month, in accordance with American National Standard Z87.1–1968, and § 1910.134.

* * * * *

(h) * * *

(2) * * *

(iii) Gas masks shall be provided for emergency use, in accordance with § 1910.134.

(iv) For emergency and rescue work, a self-contained breathing apparatus or supplied air respirator in accordance with the requirements of § 1910.134 shall be provided.

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November 15, 1994

## Part III

# Environmental Protection Agency

40 CFR Parts 50 and 53

National Ambient Air Quality Standards for Sulfur Oxides (Sulfur Dioxide)—Reproposal; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 50 and 53

[AD-FDL-5103-1]

RIN 2060-AA61

## National Ambient Air Quality Standards for Sulfur Oxides (Sulfur Dioxide)—Reproposal

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA today is proposing not to revise the current 24-hour and annual primary standards but is also soliciting comment on the possible need to adopt additional regulatory measures to address short-term peak ($SO_2$) exposures and thereby further reduce the health risk to exercising asthmatic individuals. The alternatives under consideration include: revising the existing national ambient air quality standards (NAAQS) by adding a new 5-minute standard of 0.60 ppm, 1 expected exceedance; establishing a new regulatory program under section 303 of the Clean Air Act to supplement the protection provided by the existing NAAQS; and augmenting implementation of the existing standards by focusing on those sources or source types likely to produce high 5-minute peak $SO_2$ concentrations.

Included in this document are proposals to incorporate certain associated technical changes to the requirements for Ambient Air Monitoring Reference and Equivalent Methods (40 CFR part 53) and other minor technical changes regarding the 40 CFR part 50 regulations.

A related document will be published shortly in the **Federal Register** that proposes for comment the requirements for implementing the alternative regulatory measures. Included in that document are technical revisions to 40 CFR parts 51 and 58.

DATES: Written comments on this proposal must be received by February 13, 1995. The EPA will hold a public hearing on this notice in approximately 30 days. The time and place will be announced in a subsequent **Federal Register** document.

ADDRESSES: Submit comments on the proposed action on the NAAQS (40 CFR part 50) (duplicate copies are preferred) to: Air & Radiation Docket Information Center (6102), Room M-1500, Environmental Protection Agency, Attn: Docket No. A-84-25, 401 M Street, SW., Washington, DC 20460. Comments on the proposed revisions to the Ambient Air Monitoring Reference and Equivalent Methods (40 CFR part 53) should be separated from those pertaining to the standards and sent to the same address, Attn: Docket No. A-94-42. These dockets are located in the Central Docket Section of the U.S. Environmental Protection Agency, South Conference Center, Room M-1500, 401 M St., SW., Washington, DC. The docket may be inspected between 8 a.m. and 5:30 p.m. on weekdays, and a reasonable fee may be charged for copying. For the availability of related information, see the SUPPLEMENTARY INFORMATION section.

FOR FURTHER INFORMATION CONTACT: Part 50 Notice—Mr. John H. Haines, Air Quality Strategies and Standards Division (MD-12), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-5533. Part 53 Notice—Mr. Frank McElroy, Atmospheric Research and Exposure Assessment Laboratory (MD-77), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711, telephone (919) 541-2622.

SUPPLEMENTARY INFORMATION:

### Background

In 1971, the EPA promulgated primary and secondary NAAQS for sulfur oxides (measured as $SO_2$). The primary standards were set at 365 micrograms per cubic meter (μg/m³) (0.14 part per million (ppm)), averaged over a 24-hour period and not to be exceeded more than once per year, and 80 μg/m³ (0.030 ppm) annual arithmetic mean. The secondary standard was set at 1300 μg/m³ (0.5 ppm) averaged over a period of 3 hours and not to be exceeded more than once per year. In accordance with sections 108 and 109 of the Act, EPA reviewed and revised the health and welfare criteria upon which these primary and secondary $SO_2$ standards were based.

On April 26, 1988 (53 FR 14926), the EPA announced its proposed decision not to revise these standards. In that notice, the Administrator also solicited comment on an alternative of adding a 1-hour primary standard of 0.4 ppm. The EPA also sought comment on additional revisions in the event a 1-hour standard was promulgated. At that time, the EPA also proposed to revise the significant harm levels, associated episode contingency plan guidance (40 CFR part 51), and the Pollutant Standard Index for $SO_2$ (40 CFR part 58). The EPA also proposed revisions to certain monitoring and reporting requirements (40 CFR part 58).

On April 21, 1993, the EPA announced its final decision that revision of the secondary standard was not appropriate (58 FR 21351).

### Availability of Related Information

The revised criteria document, Air Quality Criteria for Particulate Matter and Sulfur Oxides (three volumes, EPA-600/8-82-029af-cf, December 1982; Volume I, NTIS # PB-84-120401, $36.50 paper copy and $9.00 microfiche; Volume II, NTIS # PB-84-120419, $77.00 paper copy and $9.00 microfiche; Volume III, NTIS # PB-84-120427, $77.00 paper copy and $20.50 microfiche); the criteria document addendum, Second Addendum to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of Newly Available Health Effects Information (EPA/600/8-86-020-F, NTIS # PB-87-176574, $36.50 paper copy and $9.00 microfiche); the criteria document supplement, Supplement to the Second Addendum (1986) to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of New Findings on Sulfur Dioxide Acute Exposure Health Effects in Asthmatic Individuals (1994) (EPA-600/FP-93/002); the 1982 staff paper, Review of the National Ambient Air Quality Standards for Sulfur Oxides: Assessment of Scientific and Technical Information (EPA-450/5-82-007, November 1982; NTIS # PB-84-102920, $36.50 paper copy and $9.00 microfiche); the staff paper addendum, Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information (EPA-450/05-86-013, December 1986; NTIS # PB-87-200259, $19.50 paper copy and $9.00 microfiche) and the staff paper supplement, Review of the National Ambient Air Quality Standards For Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Supplement to the 1986 OAQPS Staff Paper Addendum (1994) (EPA-452/R-94-013) are available from: U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161, or call 1-800-553-NTIS. (Add $3.00 handling charge per order.) A limited number of copies of other documents generated in connection with this standard review, such as the control techniques document, can be obtained from: U.S. Environmental Protection Agency Library (MD-35), Research Triangle Park, NC 27711, telephone (919) 541-2777. These and other related documents are also available in the EPA dockets identified above.

Table of Contents

## I. Background

### *A. Legislative Requirements Affecting This Rule*

#### 1. The Primary Standards

Two sections of the Act govern the establishment and revision of the NAAQS. Section 108 (42 U.S.C. 7408) directs the Administrator to identify pollutants which "may reasonably be anticipated to endanger public health or welfare" and to issue air quality criteria for them. These air quality criteria are to "reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of (a) pollutant in the ambient air. * * *"

Section 109 (42 U.S.C. 7409) directs the Administrator to propose and promulgate "primary" NAAQS for pollutants identified under section 108. Section 109(b)(1) defines a primary standard as one "the attainment and maintenance of which, in the judgment of the Administrator, based on the criteria and allowing an adequate margin of safety, (is) requisite to protect the public health."

