

## ***Forestry Program for Oregon Strategy E: Contribute to the conservation of diverse native plant and animal populations and their habitats in Oregon's forests***

### **Indicator E.c. Forest plant and animal species at risk**

#### **Why is this indicator important?**

Biological diversity is the variation of life at genetic, species, and ecosystem levels of biological organization. It is the fundamental building block of the services that ecosystems deliver to human societies. It is intrinsically important both because of its contribution to the functioning of ecosystems, and because it is difficult or impossible to recover or replace, once it has eroded.

Species extinction is a natural process. However, plant and animal species are disappearing worldwide at an accelerated pace. Often there is a strong correlation between increasing numbers of species at risk and human activities. Oregon's forests are well known for their rich biological diversity and the ecological services they provide to northwest communities. One of the most important measures of how we manage Oregon's forests is the ability to protect and conserve the native plants and animals that live in or use the forests. Managing for native plant and animal conservation; however, is a complex endeavor that often requires balancing several management objectives and understanding how species are adapted to and respond to disturbance at different scales of space and time. The social and economic dimensions of how we value biological diversity and reach consensus on best use of forestlands, particularly public forests, further complicates our management choices.

The state of Oregon and the U.S. Government have both passed Endangered Species Acts (ESA) to prevent species from becoming extinct. Because the federal ESA is one of the strongest environmental laws in the nation, both including new species on the ESA list, and removing species from the list has become a complex scientific and political endeavor.

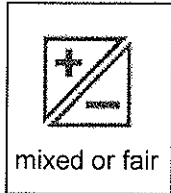
It is important to recognize species may be "at risk" before they become candidates for ESA listing. This indicator looks at a larger list of native forest plants and animals which are considered to be either "at risk" or potentially at risk in Oregon. It provides Oregonians with information by which to measure the state's progress at both preventing new native forest species from becoming at-risk of extinction, and of reversing trends showing increases in the number of forest species at risk through time.

#### ***Desired trend***

*Decreasing number of Oregon native forest plant and animal species at risk (extinction, extirpation, endangered, threatened or potentially endangered or threatened).*

## What does this indicator tell us about sustainable forest management?

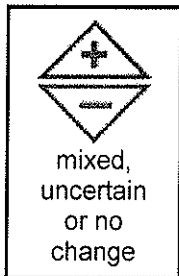
### State



Out of the estimated 595 vertebrate forest species native to Oregon a total of 62 mammals, birds, fish, reptiles, and amphibians are forest species considered to be at risk. Out of a total of approximately 3,500 native forest plant species in Oregon there are a total of 180 vascular forest species (flowering plants, ferns and conifers) which are at risk. Based on the estimates of the total number of Oregon forest species in each of the six major groups, the following percentages of forest species are currently considered at risk:

- Vascular Plants (flowering plants, ferns, and conifers) – 5.1 percent (180/3500)
- Mammals – 7.3 percent (11/150)
- Birds – 5.6 percent (17/305)
- Herpetofauna (reptiles and amphibians)– 23.4 percent (15/64)
- Fish – 25 percent (19/76)
- Invertebrates – Unknown total number of species. Fifty-six species considered at risk.

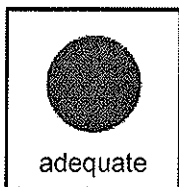
### Trend



This evaluation includes forest species which have had status changes since 2001. The number of at risk native species has been generally increasing in Oregon; however, the numbers of at risk forest mammal, bird, herpetofauna, and fish species are stable or slightly decreasing. Forest vascular plants and invertebrates have experienced a slight increase in the number of species at risk. The number of at risk invertebrate species (insects and snails mostly) may be a reflection of new scientific knowledge about these species, rather than an actual increasing trend in species at risk.

For plants and mammals, some species were evaluated for the first time (23 plants, 2 mammals, and 7 invertebrates). Within the six groups, there has been a total of 20 forest species (5 plants, 3 mammals, 5 birds, 2 herpetofauna, and 5 invertebrates) which are now less at risk than in 2001, while there were 20 species (13 plants, 1 mammal, 3 birds, and 3 invertebrates) that are now considered to be at greater risk.

### Information



Statewide information is available for this indicator. The Oregon Natural Heritage Information Center (ORNHIC) of the OSU Institute for Natural Resources publishes information on rare, threatened or endangered species in Oregon. ORNHIC integrates status information from the U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife, and Oregon Department of Agriculture. Biologists working for these agencies, together with the state's herbaria and museums and the USDA Forest Service and Bureau of Land Management provide most of the information that comprise ORNHIC's databases. The species lists are updated every other year, and long-term trends will be available.

