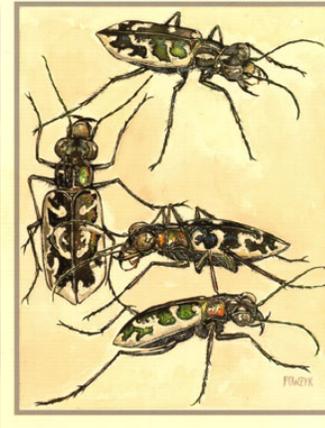
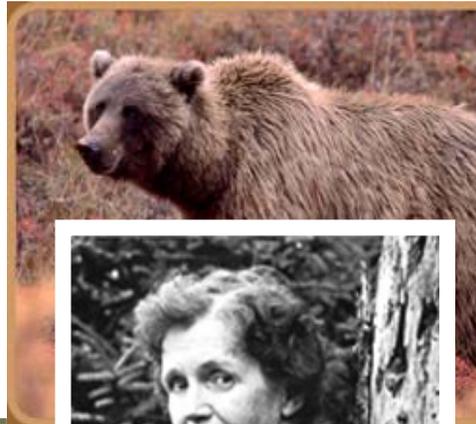


RACHEL CARSON AND ENDANGERED SPECIES

Awakening us to our neglected responsibilities
for the imperiled life around us



AWARENESS OF THE ENDANGERED SPECIES PROBLEM IN 1960

- A few charismatic species, such as the whooping crane and bald eagle, had caught the public's attention
- But, the scope of the mounting extinction crisis was recognized and understood only by hard-core conservationists
- Only a few eloquent visionaries had tried to arouse the general public's concern (e.g., Aldo Leopold)

ALDO LEOPOLD ON EXTINCTION OF SPECIES

- “It hardly seems necessary to say that the wiping out of a species is wanton barbarism.” (1920)
- “...the immediate needs of our threatened fauna and flora must be addressed now before it is too late.” (1935)
- “We have no right to exterminate any species. I stand on this as a fundamental principle.” (1945)

POLICY, LAW AND PRACTICE IN 1960

- No formal policies or legislation specifically addressed endangered species in the US
- The prevailing paradigm still suggested the endangered species problem could be solved by more passive “protection”
- The notion that endangered species needed active management attention to recover was not prevalent

SILENT SPRING BRINGS A SEA CHANGE

- “Miss Carson, you are the lady who started all this.” Sen. Abraham Ribicoff
- The powerful specter of a silent spring: A biologically impoverished world would be an unthinkable catastrophe
- Awakened the public not only to dangers of environmental toxins but to the need to respond to other human threats to nature as well
- Extinction is an irreversible threat to other species and the diversity of life on earth
- A warning heeded: We must take action to prevent impending extinctions, just as we were tackling other environmental issues

ATTENTION TO ENDANGERED SPECIES AFTER *SILENT SPRING*

- Shift from justifying action on utilitarian values to intrinsic values (an ethical shift)
- First *Red Data Book* compiled in 1966
- Endangered Species Preservation Act of 1966
 - allowed listing of only native animal species as endangered and provided only limited means for the protection of listed species
- Endangered Species Conservation Act of 1969
 - provided additional protection of species in danger of “worldwide extinction” and addressed global trade
- Federal law “simply does not provide the kind of management tools needed to act early enough to save vanishing species.” Pres. Richard Nixon, 1972

