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# OF DEAD PELICANS, TURTLES, AND MARSHES: NATURAL RESOURCES DAMAGES IN THE WAKE OF THE BP DEEPWATER HORIZON SPILL

ITZCHAK E. KORNFELD\*

**Abstract:** This Article posits that in its role as the lead agency among the United States' natural resources trustees, the National Oceanic & Atmospheric Administration's piecemeal assessment of natural resources damages, i.e., valuing one dead bird at a time or the death of just a tract of marsh, fails to consider the inherent worth or the value of the entire ecosystem. Valuing the destruction of the entire ecosystem as a result of the BP Deepwater Horizon well blowout is the best way to assess the damage in the Gulf Coast, particularly in south Louisiana. That crude oil spill resulted in an estimated 53,000 barrels released per day, and a total volume of 4.9 million barrels that despoiled the waters of the Gulf of Mexico and the surrounding shorelines. As a consequence of the spill, thousands of birds, turtles, fish, and marshlands were left to die.

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## INTRODUCTION

*I don't like to call it a disaster, because there has been no loss of human life. I am amazed at the publicity for the loss of a few birds."*

—Fred L. Hartley, President of Union Oil Company, following the 1969 Santa Barbara Channel Oil Spill<sup>1</sup>

The BP Macondo well's<sup>2</sup> blowout, and the subsequent oil spill in the Gulf of Mexico,<sup>3</sup> was one of the worst man-made environmental disasters that the United States has experienced to date. Beginning on April 20, 2010, and continuing for nearly ninety days thereafter, millions of barrels of oil gushed into the Gulf of Mexico,<sup>4</sup> producing one of the most devastating eco-disasters since the Exxon Valdez's grounding in Prince William Sound, Alaska.<sup>5</sup> In this Article, I focus upon the restoration of the Gulf Coast's natural resources. This leads to the following question: how much is, for example, Louisiana's state bird, the Brown pelican worth?<sup>6</sup> What are people across the United States willing

<sup>1</sup> *1969 Oil Spill*, U. CAL. SANTA BARBARA DEP'T OF GEOGRAPHY, [http://www.geog.ucsb.edu/~jeff/sb\\_69oilspill/69oilspill\\_articles2.html](http://www.geog.ucsb.edu/~jeff/sb_69oilspill/69oilspill_articles2.html) (last updated Dec. 2004) (quoting Fred L. Hartley) (internal quotation marks omitted).

<sup>2</sup> BP's prospect, located within Mississippi Canyon Block 252 (MC 252), was called Macondo and that is why I refer to it as the Macondo well. Art Berman, *What Caused the Deepwater Horizon Disaster?*, THEOILDRUM.COM (May 21, 2010, 10:28 AM), <http://www.theoil Drum.com/node/6493>. Concomitantly, the rig—the semi-submersible platform owned by Transocean from which the well was drilled—was named the Deepwater Horizon. See, e.g., David Hammer, *5 Key Human Errors, Colossal Mechanical Failure Led to Fatal Gulf Oil Rig Blowout*, TIMES-PICAYUNE, (Sept. 5, 2010, 3:08 PM), [http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/09/5\\_key\\_human\\_errors\\_colossal\\_me.html](http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/09/5_key_human_errors_colossal_me.html).

<sup>3</sup> See Berman, *supra* note 2.

<sup>4</sup> Alice-Azania Jarvis, *BP Oil Spill: Disaster by Numbers*, INDEPENDENT (London), Sept. 14, 2010, <http://www.independent.co.uk/environment/bp-oil-spill-disaster-by-numbers-2078396.html>.

<sup>5</sup> See generally RIKI OTT, SOUND TRUTH AND CORPORATE MYTH\$: THE LEGACY OF THE EXXON VALDEZ OIL SPILL (2005) (discussing the aftermath of the 1989 oil spill in Prince William Sound); Zygumnt J.B. Plater, *Exxon Valdez Re-Surfaces in the Gulf of Mexico and the Hazards of "Megasytem Centripetal Di-Polarity"*, 38 B.C. ENVTL. AFF. L. REV. 389 (2011) (discussing the Exxon Valdez oil spill).

<sup>6</sup> The Brown pelican (*Pelecanus occidentalis*) was first listed as an endangered species on June 2, 1970, and it was delisted on November 17, 2009. See Endangered Species Act, 16 U.S.C. §§ 1531–1544 (2006); Endangered and Threatened Wildlife and Plants; Removal of the Brown Pelican (*Pelecanus occidentalis*) from the Federal List of Endangered and Threatened Wildlife; Final Rule, 74 Fed. Reg. 59,443, 59,444 (Nov. 17, 2009) (codified at 50 C.F.R. pt. 17); *Species Profile for Brown pelican (Pelecanus occidentalis)*, U.S. FISH & WILDLIFE SERV., <http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B02L> (last visited Apr. 15, 2011) (discussing the history of the Brown pelican's listing and delisting).

to pay, in dollars and cents, for the survival of that bird species?<sup>7</sup> \$5.00? \$100.00? \$1,000.00? Or possibly \$1,000,000.00?

When contemplating what that price ought to be, it is important to recall that until quite recently the Brown pelican was:

Hounded by hunters and fishermen [for over a hundred years], driven to near-extinction by chemical pollution . . . [it], has survived a century of human abuse. . . .

The odd-looking seabird with a distinctive pouch beneath its foot-long bill was removed from the federal endangered species list only last November. Now its recovery could be undermined by millions of gallons of oil polluting the Gulf since . . . [the] April 20 [Horizon] rig explosion.<sup>8</sup>

Similarly, what price is the average American willing to pay for the extremely endangered Kemp's ridley turtle?<sup>9</sup> And how much for an acre of south Louisiana marsh? \$2.00? \$50.00? \$10,000.00? More? Less? Indeed, what is the value of the entire ecosystem?<sup>10</sup>

Finally, how much is the "national treasure" that is America's Gulf Coast worth?<sup>11</sup> What is the value of its natural resources, not only as an essential "economic engine for the entire United States," but its waters, which "sustain a diverse and vibrant ecosystem?"<sup>12</sup> Indeed, what is the Gulf's "natural beauty" worth?<sup>13</sup> What about its "historic" and cultural riches?<sup>14</sup>

<sup>7</sup> See discussion *infra* Parts II–III (discussing natural resource damage valuation methods).

<sup>8</sup> John Flescher, *Brown Pelican, Louisiana's State Bird, Imperiled by Gulf of Mexico Oil Spill*, TIMES-PICAYUNE (May 19, 2010, 7:20 AM), [http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/05/louisianas\\_state\\_bird\\_brown\\_pe.html](http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/05/louisianas_state_bird_brown_pe.html).

<sup>9</sup> The Kemp's ridley turtle was listed as an endangered species in 1970. See List of Endangered Foreign Fish and Wildlife, 35 Fed. Reg. 18,319, 18,322 (Dec. 2, 1970) (codified at 50 C.F.R. pt. 17 app. A). *Kemp's Ridley Turtle (Lepidochelys kempii)*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., FISHERIES OFFICE OF PROTECTED RES., <http://www.nmfs.noaa.gov/pr/species/turtles/kemp Ridley.htm> (last visited Apr. 15, 2011). ("[M]ale Kemp's ridleys appear to occupy many different areas within the Gulf of Mexico. Some males migrate annually between feeding and breeding grounds, yet others may not migrate at all. . . . Kemp's ridleys face threats on both nesting beaches and in the marine environment.")

<sup>10</sup> See discussion *infra* Parts II–III.

<sup>11</sup> See Exec. Order No. 13,554, 75 Fed. Reg. 62,313, 62,313 (Oct. 8, 2010) ("The Gulf Coast is a national treasure. Its natural resources are an important economic engine for the entire United States; its waters sustain a diverse and vibrant ecosystem; and the Gulf's culture, natural beauty, and historic significance are unique.")

<sup>12</sup> See *id.*

<sup>13</sup> See *id.*

<sup>14</sup> See *id.*

The critical issue of the value of the Gulf's natural resources will have to be confronted by the designated natural resources trustees.<sup>15</sup> Trustees include the National Oceanic and Atmospheric Administration, the lead agency, the Department of the Interior, and their co-equal state partners.<sup>16</sup> Indeed, the restoration of the Gulf Coast's natural resources is one of the chief environmental tasks facing federal and state government agencies. Nevertheless, restoring the Gulf's natural resources cannot be done in a vacuum.<sup>17</sup> Clearly, any restoration plan must consider the environment.<sup>18</sup> However, it must also include the people who live in the area and their history.<sup>19</sup> Since south Louisiana took the brunt of the BP oil spill,<sup>20</sup> this Article will focus on that geographic area.