### ***What is a forest species?***

For this indicator, plant and animal species are defined as Oregon “forest” species if they occur within an Oregon forest landscape. A list of plants and animals that only can be found in forests would be smaller. However, many flowering plants and conifers (vascular plants), birds, mammals, fish, reptiles and amphibians (vertebrates), occur within forested landscapes, but grow and reproduce in water, small grassland openings, cliffs, or other non-forested habitats. Since these species are impacted by forest management decisions, they are included in the list of “forest species”.

### ***What species are considered to be at risk?***

The forest species which have had status changes since 2001 have been evaluated by the Oregon Natural Heritage Information Center using standard methodology used in all 50 states. Species are ranked based on their status globally and within Oregon, based on factors such as how rare a species is (number of populations and size of populations), threats to those populations, and how the species is able to cope with those threats. These global and state ranks can all be found online, with detailed reasons for the ranks, at the [NatureServe Explorer](#) web site.

For the purpose of this indicator, forest “species at risk” means those non-extinct plant and animal species that are:

1. Listed as threatened or endangered under federal endangered species statutes;
2. Candidates for potential listing as threatened or endangered under federal endangered species statutes; and/or
3. Assigned to Lists 1 and 2 by the Oregon Natural Heritage Information Center.

### **Federal Endangered Species Act**

The US Fish and Wildlife Service and NOAA Fisheries list a species as endangered if it is expected to become extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. “Species” is broadly defined and includes subspecies and distinct populations (for vertebrates). A species is listed as threatened or endangered if it faces the present or threatened destruction, modification, or curtailment of its habitat or range; over utilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other natural or manmade factors affecting the species’ survival. A species can be considered for listing by two ways: through the petition process or the candidate assessment process.

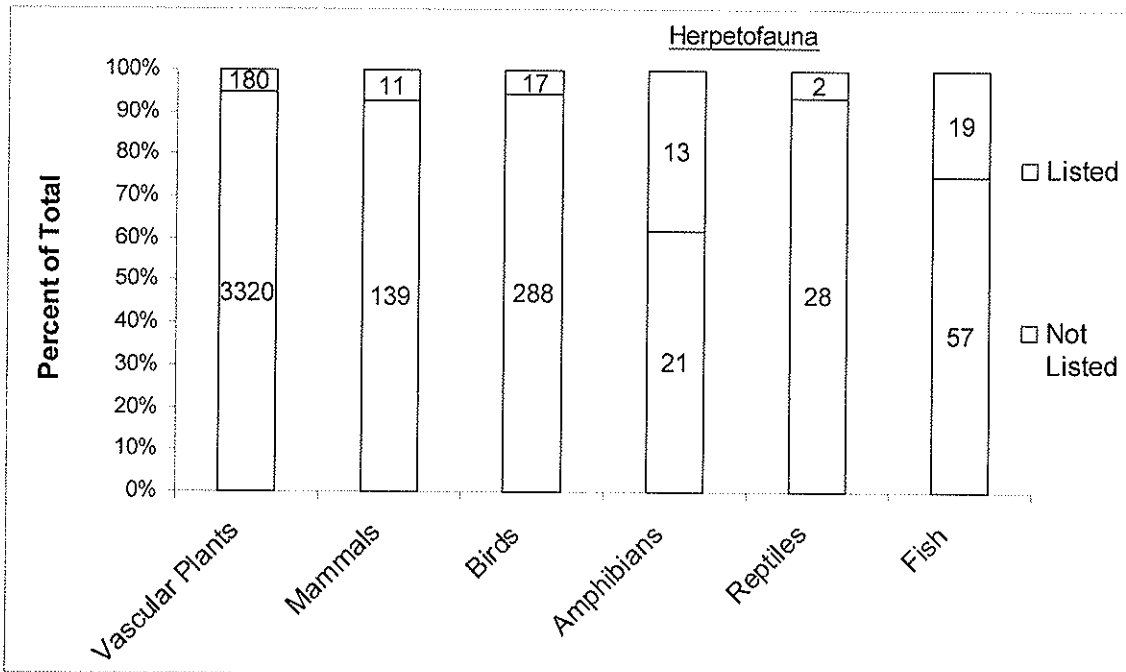
### **Oregon Natural Heritage Information Center**

