for mail surveys are generally underestimated because numerous factors prevent surveyors from determining the availability or existence of addressees. For example, nine notifications were received by acquaintances of deceased addressees. Probably many more addresses were associated with deceased people for whom no one was compelled to respond—likewise for the severely ill. A percentage of mail gets lost or damaged unbeknownst to the sender. Some addresses belong to noncitizens, whereas only U.S. citizens were asked to respond, and some respondents are temporarily unavailable due to travel. The actual response rate was almost certainly higher, perhaps exceeding the 45% of U.S. citizens that exercise their right to vote (U.S. Bureau of the Census 1996).

The franchised public is of special concern in policy analysis, and it comprises about 69% of the U.S. population (Barone & Ujifusa 1995). The demographic profile of respondents indicates that they represent a larger proportion of the franchised public than of the general public, as expected in surveys pertaining to public policy. Respondents, however, were older and far more likely to be male than either the U.S. population or the franchised public. The older age of respondents may be a function of retirees' having more time to respond to surveys. A larger proportion of males was expected because household telephone numbers tend to be listed under male names. The questionnaire was designed to minimize this disproportion by instructing the recipient to have the household adult with the most recent birthday respond. Kellert (1987), however, found that males were more concerned about conserving wildlife species and habitat

<table>
<thead>
<tr>
<th>Pairs of valuation factors</th>
<th>Mean importance</th>
<th>Mean difference</th>
<th>t ratio (degrees of freedom)</th>
<th>Probability of A = B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparent ecological importance/rarity</td>
<td>77.67/73.84</td>
<td>3.78</td>
<td>3.57 (597)</td>
<td>0.0004&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Rarity/cultural traits</td>
<td>73.84/53.05</td>
<td>20.80</td>
<td>15.14 (594)</td>
<td>&lt;0.0001&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cultural traits/intelligence</td>
<td>53.05/49.85</td>
<td>2.93</td>
<td>2.30 (594)</td>
<td>0.0219</td>
</tr>
<tr>
<td>Cultural traits/monetary value</td>
<td>53.05/32.35</td>
<td>20.67</td>
<td>14.65 (594)</td>
<td>&lt;0.0001&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Intelligence/monetary value</td>
<td>49.85/32.35</td>
<td>17.61</td>
<td>12.75 (596)</td>
<td>&lt;0.0001&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Monetary value/physical attractiveness</td>
<td>32.35/29.19</td>
<td>3.22</td>
<td>2.75 (595)</td>
<td>0.0062&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Physical attractiveness/body size</td>
<td>29.19/28.12</td>
<td>1.12</td>
<td>1.21 (596)</td>
<td>0.2268</td>
</tr>
</tbody>
</table>

<sup>a</sup>For each pair, H<sub>0</sub> = no difference in importance of factors for prioritizing species for conservation.

<sup>b</sup>Values follow order established in previous column.

<sup>c</sup>Reject H<sub>0</sub> if p < (0.05/6) = 0.0083.

<sup>d</sup>Reject H<sub>0</sub>. All pairs of factors not shown had significantly different mean importance values.
than were females, who tended to be more concerned about domestic animals and individual animal welfare. If that still holds, then males are predisposed to respond to a survey on endangered species and more likely to consider the topic in electoral decisions. Although our survey results may include a male bias in mathematical terms, they may effectively provide a better approximation of voter values to be considered in the endangered species political arena. In general, nonrespondents were probably less likely to have an opinion on species and conservation issues.

Social Constructions of Species

The visual analog scaling data were considered more important and useful than the ranked data, a priori. First, we assumed that some respondents would view the ranking question as redundant and thus give a perfunctory answer, especially regarding the lower ranks of species. Also, care is required to answer a ranking question with more than just a few items because each group must be considered simultaneously, whereas visual analog scaling allows for individually considered judgments. Furthermore, because ranking can force a distinction between species that are viewed equally, the significance of rank differences is suspect. These characteristics of ranked data help to explain the relatively low sample size (n = 510) available for testing. The ranking data should be perceived in terms of providing additional insight to the rating data.

Rating and ranking data nonetheless supported the conclusion that there are two distinct tiers of value. Birds, fish, mammals, and plants were in the top tier and were valued higher than the other types of species. The differences among birds, mammals, and plants were practically insignificant, whereas fish were valued slightly lower. For the other types, the inconsistency between the “rankings” derived from visual analog scaling and the directly obtained ranks (Tables 1 & 2) may be a function of the aforementioned weaknesses of ranking tests. Some of the inconsistency may be associated with ambivalence (i.e., once the top tier is taken care of, there is less concern about the prioritization of bottom-tier species). There is some evidence that, within the bottom tier, invertebrates and microorganisms constitute a subtier of lowest value.