Part I discusses the people of Louisiana and the culture that binds them to the marshes and the sea.<sup>21</sup> Part II.A discusses examples of ecosystem services.<sup>22</sup> Part II.B addresses the Oil Pollution Act of 1990 and the fact that Congress is failing to develop a contemporary legal regime for this new type of ecological calamity.<sup>23</sup> Part II.C explores the assess-

<sup>15</sup> Multiple sources of law designate natural resource trustees. *See, e.g.*, Exec. Order No. 12,580, 3 C.F.R. 193, 194 (1988) (designating certain cabinet officers as the federal trustees for natural resources damages); 15 C.F.R. § 990.11 (2011) ("The Oil Pollution Act of 1990 (OPA), 33 U.S.C. 2701 et seq., provides for the designation of federal, state, and . . . local officials to act on behalf of the public as trustees for natural resources . . ."); 40 C.F.R. § 300.600 (2010) ("The President is required to designate in the NCP [CERCLA's National Contingency Plan] those federal officials who are to act on behalf of the public as trustees for natural resources. Federal officials so designated will act pursuant to section 107(f) of CERCLA, section 311(f)(5) of the CWA, and section 1006 of the OPA. . . . (1) *Secretary of Commerce.* The Secretary of Commerce shall act as trustee for natural resources managed or controlled by DOC [Department of Commerce] and for natural resources managed or controlled by other federal agencies and that are found in, under, or using waters navigable by deep draft vessels, tidally influenced waters, or waters of the contiguous zone, the exclusive economic zone, and the outer continental shelf.")

<sup>16</sup> *See* Discharge of Oil From Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent to Conduct Restoration Planning, 75 Fed. Reg. 60,800, 60,801 (Oct. 1, 2010); *Deepwater Horizon/BP Oil Spill Response*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., OFF. RESPONSE & RESTORATION, [http://response.restoration.noaa.gov/dwh.php?entry\\_id=809](http://response.restoration.noaa.gov/dwh.php?entry_id=809) (last updated Oct. 28, 2010).

<sup>17</sup> *See infra* Part II (discussing possible valuation techniques and the effects of natural resource damage on an entire ecosystem).

<sup>18</sup> *See infra* Part II.C.

<sup>19</sup> *See infra* Part I.

<sup>20</sup> *See, e.g.*, Anna Driver, *On Louisiana Coast, Residents Bemoan a Lost Summer*, REUTERS, Aug. 27, 2010, available at <http://www.reuters.com/article/2010/08/27/us-oil-spill-louisiana-idUSTRE67Q5F420100827> (explaining that Louisiana has experienced the most damage from the oil spill).

<sup>21</sup> *See infra* Part I.

<sup>22</sup> *See infra* Part II.A.

<sup>23</sup> *See infra* Part II.B.

ment of the value of natural resources and five methods of valuing natural resources, including: (1) Contingent Valuation Methodology; (2) Market Valuation Approach; (3) Restoration and Replacement Cost; (4) Use Value Methodology; and (5) Habitat Equivalency Analysis.<sup>24</sup> Part III deals with the natural resources trustees' current methodology for valuing natural resources damages.<sup>25</sup> Part IV analyzes the Natural Resource Damage Assessment Process (NRDA), the Deepwater Horizon spill, and cost-benefit analysis.<sup>26</sup> Finally, Part V discusses the failure of cost-benefit analysis and suggests that Congress's reference to "natural resources" is to valuing the sum of those resources or the entire ecosystem collectively, not to valuing each resource individually.<sup>27</sup>

## I. LOUISIANA, LOUISIANA

### A. *The People*: Les Acadiens

Citizen participation is the hallmark of the NRDA process.<sup>28</sup> Moreover, regulations promulgated under the Oil Pollution Act of 1990<sup>29</sup>—one of the operative statutes under which the cleanup and restoration of south Louisiana has and will take place—also require that the responsible parties (RPs), such as BP and Transocean in the Gulf disaster, be invited to participate in the NRDA activity.<sup>30</sup> Due to the RPs' expertise and agency capture,<sup>31</sup> it is likely that commenting members of the public who have been personally injured will be at a distinct technological and scientific disadvantage, relative to the relevant industry groups.

<sup>24</sup> See *infra* Part II.C.

<sup>25</sup> See *infra* Part III.

<sup>26</sup> See *infra* Part IV.

<sup>27</sup> See *infra* Part V.

<sup>28</sup> See, e.g., 43 C.F.R. § 11.30(c)(1)(iii), 11.32(c) (2010) (stating that the costs of public participation can be assessed, and mandating public involvement in the NRDA process).

<sup>29</sup> See Oil Pollution Act of 1990 (OPA), 33 U.S.C. §§ 2701–2762 (2006); *OPA Guidance About DARRP*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., [http://www.darrp.noaa.gov/library/I\\_d.html](http://www.darrp.noaa.gov/library/I_d.html) (last updated July 19, 2010).

<sup>30</sup> 15 C.F.R. § 990.14(c)(1)–(2) (2011) ("Trustees must invite the responsible parties to participate in the natural resource damage assessment described in this part."); see Discharge of Oil From Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent To Conduct Restoration Planning, 75 Fed. Reg. 60,800, 60,801 (Oct. 1, 2010) (identifying responsible parties from the Gulf); Stephen Gidicere et al., *The Coming Wave of Gulf Coast Oil Spill Litigation*, 71 ALA. LAW. 374, 376 (2010).

<sup>31</sup> See Detlof von Winterfeldt, *Setting Standards for Offshore Oil Discharges: A Regulatory Decision Analysis*, 30 OPERATIONS RES. 867, 868–69 (1982). See generally *Protecting the Public Interest: Understanding the Threat of Agency Capture: Hearing Before the Subcomm. on Admin. Oversight & the Courts, S. Judiciary Comm.*, 111th Cong. 50–51 (2010) (statement of Sen. Russell D. Feingold) (discussing agency capture).

In order to fully understand how the injured and aggrieved public in south Louisiana will react to any remedy, one must understand these people's present needs, past activities, and their sensibilities and attitudes vis-à-vis the Gulf of Mexico's environment.<sup>32</sup> For those unfamiliar with the culture of the peoples of south Louisiana, it is critical to appreciate fully that the spill's destruction of the Gulf's natural resources,<sup>33</sup> including the wildlife, will not begin to fade from memory for at least a few generations.<sup>34</sup> Why? Because of the Cajuns'<sup>35</sup> and the local native tribes'<sup>36</sup> close relationship with the land and water of south Louisiana,<sup>37</sup> where for some ten generations they have worked, lived, and gathered their families for outings and *Fais do-dos*—Cajun dance

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<sup>32</sup> See Barry Yeoman, *Saving Louisiana: What Can We Do?*, ONEARTH (Jan. 7, 2011), <http://www.onearth.org/article/saving-louisiana-what-can-we-do>.

<sup>33</sup> 33 U.S.C. § 2701(20) (2006) (defining natural resources as "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to . . . the United States (including the resources of the exclusive economic zone), any State or local government or Indian tribe, or any foreign government"); see RAY MABUS, *AMERICA'S GULF COAST: A LONG TERM RECOVERY PLAN AFTER THE DEEPWATER HORIZON OIL SPILL I* (2010) (discussing the impact of the oil spill on Gulf Coast residents), available at <http://www.restorethegulf.gov/sites/default/files/documents/pdf/gulf-recovery-sep-2010.pdf>.

<sup>34</sup> See, e.g., MABUS, *supra* note 33, at 39. Having lived and worked as a petroleum geologist in south Louisiana for over a decade, the author can personally attest to the impact that the Deepwater Horizon/BP Macondo spill has had, not only upon the natural resources, but on the region's people.

<sup>35</sup> Cajun is slang for *les Cadiens* or *les Acadiens*, who are a cultural or ethnic group that lives in south Louisiana and whose "capital" is Lafayette. See Jacques Henry, *From Acadian to Cajun to Cadien: Ethnic Labelization and Construction of Identity*, J. AM. ETHNIC HIST., Summer 1998, at 29, 29–47. They are the descendants of French Acadian refugees, who escaped persecution by English forces during the eighteenth century and traveled from Acadia, in the Canadian Maritime provinces, to south Louisiana. See Bruce J. Bourque, *Ethnicity on the Maritime Peninsula, 1600–1759*, 36 ETHNOHISTORY 257, 260–63 (1989); Henry, *supra*, 29–47. These French-speaking refugees moved from life in the Acadian cities of Dalhousie, Shelbourne, Argyle, and as far west as Quebec, favoring a rural mode of life, fishing, and farming along the bayous. See Bourque, *supra*, 260–63; Henry, *supra*, 29–47.

<sup>36</sup> See *Welcome to the United Houma Nation*, UNITED HOUMA NATION (Aug. 12, 2008), <http://www.unitedhoumanation.org/node/3> ("The United Houma Nation (UHN) is a state recognized tribe of approximately 17,000 tribal citizens residing within a six-parish (county) service area encompassing 4,570 square miles. The six parishes, Terrebonne, Lafourche, Jefferson, St. Mary, St. Bernard and Plaquemines parishes are located along the southeastern coast of Louisiana. Within this area, distinct tribal communities are situated among the interwoven bayous and canals where Houmas traditionally earned a living. Although by land and road these communities are distant, they were historically very close by water. However, boat travel is no longer a viable option due to the effects of coastal erosion, which has left these waterways either nonexistent or impassable and often treacherous.")