**List 1** contains taxa that are threatened with extinction or presumed to be extinct throughout their entire range.

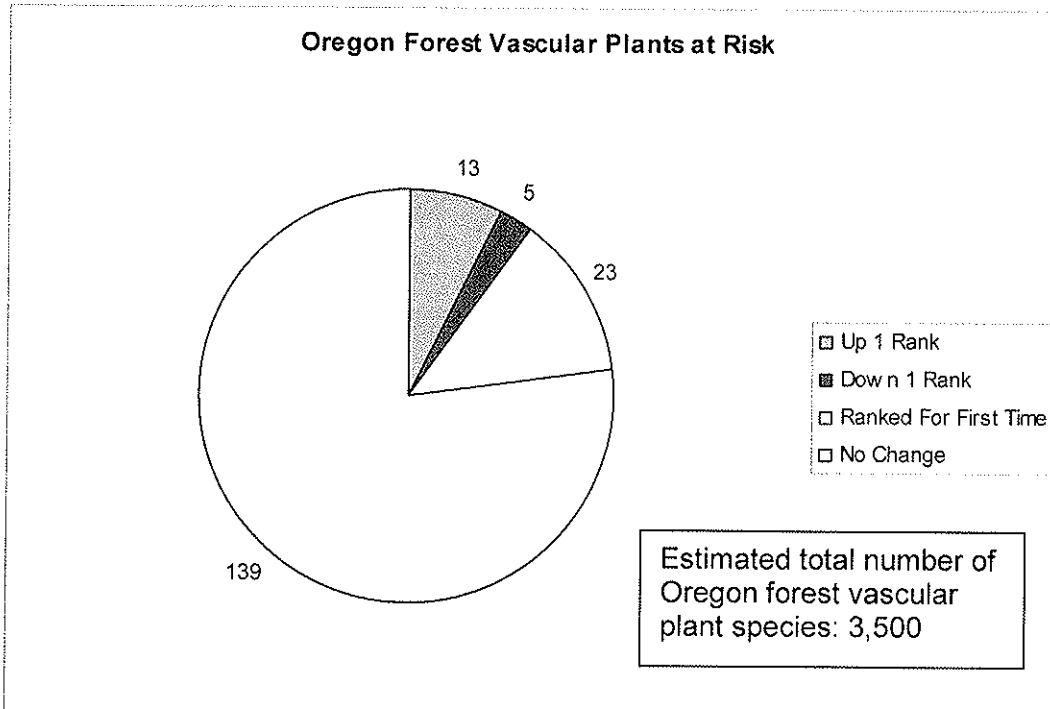
**List 2** contains taxa that are threatened with extirpation or presumed to be extirpated from the State of Oregon. These are species of concern when considering the diversity of species within Oregon’s borders. They can be significant when protecting the genetic diversity of a taxon. The Oregon Natural Heritage Information Center regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list.

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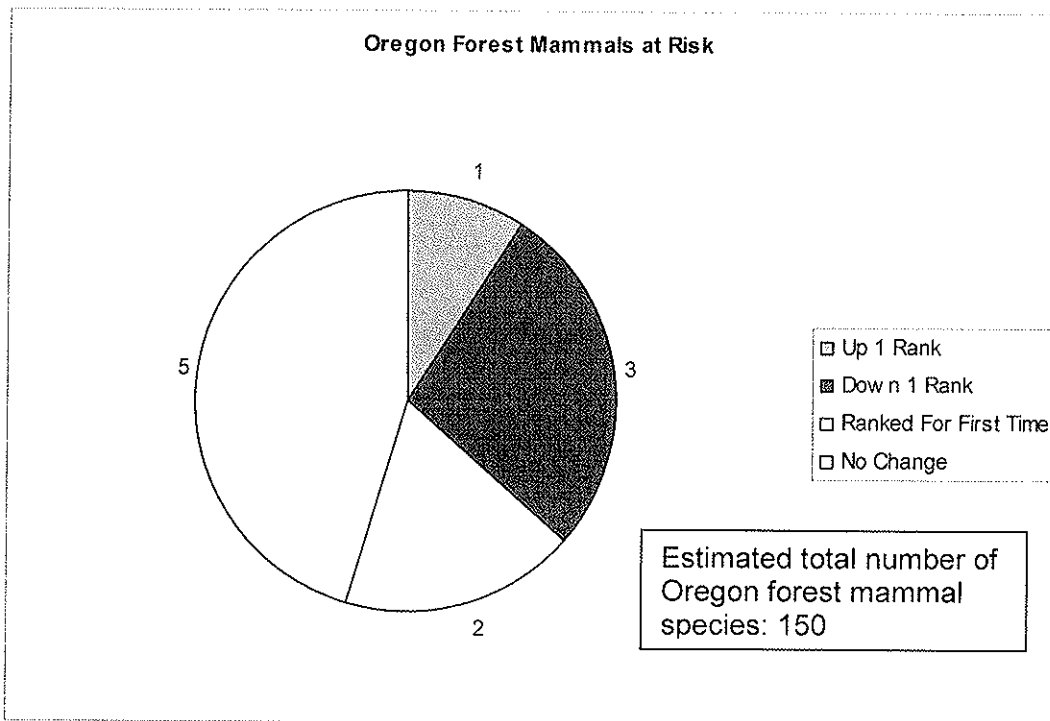
The Oregon Conservation Strategy has identified “species of greatest conservation need.” The Conservation Strategy also uses information on species distribution and abundance produced by the Oregon Natural Heritage Information Center.