It is important to distinguish between ambivalence about the prioritization of bottom-tier species and ambivalence about the conservation of species therein. The scaled data indicate that the public considered the conservation of all types of species to be important, regardless of how they were prioritized. Even the lowest-rated type of species (microorganisms) was rated at 52.05 (Table 1). In this respect, our results seem inconsistent with Kellert’s (1996:41) bar graph portraying the negativistic attitude as the third most prominent of the attitudes held by Americans toward nonhuman species. This may indicate a shift in public attitude. Kellert’s primary data were gathered in 1978 and have been occasionally supplemented with data from smaller and localized surveys (e.g., Kellert 1993). Our results are more consistent with the claim of Murphy et al. (1994:1) that “We have reached a pivotal moment in history, a time when public understanding and appreciation of biotic diversity is at an all-time high.”

Alternatively, Kellert’s method for ascribing the “negativistic” trait may not be consistent with negativism in the vernacular. Kellert (1980:48) considered a survey result that “60% reported being afraid to touch a snake” as reflecting the negativistic attitude, and Kellert (1993:849) reported “an aversion to insects in the home” and “a fear of stinging insects, spiders, and scorpions“ as evidence for a negativistic attitude. Most Americans, however, would probably consider such sentiments to be natural and appropriate. We do not challenge the validity of Kellert’s (1980) cluster analyses and subsequent research, but perhaps “negativism” is a misnomer as applied to the cluster it describes. In fact, Kellert’s (1996:25) description of the attitude allows for a “healthy distancing and even respect” of nonhuman species.

Hayward (1994:48) acknowledged that “values always come socially mediated” but elaborated that “This need not mean taking the view, however, that values are a purely social—and therefore contingent or conventional—construct. For society itself is a part of that noncontingent reality we call nature. So which values get constructed and how is unlikely to be arbitrary, even though the processes involved will be complex and not
always easy to discover.” In this case, the processes are not even complex: fear and respect are commonly evoked by pain-inflicting species, dangerous species, and species that are difficult for the lay person to distinguish from dangerous species (e.g., snakes in general). We consider such attitudes as rational and positive. Although truly negative—abusive or irrational—attitudes may be encountered, our results suggest that the portrayal of “negativism” as a dominant theme in the American psyche is no longer appropriate.

The high rating of apparent ecological importance among the factors used to evaluate species reflects an ecologistic perspective in which the primary concern is “for the environment as a system, for interrelationships between wildlife species and natural habitats” (Kellert 1980:42). The fact that even the lower tier of species is considered important is further evidence for an ecologistic perspective, as is the high rating of rarity. Despite Kellert’s (1996:43) assertion derived from the past two decades that, “The least frequently encountered values of nature are the dominionistic, scientific, and ecologistic,” we believe the truth of that statement no longer applies to the ecologistic perspective. A bar chart presented by Kellert (1996:45) that covers the period from 1900 to 1976 shows that the ecologistic perspective increased rapidly from the early 1940s on, and nothing indicates a reversal in that trend between 1976 and today. Our results indicate a strong ecologistic element in the public view of species conservation, which is not surprising considering the efforts at public education expended by environmental organizations since the 1960s. Perhaps the ascendency of the ecologistic perspective has usurped psychological territory once claimed by the negativistic perspective.

The clearly distinguished prioritization of birds, mammals, fish, and plants, on the other hand, may point to a number of other perspectives. It could suggest an aesthetic perspective, which “stresses the ‘charismatic megavertebrates’”(Kellert 1996:15). It could also suggest a utilitarian perspective; birds, mammals, fish, and plants are harvested by many people. The data on factors of valuation seemingly contradict both interpretations because physical attractiveness, body size, and monetary value constitute a lower tier of evaluation factors. Such factors, however, have long been primary determinants of public preference for species (Burghardt & Herzog 1980; Kellert 1985), and it is unlikely that they have been discarded.

There are three likely explanations for the low scores of physical attractiveness, body size, and monetary value. First, people may consider it politically incorrect to admit a preference based on appearance or monetary value because it is politically incorrect to discriminate among humans on the basis of race or class. Second, the low scores may not indicate unimportance as much as they reflect the importance of ecological factors. For example, a respondent who rated rarity at an importance level of 80 may have rated attractiveness at a level of 40, not thinking that attractiveness was unimportant but that rarity was twice as important. The third explanation is based on Kellert’s (1996:212) insight that aesthetic perspectives tend to be manifested emotionally and utilitarian perspectives tend to be “frequently expressed and therefore learned as broad belief orientations,” whereas ecologistic perspectives are “cognitive,” or rational. Responding to a questionnaire, like voting, is primarily a cognitive event, albeit influenced by emotional and subconscious factors.