<sup>37</sup> See *id.* (describing the tribe's relationship with the land and waters of Louisiana); see also Bourque, *supra* note 35, at 260–63; Henry, *supra* note 35, at 29–47.

parties.<sup>38</sup> That is also why few in the southern reaches of the Bayou State can turn away from the hard and depressing facts of the spill, including the horrific deaths of eleven of the oil platform's workers who were taken away from this extremely close-knit community and the extermination of the region's fauna and flora.<sup>39</sup>

Indeed, as the millions of barrels of oil gushed from the wellbore, streamed into the Gulf, and made their way landward, they destroyed oyster beds, fisheries, and the livelihoods of fishermen, shrimpers, and crab processors.<sup>40</sup> The oil additionally impacted ancillary businesses from Terrebonne Bay, in Louisiana's LaFourche Parish, east to Bayou La Batre in Alabama's Mobile County.<sup>41</sup> A paradigm of the power of the Cajuns' and native peoples' intimate bond with south Louisiana's resources is demonstrated by the following statement expressed by a participant at a Houma, Louisiana, post-spill town meeting: "We need to understand that the environment and our lifestyle and our communities and the businesses that flourish down here must work together."<sup>42</sup>

### B. *The Darker Side*

Notwithstanding the foregoing, there is also a glaring inconsistency to this love affair with the Coast and its "resources": a concomitant love of, and reliance upon, the oil and gas industry.<sup>43</sup> As was recently pointed out by Professor Oliver Houck,<sup>44</sup>

*No state in the union has been more firmly wedded to the oil and gas industry than Louisiana. No more zealous preachers of the clean oil gospel can be found than the state's politicians, who*

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<sup>38</sup> *A Glossary of Terms Used in New Orleans*, EXPERIENCENEWORLEANS.COM, <http://www.experienceneworleans.com/glossary.html> (last visited Apr. 15, 2011) (defining *fais do-do*).

<sup>39</sup> See Jarvis, *supra* note 4 (describing death of platform workers and the extent of damage to the Gulf Coast's land and environment); Yeoman, *supra* note 32 (discussing marine life's importance to the Louisiana community).

<sup>40</sup> See Notice of Intent, Discharge of Oil from Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent to Conduct Restoration Planning, 75 Fed. Reg. 60,800, 60,801-02 (Oct. 1, 2010); NAT'L OCEANIC & ATMOSPHERIC ADMIN. (NOAA), NOAA'S OIL SPILL RESPONSE: ASSESSMENT AND RESTORATION 1 (2010); NOAA, NOAA'S OIL SPILL RESPONSE: EFFECTS OF OIL ON MARINE MAMMALS AND SEA TURTLES 1 (2010); NOAA, NOAA'S OIL SPILL RESPONSE: FISHING INDUSTRY IN THE GULF OF MEXICO 1 (2010).

<sup>41</sup> See NAT'L OCEANIC & ATMOSPHERIC ADMIN., NEARSHORE SURFACE OIL FORECAST DEEPWATER HORIZON MC 252, at 1 (2010).

<sup>42</sup> See, e.g., MABUS, *supra* note 33, at i.

<sup>43</sup> See, e.g., Oliver Houck, *Who Will Pay to Fix Louisiana?*, NATION, July 12, 2010, at 11 (describing Louisiana's reliance on the oil and gas industry).

<sup>44</sup> *Oliver A. Houck*, TULANE U. L. SCH., <http://www.law.tulane.edu/tlsfaculty/profiles.aspx?id=430> (last visited Apr. 15, 2011).



were elected by oil money (at the high end of industry campaign funding) and have defended the industry from regulation (including wetland protections), reduced its royalties with tax breaks and “royalty holidays” (thereby depriving the US Treasury of some \$53 billion in revenues from existing offshore leases) . . . .<sup>45</sup>

With this brief geographic and cultural sojourn now over, one of the main enterprises of this Article is to highlight the fact that the necessary repair and restoration efforts in the Gulf will take decades.<sup>46</sup> Indeed, Americans cannot be allowed to forget this disaster, as they have countless others, including the aftermath of Hurricanes Katrina and Rita.<sup>47</sup> Lawyers, scientists, and lay people must keep this tragedy’s long-term effects in the public’s eye, lest politicians are allowed to drop the ball on this issue in their haste to move on to what they deem to be more expedient political concerns.<sup>48</sup>

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<sup>45</sup> Houck, *supra* note 43, at 11 (emphasis added).

<sup>46</sup> *See, e.g., id.* (“It is bad, particularly for local communities, and the long term is anyone’s guess. We still do not know the full *Exxon Valdez* story, and that was in a more confined space, twenty-one years ago.”). *See generally* OTT, *supra* note 5 (discussing the legacy of the Exxon Valdez disaster).

<sup>47</sup> *See, e.g.,* HENRY J. KAISER FAMILY FOUND., NEW ORLEANS FIVE YEARS AFTER THE STORM: A NEW DISASTER AMID RECOVERY 1, 5, 7 (2010), available at <http://www.kff.org/kaiserpolls/upload/8089.pdf> (finding that seven out of ten of Orleans Parish residents feel the nation has forgotten the challenges they face).

<sup>48</sup> *See, e.g.,* Houck, *supra* note 43, at 11 (describing political ties of government to industry and the need not to deny environmental damage).

## II. NATURAL RESOURCES VALUATION

### A. *Examples of Ecosystem Services*<sup>49</sup>

*As the great Mississippi River Delta disappears, so do the ecosystems, economies and people that it holds. The Mississippi River is the solution. It has the water, sediment and energy to rebuild land, defend against hurricanes and again provide habitat, safety, livelihood, and prosperity. We must look to the natural functioning of the delta to guide us in restoration.*

—John Day, 2007<sup>50</sup>

Ecosystems as a whole provide value beyond the individual natural resources that are their building blocks. Ecosystem functions or services are “the conditions and processes through which natural ecosystems and the species that make them up sustain and fulfill human life.’ Ecosystems provide a variety of services that individuals and communities use and rely on, not only for their quality of life but also for economic production.”<sup>51</sup> Ecosystems encompass structural constituents like marsh flora, as well as dynamic procedures like nutrient cycling, water streams, and the life cycles of organisms like fish, oysters, and shrimp.<sup>52</sup> These structural constituents and dynamic procedures include “soil accumulation, habitat creation, reduced fetch, [and] obstructions to hurricane storm surges,” which engender ecological commodities such as oxygen, water, fauna, and services such as “hurricane and flood protection, water filtration, recreation, [and] aesthetic value.”<sup>53</sup>

Ecological commodities are a broad category and include both services and products obtained from ecosystems. They include: (1) purification of the air and water; (2) mitigation of hurricanes and floods; (3) recreation; (4) generation and renewal of soil and soil fertility; (5)

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<sup>49</sup> For excellent discussions of ecosystem services, see Gretchen C. Daily, *Introduction: What Are Ecosystem Services?*, in *NATURE'S SERVICES: SOCIETAL DEPENDENCE ON NATURAL ECOSYSTEMS* 1, 3–6 (Gretchen C. Daily ed., 1997). Seventeen ecosystem services were recently identified and economically evaluated, with an estimated worldwide valuation of \$33 trillion per year, considerably in excess of total global gross national product of \$18 trillion per year. See Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, *NATURE*, 15 May 1997, at 253, 253.

<sup>50</sup> DAVID BATKER ET AL., *EARTH ECON., GAINING GROUND: WETLANDS, HURRICANES AND THE ECONOMY: THE VALUE OF RESTORING THE MISSISSIPPI RIVER DELTA* 7 (2010), available at [http://www.earthconomics.org/FileLibrary/file/Reports/Louisiana/Earth\\_Economics\\_Report\\_on\\_the\\_Mississippi\\_River\\_Delta\\_compressed.pdf](http://www.earthconomics.org/FileLibrary/file/Reports/Louisiana/Earth_Economics_Report_on_the_Mississippi_River_Delta_compressed.pdf).

<sup>51</sup> *Id.* at 22 (quoting Daily, *supra* note 49, at 3).

<sup>52</sup> *See id.* at 21.

<sup>53</sup> *Id.*

maintenance of biodiversity; (6) partial stabilization of climate; and (7) fishing, crabbing, and shrimping activities, among many others.<sup>54</sup>

Damages provisions in certain federal statutes have begun to take note of, and try to estimate, the value of lost natural resources and ecosystem services after disasters such as the Deepwater Horizon spill.

### B. *Natural Resources Damages Under the Oil Pollution Act of 1990*

The Oil Pollution Act of 1990 (OPA) “addresses oil pollution and establishes liability for the discharge and substantial threat of a discharge of oil to navigable U.S. waters and shorelines.”<sup>55</sup> The statute aims, among other goals, to restore natural resources and lost services resulting from oil spills.<sup>56</sup> OPA incorporates the natural resources damages provision of the Clean Water Act’s section 311, and the natural resources damages provision of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).<sup>57</sup>

Until recently, holding parties liable for damages to natural resources was inconceivable. That changed with the prescient passage of natural resources provisions in section 311 of the Federal Water Pollution Control Act—now commonly referred to as the Clean Water Act<sup>58</sup>—and in the subsequent enactment of CERCLA.<sup>59</sup> Even following the passage of the latter two statutes, little effort was made to calculate

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<sup>54</sup> See *id.* at 22 tbl.1, 34.