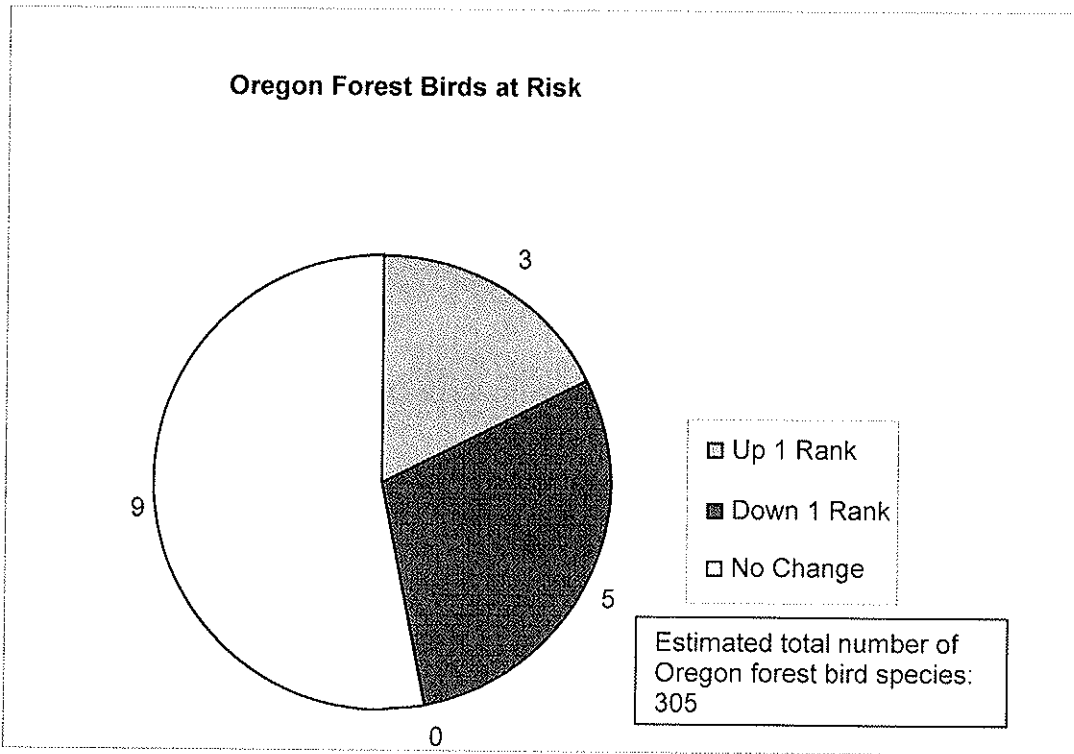
**Figure 8. The relative number of ESA or Oregon Natural Heritage Information Center List 1 and List 2 forest species at risk expressed as a percent of the estimated total number of species. Vascular plants does not include hybrids and exotics. The total number of invertebrate species is unknown.**