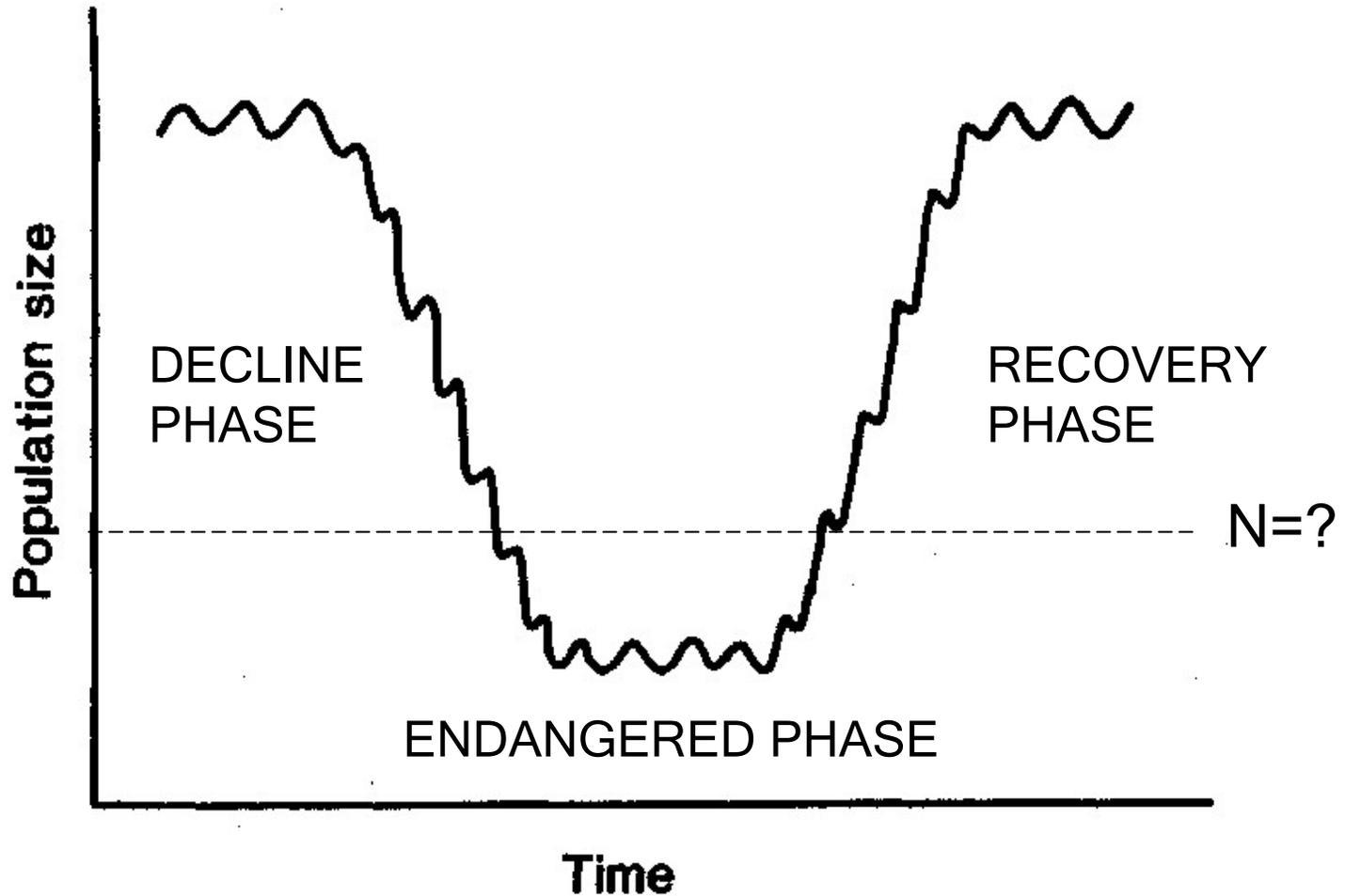
THE ENDANGERED SPECIES ACT OF 1973

- “Various species of fish, wildlife and plants of the U.S. have been rendered extinct as a consequence of economic growth...
- Other species of fish, wildlife and plants have been so depleted in numbers that they are in danger of or threatened with extinction...
- These species of fish, wildlife and plants are of...value to the Nation and its people...
- The U.S. has pledged itself to conserve...the various fish, wildlife and plant species facing extinction.”

THE ESA MAKES ENDANGERED SPECIES RECOVERY A PRIORITY

- “The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved... [*remove threats*]
- and to provide a program for the conservation of such endangered species and threatened species...” [*rescue species*]

THE CHALLENGE



MANAGEMENT OBJECTIVES

- Stop the decline phase of the bottleneck before population gets too small
- Make the endangered phase as short as possible to avoid risks of small population size
- Make the recovery phase as rapid as possible

URGENCY REQUIRES SPECIAL MANAGEMENT APPROACHES

- Not easy to promptly halt a decline and rapidly increase population size
- Analogy to a hospital emergency room is useful (treat life-threatening symptoms first; then when patient is stabilized, treat underlying disease)
- Endangered species managers must treat both ultimate and proximate causes of endangerment