<sup>55</sup> OPA *Guidance About DARRP*, *supra* note 29.

<sup>56</sup> *Id.*

<sup>57</sup> See Clean Water Act § 311, 33 U.S.C. § 1321 (2006) (explaining liability for and assessment of natural resources damages under the Clean Water Act); Oil Pollution Act of 1990 § 1006, 33 U.S.C. § 2706 (2006) (explaining liability for and assessment of natural resources damages under OPA); Comprehensive Environmental Response, Compensation, and Liability Act § 107(a)(4)(C), 42 U.S.C. § 9607(a)(4)(C) (2006) (defining the scope of natural resource liability under CERCLA as “damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a [hazardous] release”); KRISTINA ALEXANDER, CONG. RESEARCH SERV., R41396, THE 2010 OIL SPILL: NATURAL RESOURCE DAMAGE ASSESSMENT UNDER THE OIL POLLUTION ACT 4–5 (2010); see also 42 U.S.C. § 9607(f)(1) (providing for liability for natural resources damages, and stating that where natural resources damages are established pursuant to CERCLA’s § 107(a)(4)(C), liability shall be to the United States, any State, or an Indian Tribe).

<sup>58</sup> See 33 U.S.C. § 1321(f)(4) (“The costs of removal . . . shall include any costs or expenses incurred . . . in the restoration or replacement of natural resources damaged or destroyed as a result of a discharge of oil or a hazardous substance in violation of subsection (b) of this section.”).

<sup>59</sup> See 42 U.S.C. § 9607; Eric Hecox, *Oil Spills, Clean Water Act § 311, and the Oil Pollution Act*, BUREAU OF LAND MGMT., <http://www.blm.gov/nstc/WaterLaws/pdf/Chapter8.pdf> (last visited Apr. 15, 2011).

the value of various natural resources, for example, fish, raptors, or drinking water.<sup>60</sup> All that changed following the grounding of the Exxon Valdez in Prince William Sound, Alaska.<sup>61</sup> In response to the Valdez spill, Congress passed the OPA, and in the process incorporated CERCLA's natural resources damages provisions.<sup>62</sup>

However, a question remained regarding the appropriate method for calculating natural resources damages. The Department of Interior promulgated regulations pursuant to CERCLA that assessed natural resources damages as the *lesser* of either lost use value, calculated as market value, or replacement value.<sup>63</sup> Those regulations were subsequently challenged, and the calculation of damages based only on market value was found to be in violation of CERCLA's clear statutory command.<sup>64</sup>

Nonetheless, there remain a number of different ways to assess the value of natural resources.<sup>65</sup> Five such valuation methodologies are described below.

### C. Methods of Valuing Natural Resources<sup>66</sup>

#### 1. Contingent Valuation Methodology

Contingent Valuation Methodology (CVM) is an empirical technique in which a survey or questionnaire is developed and used to value a given natural resource and its ecological services.<sup>67</sup> The survey or poll is used to sample a segment of the population.<sup>68</sup> Its results are then em-

<sup>60</sup> See James Peck, Comment, *Measuring Justice for Nature: Issues in Evaluating and Litigating Natural Resources Damages*, 14 J. LAND USE & ENVTL. L. 275, 277-78 (1999).

<sup>61</sup> See *id.* at 275, 277-78.

<sup>62</sup> 33 U.S.C. § 2706; see *Natural Resource Damages: A Primer*, ENVTL. PROT. AGENCY, <http://www.epa.gov/superfund/programs/nrd/primer.htm> (last visited Apr. 15, 2011).

<sup>63</sup> See *Ohio v. U.S. Dep't of Interior*, 880 F.2d 432, 438 (D.C. Cir. 1989). This opinion was handed down approximately four months following the Exxon Valdez. See *id.*

<sup>64</sup> See *id.* at 442.

<sup>65</sup> See Peck, *supra* note 60, at 277 (describing various methods of natural resources assessment).

<sup>66</sup> A full discussion of valuation methodologies is beyond the scope of this Article. See generally Peck, *supra* note 60 (an excellent discussion of this topic); Kathryn Chelina MacDonald, Comment, *The Recovery of Restoration Costs: Analytical Synthesis of Common-Law Property Damages, Restitution, and Natural Resource Damages Under CERCLA*, 5 TUL. ENVTL. L.J. 255 (1991).

<sup>67</sup> See Peck, *supra* note 60, at 284 (citing William D. Schulze, *Use of Direct Methods for Valuing Natural Resource Damages*, in VALUING NATURAL ASSETS, THE ECONOMICS OF NATURAL RESOURCE DAMAGE ASSESSMENT 204, 207 (Raymond J. Kopp & V. Kerry Smith eds., 1993)).

<sup>68</sup> *Id.*

ployed to furnish the price that the members of that population are willing to pay to sustain or reestablish that resource.<sup>69</sup> Thus, CVM does not measure value directly.<sup>70</sup> Rather, it is an experiential economic procedure, which is employed to support a perceived measure of damages, based on the costs of restoration.<sup>71</sup> CVM is also utilized in evaluating the soundness of calculating nonuse values.<sup>72</sup> The validity of this technique as a measure of the value of a natural resource was upheld by the District of Columbia Circuit in *Ohio v. United States Department of the Interior*.<sup>73</sup> In *Ohio*, the Court recognized two broad standards for utilizing contingent valuation.<sup>74</sup> They are: (1) restoration of the resource;<sup>75</sup> and (2) payment of damages for “nonuse value.”<sup>76</sup> Accordingly, damages must be assessed by measuring the “restoration costs” of a natural resource rather than by only measuring its “use values.”<sup>77</sup>

## 2. The Market Valuation Approach

The Market Valuation Approach (MVA) to natural resources valuation “provides a relatively certain measure of resource value, as market value is reflected in the price for resources as traded in a definable market.”<sup>78</sup> However, “most government resources, particularly resources for which natural resource damages would be sought[,] may often have no market.”<sup>79</sup> Due to the limited number of definable markets for natural resources, market valuation has limited applicability.

## 3. Restoration and Replacement Cost

The Restoration and Replacement Cost (RRC) approach directly measures the cost of restoring of a damaged natural resource and addresses the injury to a natural resource.<sup>80</sup> “Restoration cost is the only valuation method that accounts for the uniqueness of each particular

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<sup>69</sup> *Id.*

<sup>70</sup> *See id.* at 284–85 (discussing criticisms of CVM).

<sup>71</sup> *See id.*

<sup>72</sup> *See Ohio v. U.S. Dep’t of Interior*, 880 F.2d 432, 474–75 (D.C. Cir. 1989).

<sup>73</sup> *Id.* at 478.

<sup>74</sup> *See id.* at 474–78.

<sup>75</sup> *See id.* at 478.

<sup>76</sup> *See id.* at 474–76.

<sup>77</sup> *See id.* at 474–78.

<sup>78</sup> Peck, *supra* note 60, at 282.

<sup>79</sup> *Ohio v. Dep’t of Interior*, 880 F.2d at 463 (quoting the Department of Interior’s CERCLA 301 Project Team).

<sup>80</sup> Peck, *supra* note 60, at 283–84.

resource and the finite supply of natural resources . . . .”<sup>81</sup> Indeed, the costs of restoration encompass the entire value of a given resource and are therefore an “intrinsic” measure of the extent of the damage to the resource.<sup>82</sup> Nevertheless, restoration costs do “*not directly measure the value of the damaged resource* and can result in costs greatly exceeding the value of the damaged natural resources as measured by other methods.”<sup>83</sup>

#### 4. Use Value Methodology

Use Value Methodology (UVM) estimates the lost value of using a given resource after damage or destruction.<sup>84</sup> In *Ohio*, the court posed the following hypothetical example to illustrate this measure.<sup>85</sup> Imagine, the court asked,

a hazardous substance spill that kills a rookery of fur seals and destroys a habitat for seabirds at a sealife reserve. The lost use value of the seals and seabird habitat would be measured by the market value of the fur seals’ pelts (which would be approximately \$15 each) plus the selling price per acre of land comparable in value to that on which the spoiled bird habitat was located.<sup>86</sup>

Nevertheless, the court held that,

[w]hile *it is not irrational* to look to market price as *one* factor in determining the use value of a resource, it is unreasonable to view market price as the *exclusive* factor, or even the predominant one. From the bald eagle to the blue whale and snail darter, natural resources have values that are not fully captured by the market system.<sup>87</sup>

Some of the non-market values include the enjoyment of sitting along the shoreline, in a boat in a marsh, or a boat in the Gulf, and looking at a blue whale, a seal, or a seabird and their habitats.

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<sup>81</sup> *Id.* at 283.

<sup>82</sup> *Id.*

<sup>83</sup> *Id.* (emphasis added).

<sup>84</sup> *Ohio v. Dep’t of Interior*, 880 F.2d at 438.

<sup>85</sup> *See id.* at 442.

<sup>86</sup> *Id.* (citation omitted).

<sup>87</sup> *Id.* at 462–63 (first emphasis added).