The U.S. Court of Appeals for the D.C. Circuit has held that the requirement for an adequate margin of safety for primary standards was intended to address uncertainties associated with inconclusive scientific and technical information available at the time of standard setting. It was also intended to provide a reasonable degree of protection against hazards that research has not yet identified. *Lead Industries Association* v. *EPA*, 647 F.2d 1130, 1154 (D.C. Cir. 1980), *cert. denied*, 101 S. Ct. 621 (1980); *American Petroleum Institute* v. *Costle*, 665 F.2d 1176, 1177 (D.C. Cir. 1981), *cert. denied*, 102 S. Ct. 1737 (1982). Both kinds of uncertainties are components of the risk associated with pollution at levels below those at which human health effects can be said to occur with reasonable scientific certainty. Thus, by selecting primary standards that provide an adequate margin of safety, the Administrator is seeking not only to prevent pollution levels that have been demonstrated to be harmful, but also to prevent lower pollutant levels that she finds pose an unacceptable risk of harm, even if that risk is not precisely identified as to nature or degree.

In selecting a margin of safety, the EPA has considered such factors as the nature and severity of the health effects involved, the size of the sensitive population(s) at risk, and the kind and degree of the uncertainties that must be addressed. Given that the "margin of safety" requirement by definition only comes into play where no conclusive showing of harm exists, such factors, which involve unknown or only partially quantified risks, have their inherent limits as guides to action. The selection of any particular approach to providing an adequate margin of safety is a policy choice left specifically to the Administrator's judgment. *Lead Industries Association* v. *EPA, supra*, 647 F.2d at 1161–62.

Section 109(d) of the Act (42 U.S.C. 7409(d)) requires periodic review and, if appropriate, revision of existing criteria and standards. The process by which the EPA has reviewed the original criteria and standards for sulfur oxides under section 109(d) is described in a later section of this notice.

#### 2. Related Control Requirements

States are primarily responsible for ensuring attainment and maintenance of ambient air quality standards once the EPA has established them. Under section 110 (42 U.S.C. 7410) and part D of title I of the Act (42 U.S.C. 7501–7515), States are to submit, for EPA approval, State implementation plans (SIP's) that provide for the attainment and maintenance of such standards through control programs directed to sources of the pollutants involved. The States, in conjunction with the EPA, also administer the prevention of significant deterioration program (42 U.S.C. 7470–7479) for these pollutants. In addition, Federal programs provide for nationwide reductions in emissions of these and other air pollutants through the Federal motor vehicle control program under title II of the Act (42 U.S.C. 7521–7574), which involves controls for automobile, truck, bus, motorcycle, and aircraft emissions; new source performance standards under section 111 (42 U.S.C. 7411); National Emission Standards for Hazardous Air Pollutants under section 112 (42 U.S.C. 7412); and title IV of the Clean Air Act Amendments of 1990 (42 U.S.C. 7651–76510), which specifically provides for major reductions in $SO_2$ emissions.

### *B. Sulfur Oxides and Existing Standards for $SO_2$*

The principal focus of this standard review is on the health effects of $SO_2$, alone and in combination with other pollutants. Other sulfur oxide ($SO_X$) vapors (e.g., sulfur trioxide, $SO_3$) are not commonly found in the atmosphere. Information on the effects of the principal atmospheric transformation products of $SO_2$ (i.e., sulfuric acid and sulfates) was considered in the review of the particulate matter standards and addressed in the revisions to these standards promulgated on July 1, 1987 (52 FR 24634); it will be considered again in the next review of the particulate matter standards, the commencement of which was announced on April 12, 1994 (59 FR 17375).

Sulfur dioxide is a rapidly diffusing reactive gas that is very soluble in water. It is emitted principally from combustion or processing of sulfur-containing fossil fuels and ores. Sulfur dioxide occurs in the atmosphere with a variety of particles and other gases, and undergoes chemical and physical interactions with them forming sulfates and other transformation products. At elevated concentrations, $SO_2$ can adversely affect human health. Annual average $SO_2$ levels range from less than 0.004 ppm in remote rural sites to over 0.03 ppm in the most polluted urban industrial areas. The highest short-term values are found in the vicinity (<20 km) of major point sources. In the absence of adequate controls, maximum levels at such sites for 24-hour, 3-hour, and 1-hour averages can reach or exceed 0.4 ppm, 1.4 ppm, and 2.3 ppm, respectively. The origins, relevant concentrations and potential effects of $SO_2$ are discussed in more detail in the revised criteria document (EPA, 1982a), in the staff paper (EPA, 1982b), in the criteria document addendum (EPA, 1986a), and the staff paper addendum (EPA, 1986b).

On April 30, 1971, the EPA promulgated the primary NAAQS for $SO_2$ under section 109 of the Act (36 FR 8186). The existing primary standards for sulfur oxides, measured as $SO_2$, are 365 $\mu g/m^3$ (0.14 ppm), averaged over a period of 24 hours and not to be exceeded more than once per year, and 80 $\mu g/m^3$ (0.030 ppm) annual arithmetic mean. The scientific and technical bases for the current standards are contained in the original criteria document, Air Quality Criteria for Sulfur Oxides (DHEW, 1970).

Implementation of $SO_2$ air quality standards by the States and the EPA, together with fuel use shifts and siting decisions motivated by changing economic conditions, have resulted in substantial improvements in ground level air quality. Annual emissions decreased significantly between 1975 and 1982, from 25.7 to 21.4 million metric tons/year. During the mid to late eighties and early nineties, however, annual emissions of $SO_2$ have remained basically the same, at approximately 20.6 million metric tons/year (EPA, 1993a).

Title IV of the Act, the acid rain program, requires that electric utilities reduce annual $SO_2$ emissions by 10 million short tons (9 million metric tons) per year from the 1980 baseline of 23.3 million metric tons. This reduction will be implemented in two phases. The phase 1 reductions are to be accomplished by 1995, and the bulk of the phase 2 reductions are to be accomplished by the year 2000, with an expected annual emission rate of 16.38 million metric tons that year. Total expected reductions from title IV will result in an annual emission rate of 14.22 metric tons in the year 2015.

Ambient air $SO_2$ trends over the decade from 1983 to 1992 show a definite downward trend, though the rate of decline has slowed over the last few years. Annual mean $SO_2$ decreased at a median rate of approximately 2 percent per year, resulting in a total drop of 23 percent. The annual second highest 24-hour values over this same time period decreased 31 percent, at an average rate of 4 percent per year (EPA, 1993a). The most recent trends of $SO_2$ measured in the ambient air have continued to show improvement. Annual mean concentrations decreased a total of 11 percent between 1990 to 1992. Over the last 2 years, the average annual mean $SO_2$ decrease was 7 percent. Second maximum 24-hour $SO_2$ concentrations declined 12 percent between 1990 and 1992 and 4 percent between 1991 and 1992 (EPA, 1993a).