ULTIMATE CAUSES OF ENDANGERMENT

- The changes in the species' environment that underlie the species' endangerment (habitat loss, exotic species, overkill, ecosystem stress)
- Can be very difficult to correct in time to save a critically endangered species for which time is rapidly running out
- Must be corrected to guarantee a secure future for the species, but in the meantime attention to proximate causes of endangerment may be needed

PROXIMATE CAUSES OF ENDANGERMENT

- These are the symptoms the endangered species is experiencing because of ultimate problems
- Inadequate survival and reproduction, declining numbers, shrinking range, genetic problems, etc.
- These symptoms can be treated independently of treating ultimate problems
- Allows the population to make it through the crisis until ultimate causes of endangerment are eventually resolved

ULTIMATE AND PROXIMATE CAUSES TREATED TOGETHER

- In no case, will treatment of only proximate causes result in recovery to a viable future
- In some cases, treatment of ultimate causes alone might result in recovery
- In many cases, ultimate and proximate causes need to be addressed together to recover an endangered species
- In all cases, ultimate causes must be corrected
- Well conceived and executed programs do save species

ENDANGERED SPECIES PROGRAM AT PATUXENT

- Field investigations to identify ultimate threats so they can be addressed
- *In situ* management to stimulate recovery
- *Ex situ* management, especially captive breeding at Patuxent
- Reintroductions and translocations into suitable habitat

