



# Why Care?

## The Urgency of Saving Endangered Species

*The threat to our nation's imperiled wildlife is immediate and real. Over the next 50 years, up to one third of the world's plant and animal species may be lost forever.*

## Medicinal Benefits of Endangered Species

*Protecting endangered species is not just the right thing to do, it makes economic sense, too.*

**The Pharmaceutical and Medicine Industry**  
*ranked among the fastest growing manufacturing industries*

\* In 2004, pharmaceutical and medicine manufacturing provided 291,000 wage or salary jobs. This number of jobs is expected to increase by about 26 percent over a ten-year period starting in 2004, compared with a 14 percent growth for all industries combined.<sup>22</sup>

\* The industry consists of about 2,500 places of employment, located throughout the country. Pharmaceutical industry testing involves tens of thousands of new substances each year.<sup>22</sup>

\* Earnings of workers are higher than the average for all manufacturing industries. In May 2004, production or non-supervisory workers in this industry averaged \$892 a week.<sup>22</sup>



\* U.S. marine biotechnology efforts since 1983 have resulted in more than 170 U.S. patents, with close to 100 new compounds being patented between 1996 and 1999. U.S. industry investment is estimated at approximately \$100 million annually.<sup>21</sup>

\* Marine biotechnology has potential benefits as a growing industry in the United States. U.S. marine biotechnology efforts since 1983 have resulted in more than 170 U.S. patents, with close to 100 new compounds being patented between 1996 and 1999. U.S. industry investment is estimated at approximately \$100 million annually.<sup>21</sup>

In the United States, 56 percent of the 150 most popular prescribed drugs are linked to discoveries of natural compounds found in the wild. The annual economic value of these 150 drugs alone totals \$80 billion.<sup>1</sup> Less than one percent of all plant species have been screened for potential pharmaceutical applications. At the current extinction rate, experts estimate that the Earth is losing one major drug every two years.<sup>2</sup> A cure for cancer or AIDS may lie in a plant or animal on the brink of extinction.



\* The Pacific yew, a slow-growing tree found in the ancient forests of the Pacific Northwest, was historically considered a "trash" tree that was burned after clear-cutting forests. A substance found in its bark -- now marketed as Taxol® -- was later identified and approved for the treatment of ovarian, breast, and lung cancer.<sup>3</sup>

\* The rosy periwinkle provides the cure for Hodgkin's disease and certain forms of leukemia. Chemicals extracted from the Rosy Periwinkle (*Catharanthus rosea*) increase the survival rate of children with leukemia from 20% to 80%. The periwinkle was on the brink of extinction due to deforestation until scientists discovered its medicinal value.<sup>4</sup>



\* A compound, called GsMTx4, from the venom of some tarantula species may lead to new treatments for neurological disorders such as Parkinson's disease.<sup>17, 19</sup> Approximately 40,000 Americans are diagnosed with Parkinson's disease annually, and this number does not include the thousands of cases that go undetected.<sup>20</sup>

\* The Houston toad, which is found exclusively in southeast Texas, secretes chemicals through its skin to protect itself from predators. These chemicals, such as serotonin and alkaloids, are used as medicines to treat heart and nervous disorders in humans.<sup>11</sup> Today the Houston toad is threatened by habitat loss and alteration, as well as, the invasive fire ant that kills young toads.<sup>12</sup>





\* In 2002, diabetes affected an estimated 18.2 million Americans.<sup>6</sup> An experimental drug derived from Gila monster saliva appears to help people with type-2 diabetes gain control over their blood sugar.<sup>7</sup> The compound triggers the release of insulin when blood sugar levels are too high.

\* Dr. Michelle Magee, director of the MedStar Diabetes Institute states that an advantage of this new drug called Byetta, developed from the Gila monster, is that it “promotes that feeling of fullness after you eat and regulates how much you are eating,”<sup>8</sup> which can help patients with weight loss.

\* Much of the Gila monster's habitat has been cleared for agriculture leaving remaining populations in isolated fragments.<sup>9</sup> Development and road construction have also encroached on their habitat. In addition, many individuals are killed by pets, such as domestic cats and dogs. The illegal pet trade is also a threat to the Gila monster population.<sup>10</sup>

\* Sponges from the world's deep oceans have been used in pharmaceuticals for viruses, cancers, malaria, and fungal infections. The marine environment holds the greatest source of biological diversity on the planet, with representatives from every phylum and more than 200,000 known, documented species of invertebrates and algae.<sup>21</sup>



\* Horseshoe crabs' blood is used to detect harmful endotoxin producing bacteria in things that are used in the human body, such as heart valves, needles, and drugs that are injected into patients.<sup>13</sup> The effect on humans exposed to the endotoxins ranges from fever to hemorrhagic stroke. The tests performed with horseshoe crab blood are the key in finding these toxins before they can do any damage to humans.<sup>14</sup>

\* Populations of horseshoe crabs are in decline in response to overfishing of the crab for use as eel and conch bait. The loss of the sandy beaches it needs for spawning has also been determined as a possible threat.<sup>15</sup>



\* Digitalis, a drug derived from the purple fox-glove plant, extends the life span of an estimated three million Americans who suffer from heart disease.<sup>5</sup>

\* Scientists have developed two anti blood-clotting drugs, Aggrastat and Ancrod, based on proteins found in the venom of the deadly saw-scaled viper.<sup>16</sup>

\* Also, protein from another Asian pit viper is being studied because it appears to inhibit the spread of skin cancer cells.<sup>17</sup> Melanoma is the most serious skin cancer. The American Cancer Society estimated 59,580 new diagnosed cases and 7,770 deaths from melanoma for 2005.<sup>18</sup>

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