### *C. Development of Revised Air Quality Criteria for Sulfur Oxides and Review of the Standards: Development of the Staff Paper*

On October 2, 1979, the EPA announced it was revising the original criteria document for sulfur oxides concurrently with that for particulate matter to produce a combined particulate matter/sulfur oxides (PM/SOx) criteria document (44 FR 56731). A more complete history of the revisions and addenda to the criteria document and staff paper, as well as the text of all CASAC closure letters, is presented in the 1988 proposal (53 FR 14926, April 26, 1988). A brief synopsis appears below.

The EPA provided a number of opportunities for review and comment on the revised criteria document by organizations and individuals outside the Agency. Three drafts of the revised criteria document, prepared by the EPA's Environmental Criteria and Assessment Office (ECAO), were made available for external review (45 FR 24913, April 11, 1980; 46 FR 9746, Jan. 29, 1981; 46 FR 53210, Oct. 28, 1981). The EPA received and considered numerous and often extensive comments on each of these drafts, and CASAC has held three public meetings (August 20–22, 1980; July 7–9, 1981; November 16–18, 1981) to review successive drafts of the document. Transcripts of these meetings have been placed in the docket for the criteria document (ECAO CD 79–1). In addition, five public workshops were held at which the EPA, its consulting authors and reviewers, and other scientifically and technically qualified experts selected by the EPA discussed the various chapters of the draft document and suggested ways of resolving outstanding issues (45 FR 74047, Nov. 7, 1980; 45 FR 76790, Nov. 20, 1980; 45 FR 78224, Nov. 26, 1980; 45 FR 80350, Dec. 4, 1980; 46 FR 1775, Jan. 7, 1981). The comments received were considered in the preparation of the final document. A CASAC "closure" memorandum indicating the Committee's satisfaction with the final draft of the criteria document and outlining key issues and recommendations was issued in December 1981.

Following closure, a number of scientific articles were published, or accepted for publication, that appeared to be of sufficient importance to the development of criteria for the primary standards for $SO_2$ to necessitate an addendum to the criteria document. Two drafts of the addendum were reviewed by CASAC and members of the public in two public meetings (April 26–27, 1982; August 30–31, 1982), and transcripts of the meetings have been placed in the docket. The addendum was included as Appendix A to Volume I of the criteria document (EPA, 1982a) when the document was issued on March 20, 1984 with the proposed revisions to the ambient air quality standards for particulate matter (49 FR 10408, Mar. 20, 1984).

As part of this process, the EPA's Office of Air Quality Planning and Standards (OAQPS) in the spring of 1982 prepared the first draft of a staff paper, "Review of the National Ambient Air Quality Standards for Sulfur Oxides: Assessment of Scientific and Technical Information-OAQPS Staff Paper." The first draft and a second draft of the staff paper were reviewed at CASAC meetings on April 26–27, 1982 (47 FR 16885, April 20, 1982), and August 30–31, 1982 (47 FR 34855, Aug. 10, 1982), respectively, and transcripts of these meetings have been placed in the docket (Docket No. A–79–28). Numerous written and oral comments were received on the drafts from CASAC, representatives of organizations, individual scientists, and other interested members of the public, and some revisions engendered by these comments are discussed in an August 5, 1982 letter to CASAC (Padgett, 1982), as well as the executive summary of the staff paper. The EPA released the final OAQPS staff paper (EPA, 1982b), upon receipt of the formal CASAC closure letter in August 1983 (Goldstein, 1983), accompanied by a minority statement by one member (Higgins, 1983).

In 1984, the Administrator reviewed the standards in light of the above information and decided, at that time, not to propose any revision of the standards.

In 1986, in response to the publication in the scientific literature of a number of additional studies on the health effects of $SO_2$ (as well as some new particulate matter studies), ECAO commenced a second addendum to the PM/$SO_X$ criteria document (51 FR 11058, Apr. 1, 1986). An external review draft was made available for public comment (51 FR 24392, Jul. 3, 1986) and CASAC held a public meeting on October 15–16, 1986 to review the criteria document addendum (transcript in public docket No. A–82–37). When development of a second addendum of the criteria document was initiated in 1986, OAQPS decided to simultaneously commence an addendum to the staff paper as well (51 FR 24392, Jul. 3, 1986). An external review draft of the addendum to the staff paper was also issued, and the staff paper was reviewed at the same public CASAC meeting at which the second addendum to the criteria document was considered.

The CASAC sent a closure letter on the criteria document addendum to the Administrator dated December 15, 1986, and another on the staff paper, dated February 1987. The closure letter on the staff paper addendum, which also discusses major issues addressed by the CASAC and the Committee's recommendations, is reprinted in Appendix 1 to this notice. The final addenda to the criteria document (EPA, 1986a) and the staff paper (EPA, 1986b), are available from the address listed above. Where there are differences between the 1982 criteria document and staff paper and the more recent addenda, the addenda supersede the earlier documents.

*D. Rulemaking Docket*

The EPA established a standard review docket for the sulfur oxides review in July 1979. The EPA also established a rulemaking docket (Docket No. A–84–25) for the April 26, 1988 proposal as required by section 307(d) of the Act. The standard review docket (Docket No. A–79–28) and a separate docket established for criteria document revision (Docket No. ECAO–CD–79–1) have been incorporated into the rulemaking docket.

**II. Summary of the 1988 Proposed Decision Not To Revise the Current Standards**

On April 26, 1988 (53 FR 14926), the EPA announced its proposed decision not to revise the existing primary and secondary $SO_X$ standards (measured as $SO_2$). In reaching the provisional conclusion that the current standards provided adequate protection against the health and welfare effects associated with $SO_2$, the EPA was mindful of uncertainties in the available evidence concerning the risk that elevated short-term (<1-hour) $SO_2$ concentrations pose to asthmatic individuals exercising in ambient air. Therefore, the EPA specifically requested broad public comment on the alternative of revising the current standards and adding a new 1-hour primary standard of 0.4 ppm. The notice also announced that if a 1-hour primary standard were adopted, consideration would be given to replacing the current 3-hour secondary standard (1,300 μg/m³ (0.5 ppm)) with a 1-hour secondary standard set equal to the primary standard, and adopting an expected-exceedance form for all of the standards.

The EPA also concluded in the April 26, 1988 notice, based upon the then-current scientific understanding of the acidic deposition problem, that it would not be appropriate, at that time, to propose a separate secondary $SO_X$ standard to provide increased protection against the acidic deposition-related effects of $SO_X$. The notice added that when the fundamental scientific uncertainties had been reduced through ongoing research activities, the EPA would draft and support an appropriate set of control measures.