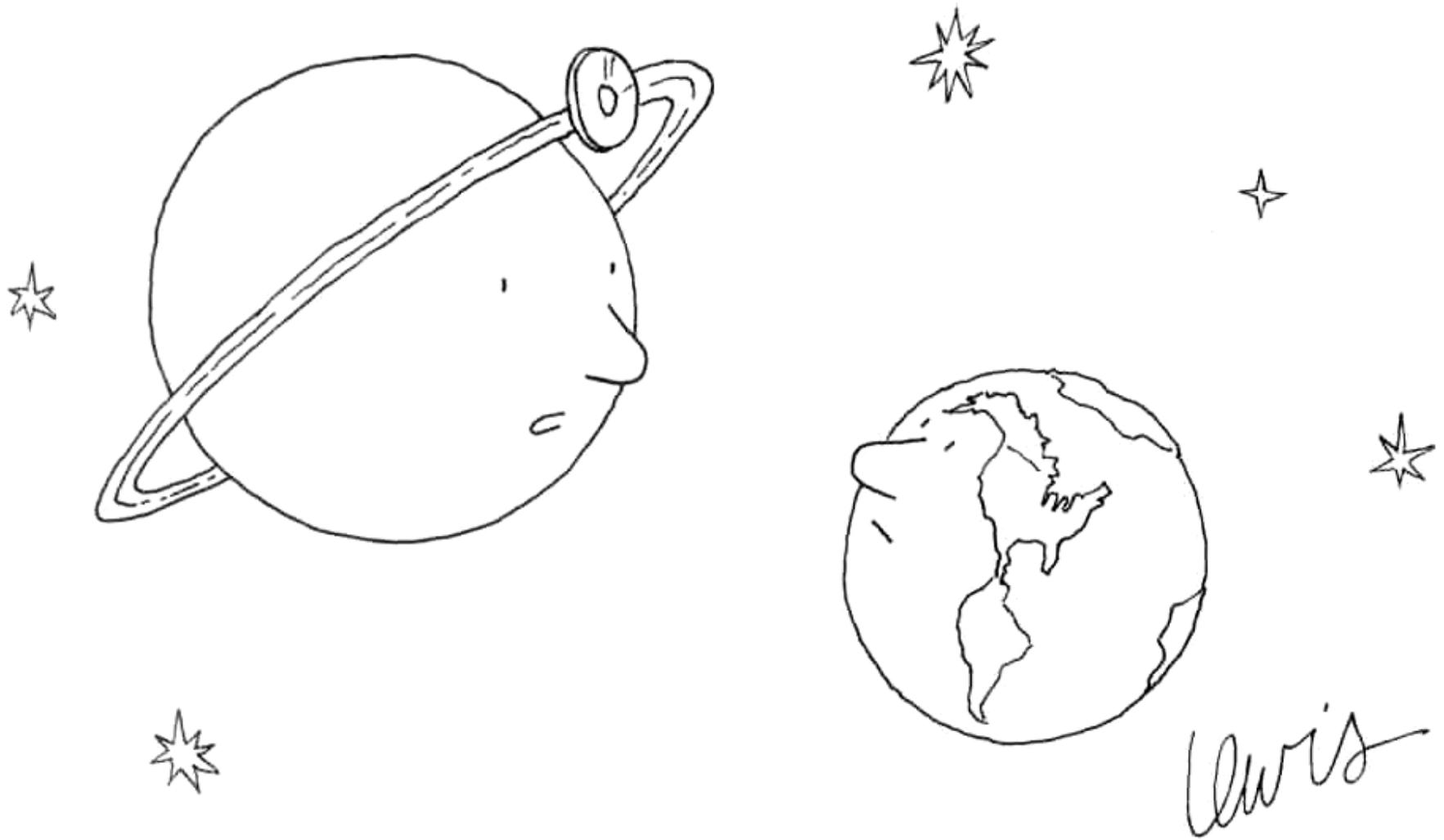


FROM THE DEDICATION IN *SILENT SPRING*: AN INDICTMENT

“Man has lost the capacity to foresee and to forestall. He will end by destroying the earth. [Poor bees, poor birds, poor men.]”

Albert Schweitzer

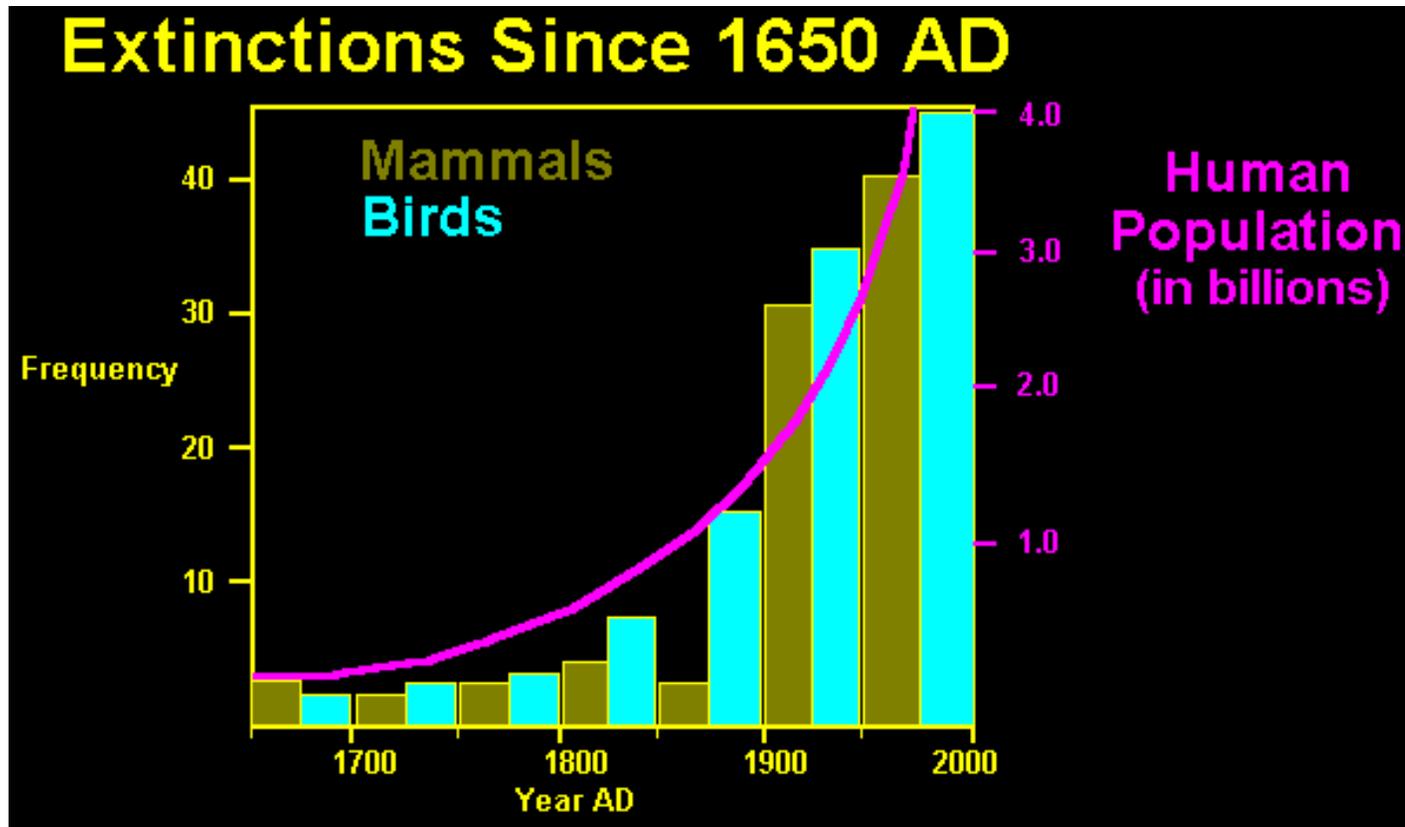
Has the public now foreseen the crisis, and how successful have we been in our efforts to forestall extinctions?