## 5. Habitat Equivalency Analysis

Habitat Equivalency Analysis (HEA) is a methodology used to determine compensation for resource injuries.<sup>88</sup> “The principal concept underlying the method is that the public can be compensated for past losses of habitat resources through habitat replacement projects providing additional resources of the same type.”<sup>89</sup> Trustees have previously used HEA for oil spills, including the 1997 Lake Barre, Louisiana pipeline spill.<sup>90</sup> “Habitats involved in these analyses include seagrasses, coral reefs, tidal wetlands, salmon streams, and estuarine soft-bottom sediments.”<sup>91</sup> “Man is inextricably linked to the ecosystem and can, therefore, be considered one of the benefactors of the services provided; however, human uses are not the focus of HEA.”<sup>92</sup>

## 6. Difficulties in Calculating Natural Resources Damages

The take-away from the foregoing methodologies is that even the generous restoration cost method does not, and cannot, measure the exact value of the impaired resource.<sup>93</sup> Moreover, restoration costs can result in costs which some have posited “greatly . . . exceed[] the value of the damaged natural resources as measured by other methods. It is generally accepted that a measure of damages that is disproportionate to value is contrary to the policy of promoting economic efficiency.”<sup>94</sup> Additionally, calculating restoration costs can raise a host of technical issues.<sup>95</sup> For example, where does one set the baseline condition? What restoration techniques are suitable? What level of restoration will be deemed sufficient?<sup>96</sup> Finally, there may be some situations where habi-

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<sup>88</sup> LA. OIL SPILL COORDINATORS OFFICE ET AL., DAMAGE ASSESSMENT AND RESTORATION PLAN: TEXACO PIPELINE INC. CRUDE OIL DISCHARGE 36 (1999) [hereinafter DAMAGE ASSESSMENT REPORT], available at <http://www.gc.noaa.gov/gc-rp/lakebarredarpfinal.pdf>.

<sup>89</sup> NAT'L OCEANIC & ATMOSPHERIC ADMIN., HABITAT EQUIVALENCY ANALYSIS: AN OVERVIEW 1 (2006) [hereinafter HABITAT EQUIVALENCY ANALYSIS], available at <http://www.darrp.noaa.gov/library/pdf/heaoverv.pdf>.

<sup>90</sup> See DAMAGE ASSESSMENT REPORT, *supra* note 88, at 5, 36 (“This Damage Assessment and Restoration Plan (DARP) has been prepared by state and federal natural resource Trustees to address the restoration of natural resources and resource services injured by the Texaco Pipeline Company Lake Barre oil spill on May 16, 1997 . . .”).

<sup>91</sup> HABITAT EQUIVALENCY ANALYSIS, *supra* note 89, at 1.

<sup>92</sup> *Restoration Economics: Habitat Equivalency Analysis*, NAT'L OCEANIC & ATMOSPHERIC ADMIN., <http://www.csc.noaa.gov/coastal/economics/habitatequ.htm> (last visited Apr. 15, 2011).

<sup>93</sup> Peck, *supra* note 60, at 283.

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> *Id.*

tats have suffered so much damage that restoring “various ecosystem functions may not be possible.”<sup>97</sup>

### III. THE FEDERAL NATURAL RESOURCES TRUSTEES’ CURRENT METHODOLOGY FOR VALUING NATURAL RESOURCES DAMAGES

In both CERCLA and OPA, Congress authorized the President to designate natural resources trustees (“Trustees”)<sup>98</sup> to act on the public’s behalf.<sup>99</sup> In turn, the President designated the Secretary of the Department of Commerce to

act as trustee for natural resources managed or controlled by DOC [the Department of Commerce] and for natural resources managed or controlled by other federal agencies and that are found in, under, or using waters navigable by deep draft vessels, tidally influenced waters, or waters of the contiguous zone, the exclusive economic zone, and the outer continental shelf.<sup>100</sup>

The Secretary then delegated the trusteeship to the Department’s National Oceanic and Atmospheric Administration (NOAA).<sup>101</sup>

“As the primary Federal natural resource trustee for coastal resources, NOAA has responsibility for ensuring the restoration of coastal resources injured by releases of hazardous materials and of national

<sup>97</sup> *Id.*

<sup>98</sup> The President’s power to act derives from the public trust doctrine, pursuant to *parens patriae* power. See Deborah G. Musiker et al., *The Public Trust and Parens Patriae Doctrines: Protecting Wildlife in Uncertain Political Times*, 16 PUB. LAND & RESOURCES L. REV. 87, 89 (1995). The public trust doctrine refers to the sovereign’s duty—whether federal or state—to maintain and preserve natural resources for the public’s benefit, and thus the doctrine specifies that natural resources belong to the public as a whole. See, e.g., Darren K. Cottriel, *The Right to Hunt in the Twenty-First Century: Can the Public Trust Doctrine Save an American Tradition?*, 27 PAC. L.J. 1235, 1261 (1996). Alternatively, the term *parens patriae* signifies the government’s role as the guardian of its citizens’ natural resources, such as rivers, bayous, and wildlife. See Musiker, *supra* at 101–02. See generally *Maine v. M/V Tamano*, 357 F. Supp. 1097 (D. Me. 1973) (injury caused to coastal waters and marine life by an oil spill can be the basis for damages in *parens patriae* suit).

<sup>99</sup> OPA, 33 U.S.C. § 2706(b)(2) (2006) (“The President shall designate the Federal officials who shall act on behalf of the public as trustees for natural resources . . . .”); CERCLA, 42 U.S.C. § 9607(f)(2)(A) (2006) (“The President shall designate . . . the Federal officials who shall act on behalf of the public as trustees for natural resources . . . .”).

<sup>100</sup> 40 C.F.R. § 300.600(b)(1) (2010).

<sup>101</sup> *Trust Resources*, U.S. ENVTL. PROT. AGENCY, [http://www.epa.gov/superfund/programs/nrd/trust\\_r.htm#doc](http://www.epa.gov/superfund/programs/nrd/trust_r.htm#doc) (last updated Mar. 25, 2011) (“The DOC Secretary delegated Trustee responsibility to the Administrator of the National Oceanic and Atmospheric Administration.”).



marine sanctuary resources injured by physical impacts.”<sup>102</sup> NOAA has rejected the use of CVM, preferring two other appraisal approaches: “resource-to-resource or service-to-service” and “valuation.”<sup>103</sup> When employing the “resource-to-resource or service-to-service” methodology, the Trustees establish the design of the restoration project in order to provide new services that are comparable to those that were destroyed due to resource damage.<sup>104</sup> Thus, the new resources or services simply replace those that were lost.<sup>105</sup> Accordingly, assume the following scenario: an oil spill damages five acres of wetlands. The restorative remedy will encompass the responsible party’s payment for, or in the alternative, the creation of, an equivalent five-acre wetland parcel. However, in order for this approach to be applicable, the new services must be “of the same type and quality” as the services that were lost.<sup>106</sup>

When replacement services are not analogous to lost services, Trustees are required to use a “valuation methodology” for scaling restorative plans.<sup>107</sup> Here the Trustees have two choices: a “value-to-value” procedure, or a “value-to-cost” method.<sup>108</sup> NOAA’s “preferred version of the valuation approach . . . [is the] ‘value-to-value,’ [because it] scales a project by adjusting the size of a restoration action to ensure that the present discounted value of project gains equals the present discounted value of the interim losses.”<sup>109</sup> This methodology assesses the value of both ecological services lost and services supplied under the restoration plan when calculating total value.<sup>110</sup> “Trustees achieve the correct scale when the value of services lost equals the value of new services provided under the restoration plan.”<sup>111</sup>

In the BP Horizon case, NOAA, the Department of Interior, and the State of Louisiana will therefore have to ask how much a Louisiana

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<sup>102</sup> See *About Relevant Laws: NOAA’s Legal Authorities for Restoring Coastal Resources*, NAT’L OCEANIC & ATMOSPHERIC ADMIN., <http://www.darrp.noaa.gov/about/laws.html> (last updated July 19, 2010).

<sup>103</sup> See 15 C.F.R. § 990.53(d)(2)–(3) (2011).

<sup>104</sup> See *id.*

<sup>105</sup> See *id.*

<sup>106</sup> See *id.*

<sup>107</sup> See NAT’L OCEANIC & ATMOSPHERIC ADMIN., SCALING COMPENSATORY RESTORATION ACTIONS: GUIDANCE DOCUMENT FOR NATURAL RESOURCE DAMAGE ASSESSMENT UNDER THE OIL POLLUTION ACT OF 1990, at xii (1997) [hereinafter NOAA GUIDANCE DOCUMENT], available at <http://www.darrp.noaa.gov/library/pdf/scaling.pdf>.

<sup>108</sup> *Id.*

<sup>109</sup> *Id.*

<sup>110</sup> Dale B. Thompson, *Valuing the Environment: Courts’ Struggles with Natural Resource Damages*, 32 ENVTL. L. 57, 67 (2002).

<sup>111</sup> See *id.*

Brown pelican is worth. Or, what is the value of an acre of wetlands? Or for that matter a turtle? However, these types of “value” assessments are wrong because they look at the “damage” in isolation from the ecosystem.<sup>112</sup> Indeed, when an ecosystem is damaged or destroyed as is the case in the Gulf Coast, especially in the south Louisiana portion of the Gulf, the entire system must be assessed.<sup>113</sup> Otherwise, the piecemeal technique of valuing each natural resource is akin to a medical doctor discovering that a patient has cancer, and focusing on only on an initial tumor—that is, missing the forest for the trees.