The EPA also proposed minor technical revisions to the standards, including restating the levels for the primary and secondary standards in terms of ppm rather than μg/m³, adding explicit rounding conventions, and specifying data completeness and handling conventions. The EPA also announced its intention to retain the block averaging convention for the 24-hour, annual, and 3-hour standards and proposed to eliminate any future questions in this regard by adding clarifying language to 40 CFR 50.4 and 50.5. Based on its assessment of the $SO_2$ health effects information, the EPA also proposed to revise the significant harm levels for $SO_2$ and the associated example air pollution episode levels (40 CFR part 51). Finally, the EPA proposed some minor modifications to the ambient air quality surveillance requirements (40 CFR part 58).

The April 26, 1988 (53 FR 14926) notice sets forth in detail the rationale for the proposals discussed above and provides other background information.

**III. Post-Proposal Developments**

*A. Opportunities for Public Comment*

Following the publication of the proposal, the EPA held a public meeting in Washington on June 10, 1988 to receive comment on the April 26, 1988 proposal. A transcript of the meeting has been placed in the public docket (Docket No. A–84–25). On July 20, 1988, the EPA announced an extension of the public comment period from July 25, 1988 to September 23, 1988 (53 FR 27362). The EPA issued a second notice on September 21, 1988 (53 FR 36587) to clarify that issues concerning block versus running averaging conventions should be fully aired in the sulfur dioxide rulemaking initiated by the April 26, 1988 notice (53 FR 14926). At the same time, the EPA extended the comment period until November 22, 1988 to provide ample opportunity for the public to comment.

*B. Legislative Activity*

In July 1989, legislative proposals for amending the Act were submitted to Congress. This initiative included a comprehensive program to address the acidic deposition problem. After extensive deliberation, the 1990 Amendments, including the title IV acid rain provisions, were passed by Congress and signed into law by the President on November 15, 1990. As discussed earlier in section I.B., and below, title IV of the 1990 Amendments was developed specifically to address the acidic deposition problem but will have an attendant benefit of reducing $SO_2$-related health effects.

*C. Litigation on Secondary Standard*

Prior to the 1988 proposal, the Environmental Defense Fund and other plaintiffs had sued the EPA under section 304 of the Act to compel review and revision of the NAAQS for $SO_X$ under section 109(d)(1) of the Act, *Environmental Defense Fund* v. *Reilly*, No. 85 C.V. 9507 (S.D.N.Y.). In response to a decision of the U.S. Court of Appeals for the Second Circuit in 1989, *Environmental Defense Fund* v. *Thomas*, 870 F.2d 892 (2d Cir. 1989), the EPA and the plaintiffs ultimately entered into a consent decree as an alternative to further litigation. The decree required the EPA to take final action by April 15, 1993 on the secondary standard portion of the 1988 proposed rulemaking.

*D. Decision on Secondary Standard*

A final decision under section 109(d)(1) of the Act that revision of the secondary standard was not appropriate was signed on April 15, 1993 and was published in the *Federal Register* on April 21, 1993 (58 FR 21351). The rationale for the decision is set forth in the April 21, 1993 notice. At that time it was also announced that when action was completed on the primary standards portion of the 1988 proposal, the EPA would decide whether to adopt minor technical changes discussed in the 1988 proposal.

*E. Litigation on Primary Standard*

In 1992, the American Lung Association sued the EPA to compel review and, if appropriate, revision of the primary standards for $SO_x$, *American Lung Association* v. *Browner*, No. 92–CV–5316 (ERK) (E.D.N.Y.). The U.S. District Court for the Eastern District of New York subsequently issued an order requiring that the EPA by November 1, 1994: take final action on the 1988 proposed decision not to revise the primary standards, or repropose and take final action on the reproposal within 1 year after the close of the public comment period.

*F. Supplementation of the Criteria Document and the Staff Paper*

In response to the more recent publication of controlled human studies on the health effects of short-term peaks of $SO_2$ on asthmatic individuals, the ECAO commenced preparation of a supplement to the second addendum to the PM/$SO_2$ criteria document in 1992. The OAQPS prepared a draft of a supplement to the staff paper addendum to update its assessment of the new information contained in the Criteria Document Supplement and to take into account more recent air quality and exposure information. Initial drafts of these documents were completed in June, 1993. The EPA announced the availability of an external review draft of both documents for public comment on July 30, 1993 (58 FR 40818), and the documents were reviewed by the CASAC at a public meeting on August 19, 1993. Recommended changes were made, and revised drafts of both documents were made available for public comment (59 FR 11985, March 15, 1994). Both documents were reviewed at a public CASAC meeting on April 12, 1994. The CASAC provided its advice and recommendations to the Administrator in a letter dated June 1, 1994 that is reprinted in Appendix 2.

**IV. Summary of Public Comments as to Primary Standards and Associated Technical Changes**

The following discussion summarizes in general terms the comments received from the public regarding the key aspects of the April 26, 1988 notice as they pertain to the primary standards and associated technical changes. The individual comments have been entered into the public docket (Docket No. A–84–25). For a summary of public comments on the secondary standard, see 58 FR 21354, Apr. 21, 1993.

Extensive written comments were received on the 1988 proposal. Of some 90 written submissions, 33 were provided by individual industrial concerns or industry groups, 14 by State, local and Federal government agencies and organizations, 14 by environmental and public interest groups, and 29 by individual private citizens.[1] The comments on the key aspects of the April 26, 1988 notice pertaining to the primary standard and associated part 50 technical changes are summarized below.

*A. Current 24-Hour and Annual Standards*

Virtually all of the comments that specifically addressed the adequacy of the current standards supported the Administrator's 1988 finding that the current primary $SO_2$ standards are adequate to protect the public health from the effects associated with 24-hour and annual average $SO_2$ concentrations in the atmosphere. As discussed below, the principal exceptions were the comments submitted on the issue of the averaging convention of the standards. These commenters maintained that the current primary standards would not provide adequate protection against adverse health effects if measurements of the currently prescribed concentration levels were restricted to the block averaging convention.

*B. Averaging Convention for the Current Standards*

Comments on the Administrator's decision to retain the block averaging convention for the 3-hour, 24-hour, and annual standards were sharply divided. The industry comments on this issue strongly supported the proposed decision to retain the block averaging convention as the appropriate method for determining compliance with the current standards. In support of this position, these commenters typically took note of the text of the 1971 promulgation notice, the Air Quality Criteria for Sulfur Oxides (DHEW, 1970), contemporaneous papers that discussed how the measurements were to be collected and analyzed, and the fact that implementation of the standards for the most part has been based on block averaging. The environmental groups maintained, however, that the wording of the original standards clearly did not preclude the use of the running averaging convention; that the EPA's monitoring capabilities, guidance, and implementation practice demonstrated that the standards were not restricted to block averaging; and accordingly that the use of running averaging would not represent a tightening of the standards. Several State agencies supported the adoption of a running interpretation or requested that the EPA remain silent so as not to undercut the States' use of running averages, while other States and municipalities supported the EPA's proposed decision.