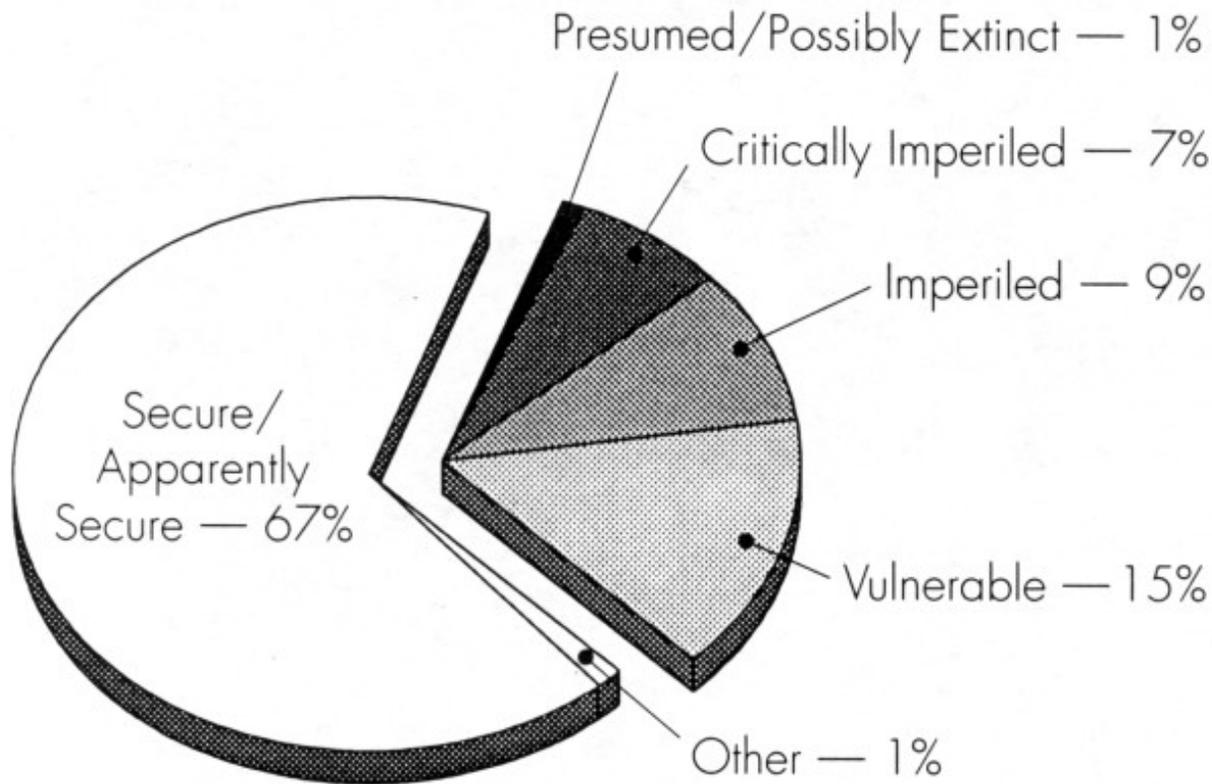
"I'm afraid you have humans."