The public retains a strong symbolic attitude toward species conservation, an ancient attitude interwoven with human evolution (Shepard 1978; Wilson 1984). The importance ratings of cultural traits and intelligence support this interpretation, as do the importance ratings of birds and mammals, which are the most symbolically important species (Kellert 1996). The inclusion of fish and plants in the upper tier of species may also reflect a naturalistic perspective, which “often takes expression through . . . birding, fishing, hunting, whalewatching, wildlife tourism, visiting zoos, and the like” (Kellert 1996:12).

More important than determining which perspective is most reflected by the prioritization of top-tier species is to recognize that a number of otherwise conflicting perspectives converge to prioritize these species. The political empowerment availed by such convergence is considerable, and its reflection in policy should be expected and employed by conservationists, especially considering the umbrella qualities of large, wide-ranging vertebrates. Nevertheless, the Endangered Species Act is frequently criticized on the basis of taxonomic equity. The National Research Council (1995) noted that the act fails to protect invertebrates and plants below the subspecies level of taxonomy but protects distinct populations of vertebrates. It judged that division to be arbitrary in a technical sense, a position shared by Murphy (1991). Similarly, Grumbine (1992:95) noted that “The act plays taxonomic favorites, giving animals stronger protection than plants (section 9). This has no justification in conservation biology.” We disagree with these authors from a biological perspective (Czech & Krausman 1998), but more importantly, a holistic perspective that accounts for public preference and political reality will be more productive in the policy arena and thus for species conservation.

**Construction and Power Dynamics and Allocation of Benefits**

To employ Schneider and Ingram’s (1993) social construction–political power matrix, the least arbitrary way to separate species based on social construction is to include birds, mammals, plants, and fish in the advantaged-dependent half. Reptiles, amphibians, invertebrates, and micro-organisms comprise the contender-deviant half. Exceptions may be common in either case (Fig. 3).
the unfathomable natural history that distance entails (e.g., poikilothermy), it would not be surprising if people questioned the cultural merits of reptiles.

Relative to the other deviant species, reptiles have a political advantage, but not enough to justify status as a contender. Plants have 13 supportive NGOs, and they were logically placed in the lower level of political support; therefore, it would be illogical to categorize reptiles (five NGOs) in the upper level. Benefits are supposed to be disproportionately low for deviants, but spending per species on reptiles exceeds that for all other types except birds (Fig. 2). Meanwhile, reptiles have no ecological features that pose an unprecedented fiscal challenge to researchers or managers, and the small number of NGOs affiliated with reptiles would not appear to yield an inordinate amount of political power.

On the other hand, the list of those NGOs (American Society of Ichthyologists and Herpetologists, Desert Tortoise Council, Desert Tortoise Preserve Committee, Gopher Tortoise Council, New York Tortoise and Turtle Society) reveals that the order Testudines is well represented in the political arena. Tortoises, especially, evoke an extreme disproportion of political allegiance within their class, far more than other favored groups such as waterfowl, bears, and salmonids, and that disproportion is reflected in the distribution of benefits. Of the $23,605,900 spent on the 32 threatened and endangered reptile species in 1993, 98% ($23,135,500) was spent on the 13 turtle and tortoise species, almost 66% ($15,492,700) on the desert tortoise alone (Babbitt 1995). Turtles and tortoises, then, are worthy of contender status. Even that designation probably underrates the testudines, however, because if the social construction of testudines had been assessed in isolation from that of the other reptiles, testudines would likely be designated as advantaged. They are associated with positive cultural symbols (e.g., the tortoise and the hare), are often kept as pets, and are a common subject of decorative art.

The logical interpretation of the reptile data, then, is that reptiles encompass their own two tiers: testudines and the others. One might even expand the argument by classifying tortoises as advantaged and turtles as strong dependents or contenders, but the evidence gets scanty at that level of distinction. Non-testudines reptiles, however, are clearly deviants. This strong dichotomy offers an explanation for the fact that reptile valuation exhibited more variance ($n = 605$, $SD = 27.24$) than that of any other vertebrate group.

The contender concept is problematic when applied to nonhuman species. Whereas a human interest group, even one reviled by the public, can attain political power via diligence and craft, species lacking a positive social construction are much less likely to accrue political power. Nevertheless, the contender category is useful for describing species of contested social construction that generate favorable and unfavorable political

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**Figure 3. Types of species as policy subjects in the social construction/political power matrix of Schneider and Ingram (1993). Relative placement of subjects conveys information; social construction decreases along the x-axis and political power increases along the y-axis.**

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The most intriguing data are those associated with reptiles. First, the rating and ranking data indicated that there is some ambivalence or perhaps confusion among the public in how it views reptiles. Considering the negative Judeo-Christian symbolism involving snakes, the proportion of dangerous species in the reptile class, the evolutionary distance between reptiles and humans, and the way reptiles are often kept as pets, it is not surprising that the public views reptiles negatively.