*C. 1-Hour Standard Alternative*

Discussion on this subject was highly polarized. Industry groups and their representatives uniformly opposed a short-term standard, while environmental groups, private citizens, and most State and local agencies that commented strongly favored the adoption of such a standard. Industry maintained that the clinical studies of asthmatics used to support the possible need for a short-term standard failed to show effects that were of such medical significance as to be considered "adverse" under the Act. Environmental groups argued that the effects seen were medically significant and "adverse" at concentrations below 0.5 ppm and called for a standard to be set at levels considerably below the 0.4 ppm, 1-hour alternative that was presented for comment. The nature of the comments were such that there was virtually no consensus over the significance of effects among industry, environmental groups, and the different medical experts that commented on the issue.

In support of their position that a short-term standard was not needed, industry groups placed great weight on the results of the exposure analysis presented in the April 26, 1988 notice. They maintained that the analysis demonstrated that the current standards provided considerable protection against short-term peak exposures and that the remaining risk did not pose a significant public health problem. Some environmental groups took exception to the EPA's use of the exposure analysis. They maintained that a large under-counting of exposures occurred because the analysis did not address potential exposures from nonutility sources such as nonferrous smelters, paper mills, and petroleum refineries. Some also argued that the EPA's reliance on the exposure analysis as a basis for retaining the existing standards was without legal authority. These commenters were also critical of the Agency's use of typical activity patterns and maintained that other aspects of the analysis were deficient. Industry groups generally supported the use of exposure analyses

[1] The numerical distribution of comments in each category should be viewed with caution. Industry groups typically submit comments on behalf of their member companies in lieu of having each of their member companies sending separate comments. Similarly, comments from environmental or other interest groups represent the views of a number of individuals.

in the standard setting process and maintained that the EPA's focus on utilities was appropriate given that they are the largest emitters of $SO_2$.

Environmental groups and private citizens also expressed concern that the significance of asthma episodes were being downplayed and raised concerns about exposures of children, who were dependent on adults for medication and care. They were also highly critical of the EPA's characterization of the number of asthmatics (up to 100,000) potentially at risk to $SO_2$ peak exposures as small.

State and local agencies that commented mostly supported the adoption of a short-term 1-hour standard.

Finally, environmental groups maintained that the 1-hour alternative would not protect against short-term 2- to 10-minute peak $SO_2$ concentrations. In support of their position, data were submitted showing that certain types of $SO_2$ sources may have very high 5-minute peaks (>1 ppm) and still have hourly averages below 0.4 ppm even when the current standards are being attained. One of the industry commenters also noted that an averaging time shorter than 1 hour would be needed to protect against very high 3- to 5-minute peak $SO_2$ levels and cited an instance where a 3- to 5-minute peak of 3.7 ppm $SO_2$ occurred, yet the 1-hour average was only 0.29 ppm. This commenter went on to suggest, however, that such problems would be better addressed through a properly designed program under the authority of section 303 of the Act rather than through the adoption of a new short-term ambient air quality standard.

*D. Other Changes to Standards*

While a number of commenters favored the adoption of a new 1-hour standard, little, if any, support was voiced for the associated revisions that the EPA indicated it was considering if a 1-hour standard was adopted. Few, if any, commenters supported the adoption of an expected exceedance form for all of the standards. While several commenters recognized that a statistical form had certain technical advantages, they expressed concern that its adoption would reduce the protection afforded by the current 3-hour, 24-hour and annual standards.

*E. Technical Revisions to 40 CFR 50.4 and 50.5*

There was general support for the EPA's proposal to restate the levels of the standards in terms of ppm rather than μg/m³ and for adding explicit rounding conventions and data completeness and handling conventions to the regulations.

## V. Rationale for Proposed Decisions

*A. Basis for the Current 24-Hour and Annual Standards*

The rationale for retaining the current 24-hour and annual primary standards was presented in some detail in the 1988 proposal (53 FR 14930, Apr. 26, 1988) and remains unchanged. At that time, the EPA concluded that the current 24-hour and annual standards appeared to be both necessary and adequate to protect human health against $SO_2$ concentrations associated with those averaging periods. The EPA also concluded that retaining the current 24-hour and annual standards was consistent with the scientific data assessed in the criteria document and staff paper and their addenda and with the advice and recommendations of the staff and the CASAC.

The EPA again provisionally concludes, based on the information assessed in the criteria document and staff paper and their addenda, that the current 24-hour and annual primary standards provide adequate health protection against the effects associated with those averaging periods. In reaching this proposed decision, the EPA takes note that the health effects information on 24-hour and annual $SO_2$ exposures remains largely unchanged since 1988. When newer information becomes available and has undergone the rigorous and comprehensive assessment, including CASAC review, necessary for incorporation into a new criteria document, it will provide the basis for the next periodic review of the 24-hour and annual primary standards.

*B. Consideration of Short-Term Peak $SO_2$ Exposures*

A number of new studies have become available since 1988 that examine the potential health effects on asthmatic individuals associated with short-term (≤1-hour) exposures to $SO_2$. In view of these new studies and other relevant new information, the EPA prepared a "Supplement to the Second Addendum (1986) to Air Quality Criteria for Particulate Matter and Sulfur Oxides (1982): Assessment of New Findings on Sulfur-Dioxide Acute Exposure Health Effects in Asthmatic Individuals" ("Criteria Document Supplement") (EPA, 1994a) and an associated staff paper supplement "Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information—Supplement to the 1986 OAQPS Staff Paper Addendum" ("Staff Paper Supplement") (EPA, 1994b). These two documents, together with the 1986 addenda, provide the primary basis for the EPA's present assessment of the health effects and related information on short-term $SO_2$ exposures and the Administrator's consideration of appropriate regulatory responses. The discussion below summarizes the basis for considering alternative regulatory responses to address the potential effects associated with short-term peak $SO_2$ exposures.

1. Assessment of Health Effects Associated With Short-Term $SO_2$ Exposures

a. *Sensitive Populations.* It is clear that healthy nonasthmatic individuals are essentially unaffected by acute exposures to $SO_2$ at concentrations below 2 ppm and do not constitute a population of concern for short-term, acute $SO_2$ exposure effects.

Based on the assessment in the Criteria Document Supplement (EPA, 1994a), the EPA concludes that mild and moderate asthmatic children, adolescents, and adults that are physically active outdoors represent the population segments at most risk for acute $SO_2$ induced respiratory effects. Individuals with more severe asthmatic conditions have poor exercise tolerances; as a result, they are very unlikely to engage in sufficiently intense outdoor activity to achieve the requisite breathing rates for $SO_2$-induced respiratory effects to occur and therefore maybe at somewhat lower risk. While current studies are suggestive of greater $SO_2$ responsiveness among those asthmatic patients with more severe disease, this issue cannot be unequivocally resolved. However, because of the lower baseline function in moderate and severe asthmatic persons, especially those lacking optimal medication, any effect of $SO_2$ would further reduce their lung function toward levels that may become cause for medical concern (EPA, 1994a, p. 44).