“As man proceeds toward his announced goal of the conquest of nature, he has written a depressing record of destruction, directed not only against the earth he inhabits but the life that shares it with him. The history of the recent centuries has its bleak passages...”

Rachel Carson, *Silent Spring*



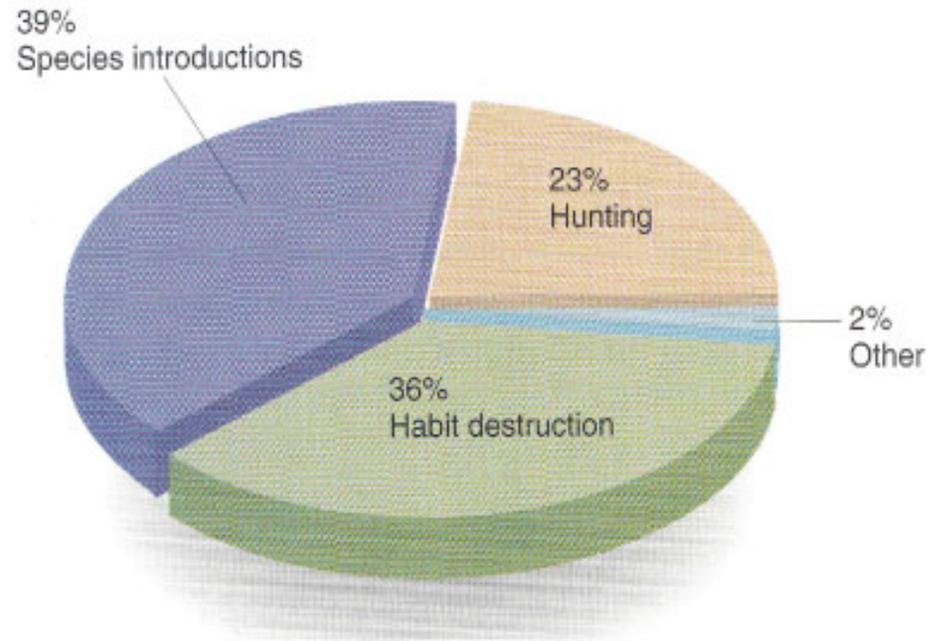
HOW MANY SPECIES ARE AT RISK?



One-third of U.S. plant and animal species are at risk of extinction.

THE “EVIL QUARTET”

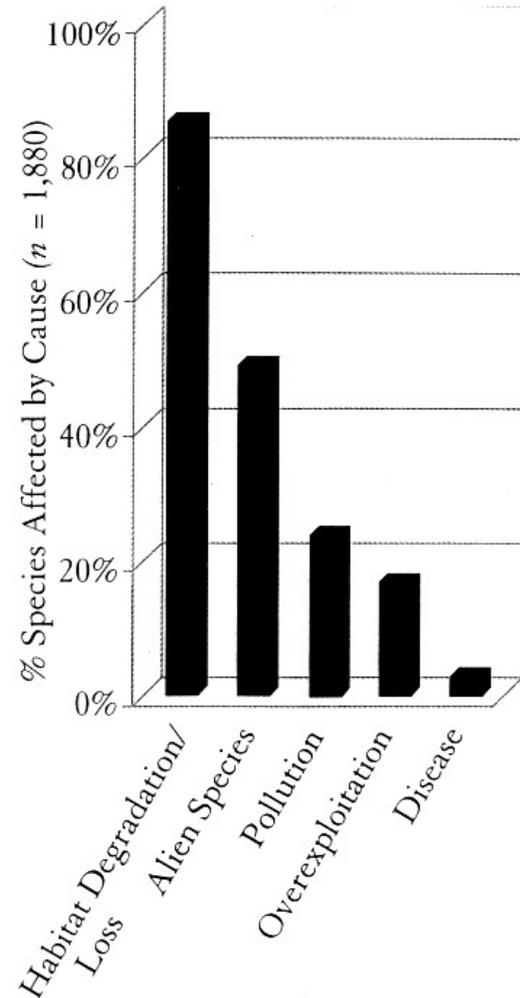
- Overkill
- Exotic species
- Habitat loss
- Ecosystem stress



Causes of extinctions since 1600

THE EVIL QUARTET PLAYS ON

- Habitat loss and degradations continue
- Exotic species are expanding in numbers and range
- Overkill seems to be declining as a threat
- Ecosystem stressors (e.g., pollutants) continue to increase in numbers and severity (>375 listed species are still affected by pesticides)



HOW EFFECTIVE IS ENDANGERED SPECIES MANAGEMENT?