#### IV. THE NATURAL RESOURCE DAMAGE ASSESSMENT PROCESS

Under OPA’s Natural Resource Damage Assessment (NRDA) process, the Trustees have the authority to identify potential restoration projects and solicit public comment on such projects before finalizing the restoration plan.<sup>114</sup> The NRDA “is the process of quantifying monetary damages for injuries to wildlife, habitat, and the services they provide, in the event of an oil spill or other pollution event.”<sup>115</sup> Since the Valdez oil spill and OPA’s passage, NRDA has ripened into a distinct and well-developed field, with its own legal precedents, economic literature, and case histories.<sup>116</sup> These are discussed below.

The trustees must follow specific mechanics to carry out their NRDA responsibilities. They must: (1) assess the damages to natural resources; (2) develop and implement a plan to restore, rehabilitate, or replace damaged natural resources; and (3) request the Attorney General of the United States to commence civil or criminal litigation against the responsible parties.<sup>117</sup>

According to the Trustees, the full extent of potential injuries from the Gulf disaster is currently unknown, and may not be known for some

<sup>112</sup> James L. Nicoll, *The Irrationality of Economic Rationality in the Restoration of Natural Resources*, 42 ARIZ. L. REV. 463, 470–71 (2000).

<sup>113</sup> See generally Steve Hampton & Matthew Zafonte, *Calculating Compensatory Restoration in Natural Resource Damage Assessments: Recent Experience in California* (2002) (unpublished manuscript prepared for the Proceedings of 2002 California World Oceans Conference, Santa Barbara, CA), available at [nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=22112](http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=22112).

<sup>114</sup> See, e.g., *Gen. Electric Co. v. U.S. Dep’t of Commerce*, 128 F.3d 767, 770–71 (D.C. Cir. 1997).

<sup>115</sup> See Hampton & Zafonte, *supra* note 113, at 1.

<sup>116</sup> See generally *Gen. Electric Co.*, 128 F.3d 767 (discussing the legal steps of the NRDA); Charles B. Anderson, *Damage to Natural Resources and the Costs of Restoration*, 72 TUL. L. REV. 417 (1997) (detailing the legal process for creating the NRDA); Nicoll, *supra* note 112 (arguing that restoration should not take into account economic values).

<sup>117</sup> 40 C.F.R. § 300.615 (2010).

time.<sup>118</sup> However, pursuant to the “Notice of Intent to Conduct Restoration Planning,” as of August 19, 2010, the Trustees had documented oil on more than 950 miles of shoreline, including “salt marshes, sandy beaches, and mangroves.”<sup>119</sup> Furthermore, as of June 29, 2010, the Trustees identified over 1900 live oiled birds and 400 live oiled sea turtles.<sup>120</sup> They had also collected more than 1850 visibly oiled dead birds, seventeen visibly oiled dead sea turtles, and five visibly oiled dead marine mammals.<sup>121</sup>

As could be expected, in the first few months following the spill, these numbers increased.<sup>122</sup> Therefore, in contrast, on August 13, 2010, it was reported that there were 4768 dead animals, “4,080 of these were birds and 525 sea turtles.”<sup>123</sup> Over 8332 species lived within the vicinity of the oil spill, including “the endangered Kemp’s Ridley turtle, as well as more than 1,200 fish, 200 birds, 1,400 molluscs, 1,500 crustaceans, and 29 marine mammals and three other sea turtle specimens.”<sup>124</sup> Dishearteningly, in October 2010, federal on-scene Coordinator Admiral Paul Zukunft observed: “We did have you know certainly a loss of wildlife, but in comparison we had about 2300 dead oil birds and *Exxon Valdez*, that number was nearly 225,000.”<sup>125</sup> These numbers represent only a portion of the wildlife that have been impacted by the spill, and the restoration planning process will further refine the total impact of this spill on the habitats and animals in the Gulf.<sup>126</sup>

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<sup>118</sup> Discharge of Oil From Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent To Conduct Restoration Planning, 75 Fed. Reg. 60,800, 60,801–02 (Oct. 1, 2010).

<sup>119</sup> *Id.* at 60,802.

<sup>120</sup> *Id.*

<sup>121</sup> *Id.*

<sup>122</sup> Paul Rioux, *Oil Spill Plugged, but More Oiled Birds than Ever are Being Found*, TIMES-PICAYUNE (Aug. 8, 2010, 10:00 AM), [http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/08/oil\\_spill\\_plugged\\_but\\_more\\_oil.html](http://www.nola.com/news/gulf-oil-spill/index.ssf/2010/08/oil_spill_plugged_but_more_oil.html).

<sup>123</sup> Jarvis, *supra* note 4.

<sup>124</sup> *Id.*

<sup>125</sup> Melanie Driscoll, *How Many Birds Died in the BP Oil Spill?*, AUDUBON MAG. BLOG (Oct. 28, 2010), <http://magblog.audubon.org/how-many-birds-died-bp-oil-spill>.

<sup>126</sup> See Discharge of Oil From Deepwater Horizon/Macondo Well, Gulf of Mexico; Intent To Conduct Restoration Planning, 75 Fed. Reg. at 60,802. (“The full nature and extent of injuries will be determined during the injury assessment phase of restoration planning.”).

A. *Wrong Again! The Downside of the Natural Resources Restoration Process*

*Initially, environmentalism was built on a simple but radical principle: let nature be. The hope was that science could point the way to measures that would let nature co-exist with human exploitation.*<sup>127</sup>

The process that the national Trustees currently employ to assess natural resources damages barks up the wrong tree. What is more, the system is beset with biological faults. First and foremost, it simply ignores the reality of ecosystems as “dynamic, interacting complexes of living organisms and their nonliving environment within a defined area.”<sup>128</sup> Rather its focus is on individual natural resources like fish, air, and water.<sup>129</sup> This is particularly true of the UVM, RRC, and MVA methodologies.<sup>130</sup>

Similarly, the resource-to-resource methodology strikes one as a puerile and impractical way to measure the value of a natural resource. For example, in the restoration following a 1997 pipeline spill in Lake Barre, also in south Louisiana, where marsh grasses were destroyed, the Trustees’ remedy was to plant marsh grass on East Timbalier Island some fifteen miles to the southeast.<sup>131</sup> Lake Barre is located in Terrebonne Parish, while East Timbalier Island is located in LaFourche Parish. “Several [local] commenters objected to the project based on its location in Lafourche Parish. They wanted a project to be done in Terrebonne Parish. . . . [and] more local participation in the process, and suggested that the Trustees should have specifically requested restoration ideas from the parish.”<sup>132</sup> However, this option was rejected as unworkable.<sup>133</sup>

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<sup>127</sup> Holly Doremus & A. Dan Tarlock, *Science, Judgment, and Controversy in Natural Resource Regulation*, 26 PUB. LAND & RESOURCES L. REV. 1, 1 (2005).

<sup>128</sup> THE H. JOHN HEINZ III CTR. FOR SCI., ECON. AND THE ENV’T, THE STATE OF THE NATION’S ECOSYSTEMS 2008: MEASURING THE LANDS, WATERS, AND LIVING RESOURCES OF THE UNITED STATES 3 fig.2 (2008), available at [http://www.heinzctr.org/ecosystems/2008report/pdf\\_files/Highlights\\_Final\\_low\\_res.pdf](http://www.heinzctr.org/ecosystems/2008report/pdf_files/Highlights_Final_low_res.pdf).

<sup>129</sup> See, e.g., 33 U.S.C. § 2701(20) (2006).

<sup>130</sup> See *supra* Part II.C.

<sup>131</sup> DAMAGE ASSESSMENT REPORT, *supra* note 88, at 5, 52 (“Based on the ranking, the Trustees determined that marsh enhancement (planting) on East Timbalier Island was the preferred marsh restoration alternative to compensate for injuries from the Lake Barre incident . . .”).

<sup>132</sup> *Id.* at 14 (“[T]he Trustees considered the proximity of restoration alternatives to the location of the spill. The preferred project was considered to be within a reasonable distance (< 18 miles) from the site of the spill, and was located within the same watershed.”).