While it has been suggested that nonasthmatic atopic individuals may also represent a broader population group at increased risk (White, 1994; 53 FR 14931–14932, Apr. 26, 1988), other assessments have not found evidence establishing the atopic group to be particularly responsive to $SO_2$ (EPA, 1994a, p. 52; EPA, 1994b, p. 10; Linn et al., 1987).

b. *Asthma.* About 10 million people or 4 percent of the population of the United States are estimated to have asthma (NIH, 1991). The true prevalence may be as high as 7 to 10 percent of the population (Evans et al., 1987), because some individuals with mild asthma may be unaware that they have the disease and thus go unreported. The prevalence is higher among African-Americans, older (8- to 11-year-old) children, and urban residents (Schwartz et al., 1990).

The Expert Panel Report from the National Asthma Education Program of the National Heart, Lung and Blood Institute (NIH, 1991) has recently defined asthma as "a lung disease with the following characteristics: (1) Airway obstruction that is reversible (but not completely so in some patients) either spontaneously or with treatment, (2) airway inflammation, and (3) increased airway responsiveness to a variety of stimuli." Common symptoms include cough, wheezing, shortness of breath, chest tightness, and sputum production. Asthma is characterized by an exaggerated bronchoconstrictor response to many physical challenges (e.g., cold or dry air, exercise) and chemical and pharmacologic agents (e.g., histamine or methacholine).

Daily variability in lung function measurements is a typical feature of asthma, with the poorest function (i.e., lowest forced expiratory volume in 1 second ($FEV_1$) and highest specific airway resistance (SRaw) being experienced in the early morning hours and the best function (i.e., highest $FEV_1$ and lowest SRaw) occurring in the mid-afternoon.

The degree of exercise tolerance varies with the severity of disease. Mild asthmatic individuals have good exercise tolerance but may not tolerate vigorous exercise such as prolonged running. Moderate asthmatic individuals have diminished exercise tolerance and individuals with severe disease have very poor exercise tolerance that markedly limits physical activity.

Exercise-induced bronchoconstriction is followed by a refractory period of several hours during which an asthmatic individual is less susceptible to bronchoconstriction (Edmunds et al., 1978). This refractory period may alter an asthmatic individual's responsiveness to $SO_2$ or other inhaled substances.

Data from the United Kingdom and United States suggest an incidence rate of asthma attacks requiring medical attention of <1 asthmatic patient-year. It is estimated that the incidence rate of hospitalization due to asthma for all asthmatic individuals in the United States is about 45 per 1,000 asthmatics per year (NIH, 1991). Death due to asthma is a rare event: about one per 10,000 asthmatic individuals per year. Mortality rates are higher among males and about 100 percent higher among nonwhites (EPA, 1994a).

In assessing the results from the controlled human exposure studies, it should be noted that the individuals who participate in such studies typically have mild allergic asthma and can go without medication altogether or can discontinue medication for brief periods of time if exposures are conducted outside their normal allergy season. In addition, African-American and Hispanic adolescents and young adults have not been studied systematically. Finally, subjects who participate in controlled exposure studies are also generally self-selected and this may introduce some bias. Thus, the extent to which the participants in the studies reflect the characteristics of the asthmatic population at large is not known. Nevertheless, the high degree of consistency among studies suggests that the subjects are generally representative of the population at risk or that any selection bias is consistently present across a diverse group of laboratories (EPA, 1994a).

c. *Short-Term Health Effects*. The basis for considering whether additional regulatory measures are needed to reduce the occurrence of short-term peaks of $SO_2$ rests primarily on the extensive literature involving brief (2- to 10-min) controlled exposures of persons with mild (and in some cases more moderate) asthma to concentrations of $SO_2$ in the range of 0.1 ppm to 2 ppm while at elevated ventilation. The major effect of $SO_2$ on sensitive asthmatic individuals is bronchoconstriction, usually evidenced in these studies by increased specific airway resistance (SRaw) or decreased forced expiratory volume ($FEV_1$), and the occurrence of clinical symptoms such as wheezing, chest tightness, and shortness of breath. The magnitude of the response and likely occurrence of symptoms increase at higher $SO_2$ concentrations and ventilation levels and are relatively brief in duration. Numerous studies have shown that lung function typically returns to normal for most subjects within an hour of exposure. No substantial "late phase" responses have been noted for $SO_2$, unlike the case for more specific stimuli (e.g., pollen, dust mites, or other allergens) in which "late phase" inflammatory responses often occur 4–8 hours after exposure and are often much more severe and dangerous than earlier immediate responses.

In a summary of the literature up to 1986 in the Staff Paper Addendum (EPA, 1986b), the staff concluded that changes in lung function (Δ SRaw 70 percent) accompanied by symptoms could be observed in some free-breathing asthmatics at 0.4 ppm at "moderate-heavy exercise." At 0.5 ppm, slightly larger functional changes on individual and group basis were seen at moderate exercise (Δ SRaw 50—100 percent), while at 0.6–0.75 ppm $SO_2$ functional changes and symptoms could be observed at light-moderate exercise (Δ SRaw 120–260 percent), with the effects being judged "indicative of clinical significance." Effects at 1–2 ppm $SO_2$ were seen as even more pronounced, ranging from "moderate" to "incapacitating" for some individuals (53 FR 14948, April 26, 1988). As the concentration increases within the range studied, effects are more pronounced and the fraction of asthmatic subjects who respond increases (53 FR 14947, April 26, 1988).

Since 1986 several new studies have been published providing pertinent information on: (1) The response of individuals with more moderate asthma to $SO_2$, (2) the duration of exposure necessary to provoke a response to $SO_2$, and (3) the effects of medication on the $SO_2$ response. Much of these data also provide a more thorough picture of the magnitude of responses in the range of 0.4 to 1.0 ppm, the range previously identified as being of interest (53 FR 14948, April 26, 1988). Data from several of these recent large-scale chamber studies were reexamined to provide a better understanding of the response observed in more sensitive subjects. Forced expiratory volume in one second was used as a measure of lung function, in addition to specific airway resistance, and other endpoints examined included symptoms, alteration of workload, and medication usage occurring as a consequence of these exposures.

Table B–1 of the Criteria Document Supplement (EPA, 1994a) summarizes the lung function changes in response to $SO_2$ concentrations in the range of 0.6–1.0 ppm from controlled human exposure studies. Because different studies used different measures of lung function ($FEV_1$ or SRaw), and different concentrations of $SO_2$, the discussion that follows will describe group mean changes first for the studies that used the measure SRaw, then group mean changes for studies that used $FEV_1$, and then finally the individual responses.