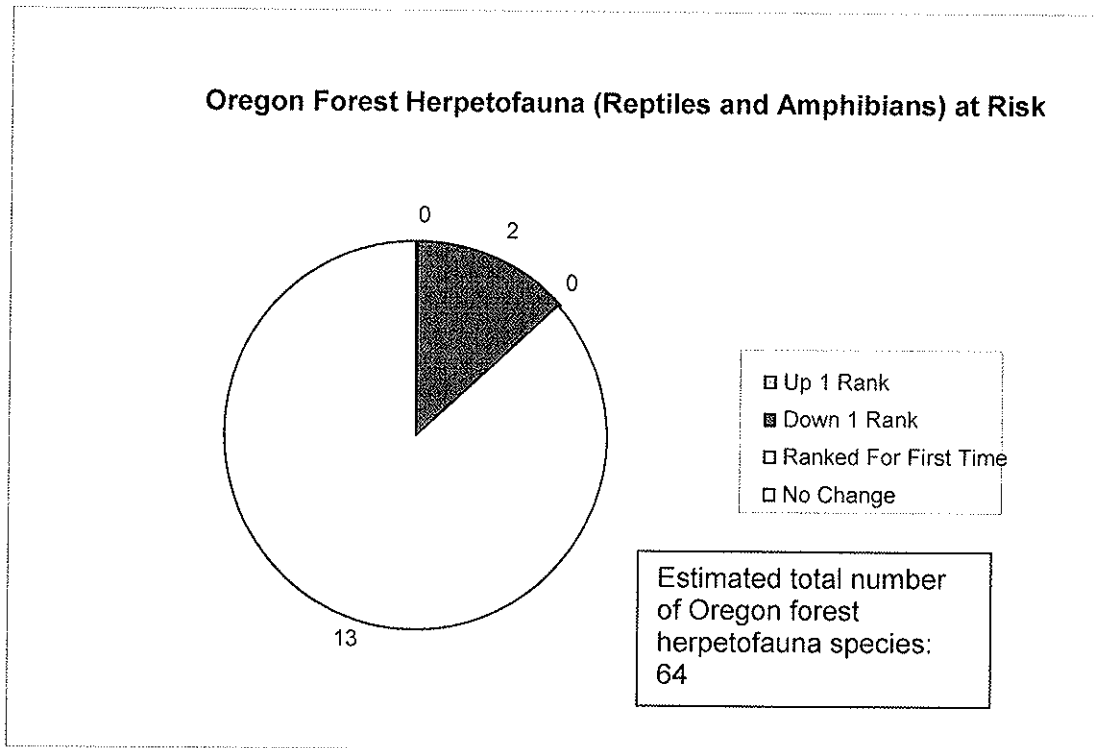
**Figure 1. Status changes of Oregon forest vascular plant species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**



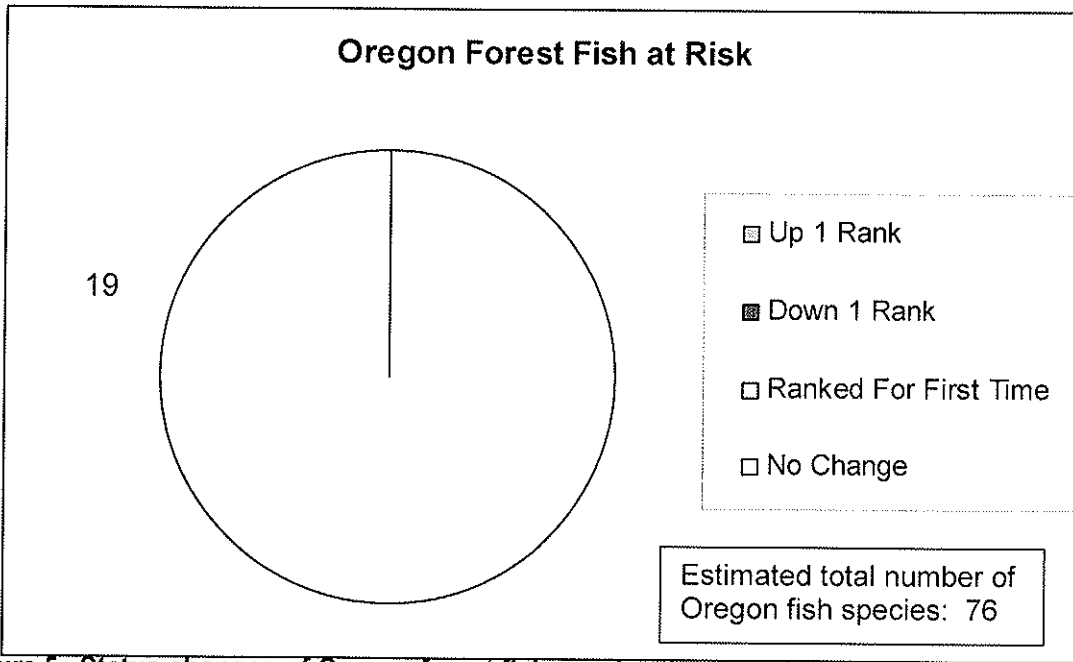
**Figure 2. Status changes of Oregon forest mammal species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**