<sup>133</sup> See *id.*

What benefits accrue to the local ecology and the people who use that ecosystem by planting marsh grass some fifteen miles away, in another county? Is this type of remedy a common sense one as a substitute for the marsh grass destroyed? Why would the Trustees not make every effort to include “local participation in the effort”?<sup>134</sup> Additionally, the Trustees did not, and in fact could not, argue that the Lake Barre restoration project could not have restored an area adjacent to the despoiled marsh grass because it could not be brought back to life for a decade. Why? Because, in their Restoration Plan, they in fact assert that the marsh grass in the spill area was growing back naturally.<sup>135</sup>

B. *Valuation and Scaling: When You Want to Reject Everything Else,  
Fall Back on Economics*

A similar argument can be made against the valuation approach. The choice of a restoration project employs an economic formula called cost-benefit analysis (CBA).<sup>136</sup> While the definition of the term “cost-benefit analysis” varies,<sup>137</sup> *Black’s Law Dictionary* defines it as “[a]n analytical technique that weighs the costs of a proposed decision, holding, or project against the expected advantages, economic or otherwise.”<sup>138</sup> A cost-benefit analysis requires one to assign a monetary value to the benefits and costs being weighed.<sup>139</sup> Often, “future costs and benefits are *discounted*, or treated as equivalent to smaller amounts of money in today’s dollars.”<sup>140</sup>

The history and current use of CBA in environmental decision-making, including “whether regulators should use cost-benefit analysis

<sup>134</sup> See *id.*

<sup>135</sup> See *id.* at 6 (“Approximately 4,327 acres of marsh were exposed to oil resulting from the incident. Most of the exposed marsh was determined to be fully functioning or recovering to full functioning within four months after the release. Marsh function in approximately 162 acres was affected for a longer period but was expected to be fully recovered two years following the incident, except for a total of 0.28 acres that lost virtually all above-ground biomass.”).

<sup>136</sup> Nicoll, *supra* note 112, at 479.

<sup>137</sup> Richard A. Posner, *Cost-Benefit Analysis: Definition, Justification, and Comment on Conference Papers*, in *COST-BENEFIT ANALYSIS: LEGAL, ECONOMIC, AND PHILOSOPHICAL PERSPECTIVES* 317, 317 (Matthew D. Adler & Eric A. Posner eds., 2001).

<sup>138</sup> *BLACK’S LAW DICTIONARY* 399 (9th ed. 2009).

<sup>139</sup> See Frank Ackerman & Lisa Heinzerling, *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection*, 150 U. PA. L. REV. 1553, 1557–58 (2002).

<sup>140</sup> *Id.* at 1559.

in evaluating their decisions” has been quite “contentious.”<sup>141</sup> This is because CBA

requires that the costs and benefits of a proposed course of action (including benefits such as saving human lives and protecting human health) be quantified and then translated into dollar terms. Cost-benefit analysis of proposed regulations is said to be necessary in order to avoid adopting inefficient rules that would impose ruinous economic costs.<sup>142</sup>

The basis for the use of economic techniques such as CBA, and the field of law and economics generally, is rooted in the University of Chicago Law School of the 1960s.<sup>143</sup> It began with Ronald Coase<sup>144</sup> who was followed by others at Chicago, including now Judge Richard Posner<sup>145</sup> and Cass Sunstein.<sup>146</sup> Each in his own way pushed CBA into both the legal and public marketplace of ideas. However, the crossover from academic theory to use in government made its way into the regulatory framework only after President Ronald Reagan’s director of the Office of Management and Budget (OMB), David Stockman,<sup>147</sup> pushed CBA as part of President Reagan’s regulatory revolution.<sup>148</sup>

Soon after entering office in 1981, President Reagan issued Executive Order 12,291, which set in motion the cost-benefit analysis of environmental regulations.<sup>149</sup> For example, section 2 of the order provides:

[ ] Regulatory action shall not be undertaken unless the potential benefits to society for the regulation outweigh the potential costs to society; [ ] Regulatory objectives shall be cho-

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<sup>141</sup> See Frank Ackerman et al., *Applying Cost-Benefit to Past Decisions: Was Environmental Protection Ever a Good Idea?*, 57 ADMIN. L. REV. 155, 155 (2005).

<sup>142</sup> *Id.*

<sup>143</sup> *The John M. Olin Program in Law and Economics*, U. CHI. L. SCH., <http://www.law.uchicago.edu/Lawecon> (last visited Apr. 15, 2011).

<sup>144</sup> *Ronald H. Coase*, U. CHI. L. SCH., <http://www.law.uchicago.edu/faculty/coase> (last visited Apr. 15, 2011); see, e.g., R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

<sup>145</sup> *Richard A. Posner*, U. CHI. L. SCH., <http://www.law.uchicago.edu/faculty/posner-r> (last visited Apr. 15, 2011); see, e.g., Posner, *supra* note 137, at 317.

<sup>146</sup> *Cass R. Sunstein*, U. CHI. L. SCH., <http://www.law.uchicago.edu/faculty/sunstein/> (last visited Apr. 15, 2011); see, e.g., Cass R. Sunstein, *Cost-Benefit Analysis and the Separation of Powers*, 23 ARIZ. L. REV. 1267 (1981).

<sup>147</sup> *Former Directors of OMB and BOB*, OFF. MGMT. & BUDGET, [http://www.whitehouse.gov/omb/organization\\_former\\_directors/](http://www.whitehouse.gov/omb/organization_former_directors/) (last visited Apr. 15, 2011).

<sup>148</sup> See Robert W. Hahn & Cass R. Sunstein, *A New Executive Order for Improving Federal Regulation? Deeper and Wider Cost-Benefit Analysis*, 150 U. Pa. L. Rev. 1489, 1505–06 (2002).

<sup>149</sup> See Exec. Order No. 12,291, 3 C.F.R. 127 (1982), *reprinted as amended in* 5 U.S.C. § 601 app. at 431 (1982).

sen to maximize the net benefits to society; [and] Among alternative approaches to any given regulatory objective, the alternative involving *the least net cost to society shall be chosen*.<sup>150</sup>

These vacuous standards—after all, what standard should one use to decide “the alternative involving *the least net cost to society*”—were then imposed as part of President Reagan’s attempt to dismantle the environmental regulatory scheme that Congress had labored to establish for the previous eleven years.<sup>151</sup> As Rena Steinzor has observed, cost-benefit analysis has failed.<sup>152</sup>

### V. COST-BENEFIT ANALYSIS HAS FAILED

Cost-benefit analysis has been the primary means of “assess[ing] the costs and benefits of regulation” for the past twenty years.<sup>153</sup>

But its use has come under sharp criticism from those who point out that it has been used as a tool to stymie health, safety and environmental regulation. That was never truer than during the [George W.] Bush years, but in fact cost-benefit was a significant barrier to progress even during the more regulation-friendly Clinton Administration.

The idea of quantifying costs and benefits, and then weighing them against each other sounds logical in theory, but it works terribly in the realm of regulating health and environmental protections.<sup>154</sup>

Indeed, a recent study found that the use of CBA would have resulted in the wrong outcome in three environmental regulatory decisions: “the removal of lead from gasoline in the 1970s and 1980s, the decision *not* to dam the Grand Canyon for hydroelectric power in the 1960s, and the strict regulation of workplace exposure to vinyl chloride in 1974.”<sup>155</sup> Thus, from an environmental policy-making perspective, the purpose of an agency’s data gathering and application of the scientific method is to “support regulatory and management decisions . . . [which] must

<sup>150</sup> *Id.* (emphasis added).

<sup>151</sup> *Id.* (emphasis added); see Philip Shabecoff, *Reagan Order on Cost-Benefit Analysis Stirrs Economic and Political Debate*, N.Y. TIMES, Nov. 7, 1981, at 28.

<sup>152</sup> Memorandum from Rena Steinzor, President, Ctr. for Progressive Reform, to Editorial Page Editors and Writers, at 1 (May 7, 2009), available at [http://www.progressivereform.org/articles/Sunstein\\_CBA\\_EdMemo\\_050709.pdf](http://www.progressivereform.org/articles/Sunstein_CBA_EdMemo_050709.pdf).

<sup>153</sup> See Hahn & Sunstein, *supra* note 148, at 1489–90.

<sup>154</sup> Memorandum from Rena Steinzor, *supra* note 152, at 1.

<sup>155</sup> Ackerman et al., *supra* note 141, at 156.

be insulated to the extent feasible against the vagaries of the political world.”<sup>156</sup> The CBA process—rooted in economics—is a political tool, not a scientific one.<sup>157</sup>

CBA is a methodology that looks solely at costs and benefits.<sup>158</sup> But for whose cost and for whose benefit? Will it be used for the benefit of the wildlife that will need to remake its home in south Louisiana? Will it be for the destroyed marshes or for the Cajun and native tribes of south Louisiana? Alternatively, will the benefit be for that nebulous mass referred to by politicians as the “American People”?

If the cost has to be borne by the people of Portland, Oregon or Portland, Maine, will they be willing to pick up the costs for the benefit of people who live thousands of miles away from them? Will they be ready to pony up the funds necessary to restore one of the great treasures of the lower forty-eight? And what if they are not? Will the federal government still be willing to step up and do what is right for south Louisiana, despite the political ramifications? Remember to keep your eye on that enterprise, as the future rolls around. What is more, if these are the questions that are still being asked, America has made little progress since the last large-scale well blowout in the lower forty-eight occurred: the 1969 Union Oil Santa Barbara Channel spill, which, in part, heralded the beginning of the environmental age.<sup>159</sup>

#### A. *Habitat Equivalency Analysis: Ecological Isolationism*

No less flawed is the HEA technique, whereby the Trustees seek to resuscitate habitats—defined as “the specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features . . . essential to the conservation of the species.”<sup>160</sup> In HEA, the Trustees analyze habitats in isolation from the entire ecological framework.<sup>161</sup> Moreover, one perspective of the NRDA process is via the “services provided” to people and not to the species, ecology, or the environment.<sup>162</sup> In other words, the process is anthro-

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<sup>156</sup> See Holly Doremus, *Using Science in a Political World: The Importance of Transparency in Natural Resource Regulation*, in *RESCUING SCIENCE FROM POLITICS: REGULATION AND THE DISTORTION OF SCIENTIFIC RESEARCH* 143 (Wendy Wagner & Rena Steinzor eds., 2006).