The data indicate that, in terms of group mean changes, total SRaw changes[2] were approximately twice as

[2] Since elevated ventilation sufficient for oronasal breathing to occur is a requirement for most asthmatic persons to respond to $SO_2$, and because many asthmatic individuals experience bronchoconstriction responses to exercise alone, it is useful to distinguish between the two different effects. Any measure of lung function such as $FEV_1$

great at 0.6 ppm and above as at 0.5 ppm and below. The differences were even more pronounced when the changes in airway resistance due to $SO_2$ alone (i.e., after correction for the effects of exercise) were considered.

For $FEV_1$, the difference in responses between 0.4 ppm and 0.6 ppm $SO_2$ were not as pronounced. At 0.6 ppm $SO_2$, group mean decreases in total $FEV_1$ of approximately 20 percent were observed in the mild and moderate asthmatics studied. The changes in $FEV_1$ due to $SO_2$ alone resulted in decreases in $FEV_1$ of approximately 15 percent (EPA, 1994a, Table B–1).

In addition, at 0.6 ppm $SO_2$, 25 percent or more of the subjects had pronounced individual responses (either a 200 percent or greater increase in SRaw or a 20 percent or greater decrease in $FEV_1$) due to $SO_2$ alone (total changes in lung function for these individuals would be expected to be even greater). In contrast, at ≤0.5 ppm $SO_2$ these more pronounced individual responses were less frequent, occurring in fewer than 25 percent of the subjects for both measures of lung function for all but one group studied (EPA, 1994a, p. B–2).

While not examined in as much detail as lung function, other indicators of severity also tend to increase with increasing $SO_2$ concentration. For instance, in one study, four of 24 moderate/severe asthmatic subjects were required to reduce their exercise level because of asthma symptoms at 0.6 ppm $SO_2$. This occurred only once at each of the lower concentrations (EPA, 1994a). Two recent studies which considered medication used to mitigate the effects of $SO_2$ as a health endpoint and which followed the subjects' medication use in detail, found approximately twice as many subjects took medication immediately after exposure to 0.6 ppm $SO_2$ than after exposure to 0.3 ppm $SO_2$ (EPA, 1994a, Table 7, p. 40).

Considering the variety of endpoints for which information is available, clearly the effects beginning at 0.6 ppm and up to 1.0 ppm are more pronounced than those at lower concentrations. This is in agreement with the conclusions reached in the Staff Paper Addendum (EPA, 1986b), which stated that there were "clearer indications of clinically or physiologically significant effects at 0.6 to 0.75 ppm $SO_2$ and above" (53 FR 14947, Apr. 26, 1988).

d. *Significance of Effects.* Opinions on the significance of the effect expressed by CASAC and others have been widely divergent. Some CASAC members and outside commenters feel that the responses reported in the range of 0.6 to 1.0 ppm $SO_2$ are not significant, especially when viewed in the context of the frequency with which asthmatics ordinarily experience similar effects in the course of their daily lives. Other CASAC members and commenters strongly felt that bronchoconstriction of the degree reported in this range of exposure is of medical significance and likely to place an exposed asthmatic at an unacceptable risk of harm.

The frequency of $SO_2$ induced asthmatic episodes relative to those provided by other stimuli (such as cold/dry air or moderate exercise) would be expected to vary from one asthmatic individual to another and from one location to another. As such, the relative contribution of $SO_2$ to acute episodes of asthma cannot be precisely assessed. However, staff did compare the effects of $SO_2$ observed in the recent controlled human exposure studies to the effects of moderate exercise, typical daily variation in lung function, and the severity of frequently experienced asthma symptoms. The effects of 0.6 ppm $SO_2$ exposure at moderate exercise, as measured by $FEV_1$, exceeded either the typical effect of exercise alone or typical daily variations in $FEV_1$ (EPA, 1994a, sections 4.3 and 5.3). For symptomatic responses, two to eight times as many subjects after exposure at exercise to 0.6 ppm $SO_2$ experienced symptoms of at least moderate severity (13–62 percent of subjects) than after exercise in clean air alone (4–19 percent of subjects) (EPA, 1994a, p. B–12). In addition, a significant portion of subjects (approximately 15 to 60 percent, depending on asthma status) participating in certain controlled human exposure studies seemed to experience symptoms more frequently in response to 0.6 ppm $SO_2$ than reported at any other time during the majority of the weeks during which they participated in the study (EPA, 1994a, p. B–12).

Furthermore, the response seen in the most sensitive 25 percent of responders at 0.6 ppm equaled or exceeded approximately a 30 percent decline in $FEV_1$ for mild asthmatic subjects and approximately a 40 percent decline for moderate asthmatic individuals. By comparison, during clinical bronchoprovocation testing changes are not usually induced beyond a 20 percent decrease in $FEV_1$.

In addition, while at least some subjects can experience such a 20 percent decline without experiencing symptoms, in recent studies focusing on effects at 0.6 ppm $SO_2$, from 33 percent to 43 percent of moderate asthmatics and from 6 percent to 35 percent of mild asthmatics experienced at least a 20 percent decrease in total $FEV_1$ in conjunction with symptoms rated as being of moderate severity or worse. Also deserving consideration is the fact that moderate/severe asthmatic subjects start an exposure with compromised lung function compared to mild asthmatic subjects. Thus, it is not clear that similar functional declines beginning from a different baseline have the same biological importance (EPA, 1994a, pp. 21–25).

In the Staff Paper Addendum, "bronchoconstriction . . . accompanied by at least noticeable symptoms," was seen as an appropriate measure of concern (EPA, 1986b, p. 37). However, a substantial proportion of the subjects in these more recent studies are experiencing greater effects, bronchoconstriction with at least moderate symptoms, beginning at 0.6 ppm $SO_2$ (EPA, 1994a).

Considering the recent body of evidence along with previous studies, the Criteria Document Supplement (EPA, 1994a) concluded that substantial percentages (≥25 percent) of mild or moderate asthmatic individuals exposed to 0.6 to 1.0 ppm $SO_2$ during moderate exercise would be expected to have respiratory function changes and severity of symptoms that distinctly exceed those experienced as typical daily variation in lung function or in response to other stimuli, such as moderate exercise. The severity of effects for many of the responders is likely to be of sufficient concern to cause disruption of ongoing activities, use of bronchodilator medication, and/or possible seeking of medical attention. At most, only 10 to 20 percent of mild or moderate asthmatic individuals are likely to exhibit lung function decrements in response to $SO_2$ exposures of 0.2 to 0.5 ppm that would be of distinctly larger magnitude than typical diurnal variation in lung function or changes in lung function experienced by them in response to other often encountered stimuli. Furthermore, it appears likely that only the most sensitive responders might experience sufficiently large lung function changes and/or respiratory

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or SRaw can be expressed as the "Total $FEV_1$ or SRaw," which is the total change in lung function experienced by the subject as a result of an exposure to $SO_2$ while at exercise, or broken down to "the effect of changes due to $SO_2$ alone," which represents the total lung function change observed minus the change seen for that subject from a control exposure at exercise in clean air. Both measures have their utility: total $FEV_1$ or SRaw indicates the magnitude of overall lung function change actually experienced by the subject, while the change due to $SO_2$ alone indicates how much of this total change is attributable to the pollutant itself.

symptoms of such severity as to be of potential health concern, that is leading to the disruption of ongoing activities, the need for bronchodilator medication, or seeking of medical attention.