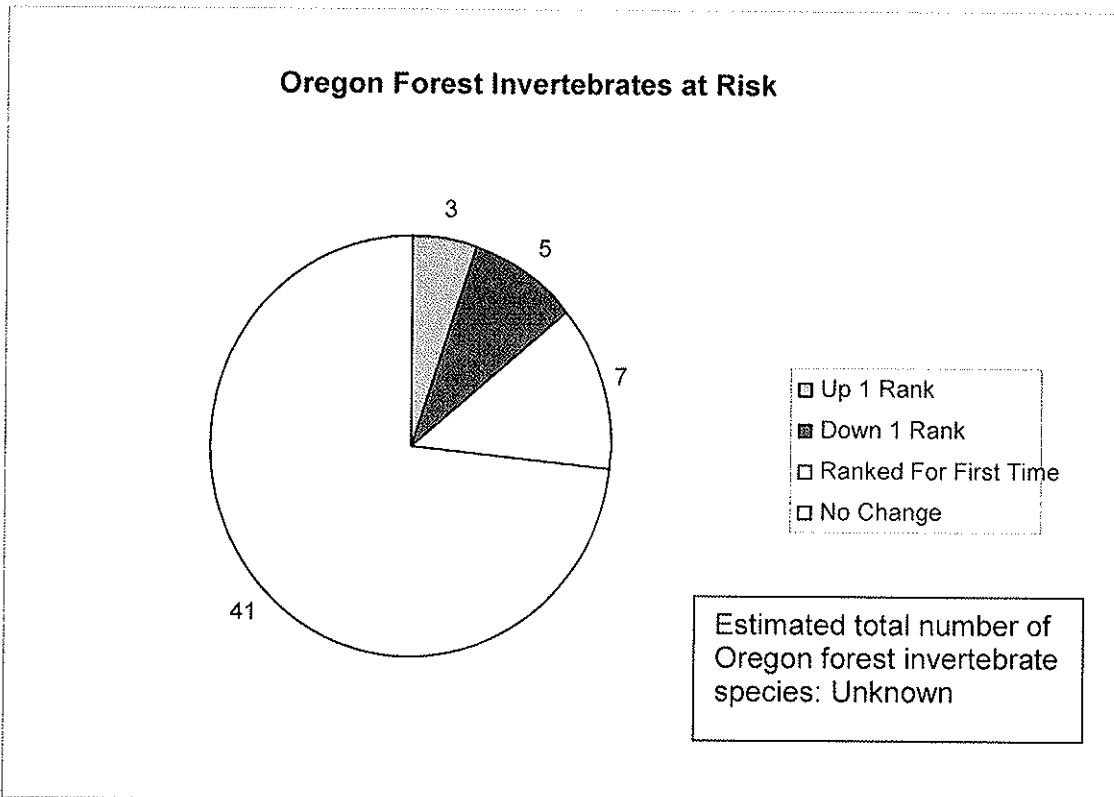
**Figure 3. Status changes of Oregon forest bird species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**



**Figure 4. Status changes of Oregon forest herpetofauna (amphibian and reptile species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**



**Figure 5. Status changes of Oregon forest fish species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**



**Figure 6. Status changes of Oregon forest invertebrate species that have been identified as “at risk” based on global or state rank changes, from 2001-2007. “Up 1 rank” means increasing risk, “down one rank” means decreasing risk.**

## **Sources**

Oregon Department of Fish and Wildlife

Oregon Natural Heritage Information Center. 2007. Rare, Threatened and Endangered Species of Oregon. Oregon Natural Heritage Information Center, Oregon State University, Portland, Oregon. 100 pp.

Quale, J.F., L.R. Ramsay, and D.F. Fraser. 2007. Status of Breeding Bird Fauna in British Columbia, Canada, Based on the IUCN Red List Index Method. Conservation Biology Volume 21(5), 1241-1247, DOI: 10.1111/j.1523-1739.2007.00753.x.

The Heinz Center. 2002. The State of the Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States. New York, NY: Cambridge University Press. 270 p.

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