- Are endangered species recovering to level where special management is no longer required?
 - Eleven have been de-listed due to recovery, and 27 more are ready to de-list
 - Abatement of the ultimate threat of toxic chemicals is a common theme in several delistings (e.g., bald eagle, peregrine falcon, brown pelican)

HOW EFFECTIVE IS ENDANGERED SPECIES MANAGEMENT?

- Have populations of listed species become more viable?
 - It seems so (estimated 41% of listed species have improved or stabilized), and the longer they've been listed the better their status
 - 22 species originally listed as endangered have been down-listed to threatened

HOW EFFECTIVE IS ENDANGERED SPECIES MANAGEMENT?

- Have extinctions been prevented?
 - Unquestionably, only 9 listed species have been declared extinct (26 possibly extinct)
 - 5 of these were almost certainly extinct at time of listing!
 - Several species (e.g., California condor, red wolf, whooping crane) would certainly be extinct without management
 - Estimated 227 probably would have gone extinct without management

HOW DOES THE PUBLIC FEEL ABOUT ENDANGERED SPECIES?

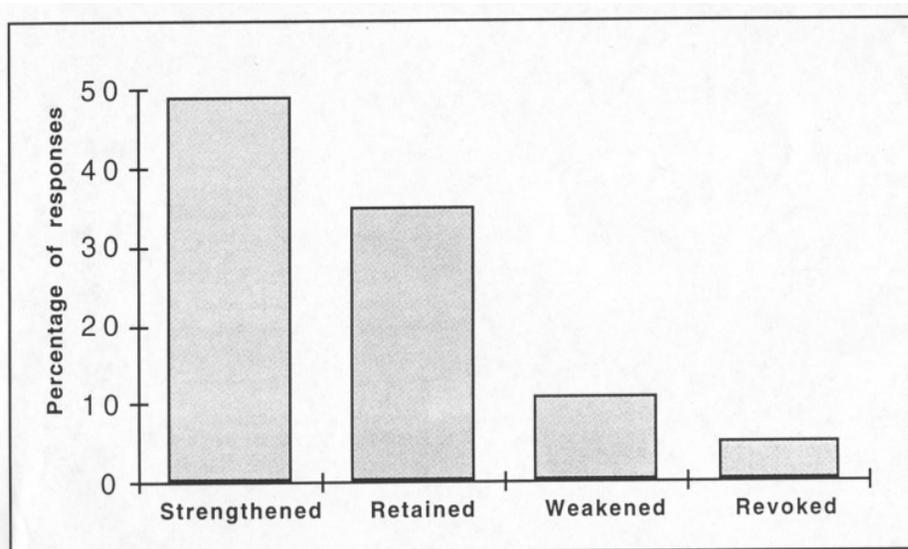


Figure 1. Percentage of respondents who would like to see the ESA strengthened, retained as written, weakened, or revoked.