<sup>157</sup> See FRANK ACKERMAN & LISA HEINZERLING, *PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING* 9 (2004).

<sup>158</sup> See Ackerman et al., *supra* note 141, at 155.

<sup>159</sup> See Elizabeth Kolbert, *Oil Shocks*, *NEW YORKER*, May 31, 2010, [http://www.newyorker.com/talk/comment/2010/05/31/100531taco\\_talk\\_kolbert](http://www.newyorker.com/talk/comment/2010/05/31/100531taco_talk_kolbert).

<sup>160</sup> See Endangered Species Act of 1973, 16 U.S.C. § 1532(5) (A) (2006).

<sup>161</sup> See *supra* Part II.C.5.

<sup>162</sup> See NOAA GUIDANCE DOCUMENT, *supra* note 107, at xii.



pomorphic.<sup>163</sup> The HEA procedure therefore veers away from the ethos that the natural resources are valuable or even “holy” in and of themselves.<sup>164</sup>

This assessment or perception by the Trustees wholly ignores the value of species that the drafters of the Endangered Species Act understood at the time of its passage in 1973.<sup>165</sup> Thus, HEA not only ignores the realities of ecosystems, but it looks backwards to an archaic age where nature and “natural resources” existed solely to serve man. This outdated view is obvious from the first definition of “natural resources” in *Black’s Law Dictionary*: “Any material in its native state which when extracted has economic value . . . .”<sup>166</sup>

#### B. Congressional Intent: “Natural Resources” Indicative of the Whole Ecosystem

Finally, using a statutory interpretation analysis, the methodologies employed by the Trustees appear to be *ultra vires*, because CERCLA’s legislative history refers solely to “*natural resources*,” referring to the ecosystem as a whole, not “*natural resource*,” referring to each individual component of the ecosystem.<sup>167</sup> For example, in the House of Representatives, Representative Jones asserted the following in unequivocal terms: “[t]he purpose of the regime, rather, is to make whole the *natural resources* that suffer injury from releases of hazardous substances.”<sup>168</sup>

Similarly, on the Senate side, Senator Mitchell, who shepherded the natural resources section of CERCLA through the Senate, emphasized that “we do not want damage to *natural resources* to await the workings of that [common-law tort litigation] process.”<sup>169</sup> Likewise, Senator Williams declared “[t]he legislation will provide for the restoration of *natural resources* which have been damaged.”<sup>170</sup> and Senator Chaffee said “[t]he provision . . . for restoration of damaged *natural resources* remains in the legislation we are considering today.”<sup>171</sup> Thus, I posit that the reference

<sup>163</sup> See *id.*

<sup>164</sup> See Steven S. Kimball, *Forest Fire Damages in Transition*, FED. LAW., Aug. 2009, at 38, 43 (“HEA is a mathematical model . . . [t]he analysis is complex and formula-driven in application.”).

<sup>165</sup> See 16 U.S.C. §1531(b) (2006).

<sup>166</sup> BLACK’S LAW DICTIONARY 1027 (6th ed. 1990).

<sup>167</sup> See 132 CONG. REC. H9612–13 (daily ed. Oct. 8, 1986) (statement of Rep. Jones). OPA adopted the same approach as CERCLA towards natural resources damages. See *supra* Part II.B.

<sup>168</sup> 132 CONG. REC. H9612–13 (emphasis added).

<sup>169</sup> 126 CONG. REC. 30,941–42 (1980) (emphasis added).

<sup>170</sup> *Id.* at 30,970 (emphasis added).

<sup>171</sup> *Id.* at 30,971–72 (emphasis added).

to “*natural resources*” is to the *sum of those resources or the entire ecosystem*. Otherwise, why would these legislators have referred to natural resource in the plural? Had they meant to refer to individual resources, I believe that they would have indicated “each natural resource.”

### CONCLUSION

*Agencies may be subject to focused political pressures that drive their preferences in directions that reflect special interests rather than the public interest. Even if agency personnel are firmly dedicated to pursuing the public interest, intense and focused political pressures may cause them to misinterpret that interest. The result is a high potential that regulatory decisions will reflect the goals and political sensitivities of bureaucrats and legislators rather than those of the electorate.*<sup>172</sup>

The BP Horizon oil spill is just the latest environmental and ecological assault visited upon south Louisiana that resulted from America’s insatiable thirst for oil. Of course, the adherents of cost-benefit analysis may argue that the benefits of drilling for oil at “home” far outweigh the benefits that some coastline, marshes, and a few thousand birds, mammals, turtles, and other fauna may offer to the people and tourists of south Louisiana.<sup>173</sup> They may also argue, according to their own version of prophecy, that in the long run, things will get back to normal. Nevertheless, as experiences from other locales like Prince William Sound in Alaska demonstrate, it takes nature a long, long time to heal itself.<sup>174</sup>

One example of this train of thought was pronounced by Representative Don Young of Alaska, who is currently the senior Republican on the House Natural Resources Committee.<sup>175</sup> When referring to the BP Deepwater Horizon spill in early June 2010, Congressman Young asserted:

This is not an environmental disaster, and I will say that again and again because it is a natural phenomena [sic]. Oil has

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<sup>172</sup> Doremus, *supra* note 156, at 145.

<sup>173</sup> See G. Kevin Jones, *Understanding the Debate over Congressionally Imposed Moratoria on Outer Continental Shelf Oil and Gas Leasing*, 9 TEMP. ENVTL. L. & TECH. J. 117, 152 (1990) (“The contribution of OCS [outer continental shelf] exploration and production activities to total oil spilled in United States waters has been insignificant and grossly exaggerated.”).

<sup>174</sup> See OTT, *supra* note 5, at 378 (“15+ Years, Recovering . . . Reasons for the delayed recovery include persistent oil effects from oiled habitat and oiled food . . .”).

<sup>175</sup> *Biography—Congressman Don Young*, HOUSE OF REPRESENTATIVES, <http://donyoung.house.gov/Biography/> (last visited Apr. 15, 2011).

seeped into this ocean for centuries, will continue to do it. During World War II there was over 10 million barrels of oil spilt [sic] from ships, and no natural catastrophe. . . . We will lose some birds, we will lose some fixed sealife, but overall it will recover.<sup>176</sup>

Mr. Young was assailed for these views.<sup>177</sup> But why should he care? He won his seat for a twentieth term in the November 2010 midterm election.<sup>178</sup> Moreover, “[i]n the aftermath of Hurricane Katrina, when Sen. John McCain proposed that Young redirect his prized pork money to help rebuild New Orleans, Young accused his detractors of ‘ignorance and stupidity.’”<sup>179</sup> He said the victims of Katrina “can kiss my ear!”<sup>180</sup>

The long and arduous task, then, is for each of us to pick a small part in reviving the south Louisiana coast and other areas despoiled by humankind. Changing the minds of the “Don Youngs” in the country, or working to have others elected in their place, is one manageable part of this task. If we all work together, we will be able to conquer the greatest of apathies and ignorance. We can return the beauty of south Louisiana that our generation and previous generations have toiled to destroy, while allowing the people of the region to fashion a natural resources remedy that will be a hallmark of things to come. And, whether we believe in God or not, we can—each of us—declare at the end of the day that we worked to fulfill the Jewish concept of *tikkun olam*: “repair [of] the earth.”<sup>181</sup>

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<sup>176</sup> *Don Young: Gulf Spill ‘Not an Environmental Disaster’*, ANCHORAGE DAILY NEWS (June 2, 2010, 9:01 AM), <http://www.adn.com/2010/06/02/1304209/don-young-gulf-oil-spill-not-an.html> (emphasis omitted) (internal quotation marks omitted).

<sup>177</sup> See, e.g., *id.*

<sup>178</sup> Mark Thiessen, *Young’s 20th Win for House Overshadowed by Senate Race*, ANCHORAGE DAILY NEWS (Nov. 3, 2010, 5:27 PM), <http://www.adn.com/2010/11/02/1531664/crawford-young-vic-for-house-seat.html>.

<sup>179</sup> Tim Dickinson, *The Ten Worst Congressmen*, ROLLING STONE POLITICS DAILY BLOG (Oct. 19, 2006, 3:25 PM), <http://www.rollingstone.com/politics/blogs/national-affairs/the-ten-worst-congressmen-20061019> (follow hyperlink under “Don Young”); see also Lisa Demer, *Young Headed to Victory*, ANCHORAGE DAILY NEWS (Nov. 5, 2008 8:01 AM), <http://www.adn.com/2008/11/05/579001/young-headed-to-victory.html>.

<sup>180</sup> Dickinson, *supra* note 180.

<sup>181</sup> Peter Steinfelds, *Beliefs; Of Talmudic Texts and Tomato Plants*, N.Y. TIMES (Jan. 17, 2004), <http://www.nytimes.com/2004/01/17/national/17BELL.html>.