Our political power assessment may be used to finalize the classification, which may then be considered in relation to the allocation of benefits. Plants are represented by only 13% (19/148) of the NGOs devoted to the socially constructed upper tier of species. The sharp demarcation between plants and the other highly valued species types justifies the assignment of plants to the dependent category. As expected for dependents, expenditures on plants are disproportionately less than public valuation.

Birds, for which 1993 spending was nearly twice the level of public valuation, are represented by 54 NGOs and are clearly the most advantaged type. A glance at some of the NGOs associated with birds reveals real political power. Ducks Unlimited, for instance, has a membership of about 550,000 (Gordon 1996), more than that of seven of the powerful “Group of Ten” environmental organizations (Switzer 1994). Founded in 1937, Ducks Unlimited employs an impressive organization dispersed throughout North America and surely has more political power than all of the combined NGOs affiliated with reptiles, amphibians, invertebrates, and microorganisms.

The political power analysis also helps to explain why expenditures for amphibians and invertebrates are disproportionately less than public valuation. Almost no one has mobilized to support these species exclusively.

The most intriguing data are those associated with reptiles. First, the rating and ranking data indicated that there is some ambivalence or perhaps confusion among the public in how it views reptiles. Considering the negative Judeo-Christian symbolism involving snakes, the proportion of dangerous species in the reptile class, the evolutionary distance between reptiles and humans, and the way reptiles are often kept as pets, it is not surprising that the public views reptiles negatively.

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activity. Exceptional species from all categories may qualify as contenders, but mammals probably constitute the majority. Although mammals are represented by 25% (40/158) of the species-oriented NGOs, they also attract political opposition; this is especially true of predators and rodents (Carrier & Czech 1996), which represent a high proportion of endangered mammals.

The consistency with which the eight types of species accrue benefits from the Endangered Species Act as predicted by the social construction–political power matrix is remarkable. When testudines are distinguished from other reptiles, only mammals do not receive benefits consistent with the social construction–political power dynamic, and that can be explained by the high number of mammalian exceptions that are better classified as contenders. Advantaged species receive the most benefits by far, and benefits to dependents and deviants are slight.

Of course, social construction and political power are correlated ($r = 0.799$), and causality is certainly involved. Nevertheless, both are important and harbor distinct implications. For example, an important ratio to consider is that of social construction to benefits. It is possible for a policy subject to obtain enough benefits so as to evoke ill feelings among other stakeholders, as when the Northern Spotted Owl ($Strix occidentalis caurina$) controversy erupted in the Northwest (Yaffee 1994). When that happens, a species may lose status from advantaged to contender, and benefits may subside. If a species receives few benefits, however, it may reap proportionally higher benefits from each new political effort. As it moves from the dependent category to the advantaged, or from the deviant to the contender, its benefits will increase. Assuming that is the case, and disregarding umbrella effects, then those concerned with the conservation of species in general may be most efficient by focusing their political efforts on plants and amphibians. Ratios of public valuation (Table 1) to spending per species in thousands of dollars (Fig. 2) were 4.95 for plants and 2.32 for amphibians. The ratio was 1.07 for invertebrates; all other types of species had ratios ranging from 0.08 to 0.19.

Factors other than social construction and political power may affect spending practices and effect spending discrepancies. For example, the logistics involved with migratory fish research and the magnitude of assessment and mitigation projects associated with salmon fisheries in the Pacific Northwest are formidable (Barker 1993). The expense entailed by these logistics provides an alternative or supplemental explanation for the relative abundance of expenditures on fish.

But priorities established by the U.S. Fish and Wildlife Service for species recovery have had little influence on the applicability of the social construction–political power model. The factors used to prioritize species for recovery—including degree of threat, recovery potential, taxonomic distinctiveness, and conflict with economic activity—do not clearly favor any type of species. More important, expenditures have not reflected the priority system. In fact, Simon et al. (1995) concluded that, regardless of the priority system, spending was highest on birds, mammals, and fish—the advantaged species.

**Conclusion**

The social construction–political power matrix provides a helpful tool for interpreting why certain types of species benefit disproportionately from the U.S. Endangered Species Act and perhaps for developing political strategies for species conservation. Conservationists that are most concerned with contenders should help to construct their subjects with a more positive valence, whereas those that are most concerned with dependents may produce more benefits with direct political action. Those most concerned about the advantaged will find abundant support for their agendas, whereas those concerned with deviants have a great deal of social and political work to do.

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**Literature Cited**