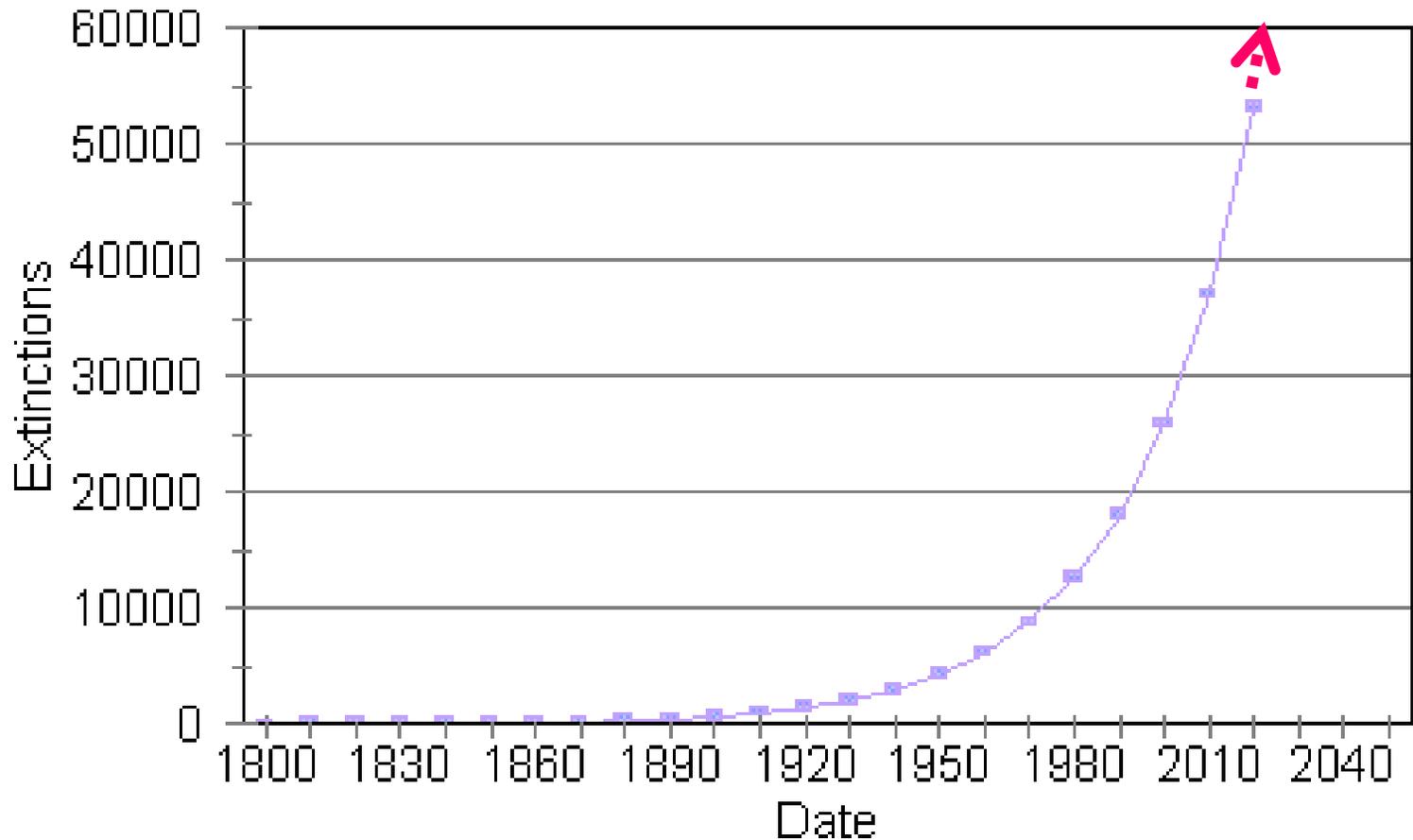
- Public opinion polls consistently show strong support for the endangered species recovery efforts
- Opposition comes mainly from a few special interest groups representing developers and is localized in areas where endangered species have impacted their activities

CRITICS USE FAMILIAR ATTACKS ONCE AIMED AT *SILENT SPRING*

- Nothing but “hysteria,” “alarmism” and “emotionalism”
- Based on “exaggeration” and “omission of pertinent contradictory evidence”
- Just a bunch of “vociferous, misinformed, tree-hugging, bird-loving environmental wackos” (Rush Limbaugh)
- “Damages the economy” and “costs jobs”
- “We can’t afford to worry about every species”
- “Puts needs of worthless species above needs of people”

ARE WE WILLING TO ALLOW A “SILENT SPRING” TO CREEP UP ON US ONE EXTINCTION AT A TIME?

Species Extinctions Since 1800



RACHEL CARSON'S RADICAL PROPOSITION

- Technological progress can, at times, be so fundamentally at odds with natural processes that it must be curtailed
- “Man’s attitude toward nature is today critically important simply because we have acquired a fateful power to alter and destroy nature... We’re challenged... as never before to prove our maturity and our mastery, not of nature, but of ourselves.”
Rachel Carson

GOOD INTENTIONS ARE NO LONGER GOOD ENOUGH

“We stand now [still!] where two roads diverge. But unlike the roads in Robert Frost’s familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth super highway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one ‘less traveled by’—offers our last, our only chance to reach a destination that assures the preservation of the earth. The choice, after all, is ours to make.” *Rachel Carson*