Based on the staff's assessment, a number of additional factors are important in assessing the significance of effects resulting from $SO_2$ exposures and determining appropriate concentrations of concern.

*Time Course of Response.* If an asthmatic individual is at elevated ventilation and encounters a brief $SO_2$ peak concentration, the onset of the effect can be very rapid although the response does not typically approach maximal levels until 5 minutes of exposure. For example, the total lung function response from a 2-minute exposure was reported to be only 50 percent of that observed after 5 minutes of exposure (Horstman et al., 1988). Balmes (1987) reported (in a mouthpiece exposure study) the response after 3 minutes of exposure was 67 percent of that observed after 5 minutes. After 5 minutes of exposure the magnitude of the response does not appear to significantly increase based on comparisons of lung function changes after 5-minute and 10-minute exposures (Linn, 1983b; EPA, 1986b, p. A–1).

The response is also generally brief in duration; numerous studies have shown that lung function typically returns to normal for most subjects within an hour of exposure. This duration is similar to that experienced in response to exercise and somewhat less than experienced in response to allergens (EPA, 1994b, p. 18). Even if exposure continues beyond the initial 5–10 minutes, lung function may still return to normal as long as the subject ceases to exercise and their ventilation rate decreases to resting levels (Hackney et al., 1984; Schachter et al., 1984).

*Effect of Varying Temperature and Humidity.* Broncho-constriction in response to $SO_2$ and exercise is: (a) Reduced by warm or humid conditions, and (b) exacerbated by cold or dry conditions. Thus, the observed effects such as those described above could be either more pronounced, less pronounced, or similar depending on the ambient conditions present during exposure at elevated ventilation.

*Effect of Varying Ventilation Rate and Breathing Mode.* Another factor that can affect the magnitude of the $SO_2$ induced response is ventilation rate. At higher ventilation rates the responses are likely to be more pronounced at any given $SO_2$ concentration than those observed at lower ventilation rates. The effects of $SO_2$ increase with both increased overall ventilation rates and an increased proportion of oral ventilation in relation to total ventilation (EPA, 1986a, p. 11). Oral ventilation is thought to accentuate the response because the scrubbing of $SO_2$ by the nasal passageways is bypassed. Based on its assessment of the available data, the staff concluded that the ventilation rates of concern begin at 35–50 L/min, when most individuals generally switch to oronasal breathing.

Ventilation rates in the range of 35–40 L/min are comparable to ventilation rates induced by climbing three flights of stairs, light cycling, shoveling snow, light jogging, or playing tennis, and can be induced in a laboratory by walking at 3.5 mph up a 4 percent grade. Ventilation rates in the range of 45–50 L/min are equivalent to moderate cycling, chopping wood, light uphill running, and can be induced by walking at 3.5 mph up an 8 percent grade (EPA, 1994b, p. 20).

While the $SO_2$ effects reported for mild or moderate asthmatic individual are likely to be more pronounced if an individual asthmatic is at a ventilation rate higher than 35–50 L/min (EPA, 1994b, p. 19), the available activity and ventilation data indicate that individuals engage in outdoor activities that induce ventilation rates of 35–50 L/min only a small percentage of the time (EPA, 1994b, p. 20). Thus, it is unlikely that asthmatic individuals in general would attain sufficiently high ventilation rates (i.e., greater than 35–50 L/min) frequently enough to markedly increase the health risk posed by peak $SO_2$ exposures.

*Use of Medication.* The extent to which an asthmatic individual is already medicated for protection against other bronchoconstriction inducing stimuli (e.g., cold dry air, allergens, etc.) and thus would be protected against $SO_2$, has been considered relevant in assessing (a) the likelihood of experiencing a bronchoconstriction response to $SO_2$ and, by extension, (b) the significance of these effects (53 FR 14932, Apr. 26, 1988). The available data now indicate that most types of regularly administered asthma medications are not very effective in blocking the $SO_2$ response. The exception, however, is the most commonly used class of asthma medications, the β-sympathomimetic drugs (beta-agonist bronchodilator), which are usually highly effective in preventing the $SO_2$ response from developing if taken shortly before exposure.

Prophylactic use of beta-agonist bronchodilators to prevent the effects of $SO_2$ requires either anticipation of exposure or routine use prior to engaging in vigorous outdoor activities. While some asthmatic persons do premedicate before exercise, available published data suggest infrequent bronchodilator use in general among mild asthmatic persons and a wide range of compliance rates (from very low to full) among regularly medicated asthmatic persons as a whole (EPA, 1994a, section 2.2). The staff's assessment of this also found low use of beta-agonist bronchodilators among asthmatic subjects participating in some of the clinical studies evaluating $SO_2$ effects, as well as the relative absence of routine medication use before exercise among such subjects (EPA, 1994a). Given the infrequent use of medication by many mild asthmatic individuals and the poor medication compliance of 30 to 50 percent of the "regularly medicated" asthmatic patients, it appears that a substantial proportion of asthmatic subjects would not likely be "protected" by medication use from impacts of environmental factors on their respiratory health. However, the frequency of use of medication (bronchodilators) specifically prior to engaging in outdoor activity cannot be confidently extrapolated from epidemiologic data on medication compliance. Thus, the relative number of persons who may be protected by medication prior to exercise is unclear (EPA, 1994a, pp. 9–10).

It also should be noted that beta-agonist bronchodilators are effective in ameliorating $SO_2$-induced bronchoconstriction if an asthmatic individual has immediate access to such medication after exposure.

*Effect of Other Pollutants.* It has been suggested by one study (Koenig et al., 1990) that prior exposure to ozone may result in greater $SO_2$ effects, at any given $SO_2$ concentration, than those reported in the controlled human exposure studies that examined the effects of $SO_2$ alone. In the ambient situation, however, potential ozone ($O_3$)-induced increases in $SO_2$ effects may be at least partially attenuated by the hot humid weather that is often associated with elevated $O_3$ concentrations.

Data on whether prior nitrogen dioxide exposure produces an increased response to $SO_2$ are unclear, with a mouthpiece study showing positive effects (Jörres et al., 1990), while a chamber study of younger subjects showed no effects of $NO_2$ on responsiveness to $SO_2$ (Rubenstein et al., 1990). It appears that a pollutant that increases nonspecific bronchial responsiveness may also increase airway responses to $SO_2$ (EPA, 1994a, p. 48).

*Epidemiological Evidence.* Available epidemiological studies show no evidence of significant associations between either 24-hour or 1-hour average ambient air $SO_2$ concentrations above 0.1 ppm and increased visits to hospital emergency rooms for asthma (EPA, 1994a, p. 52). However, it is not clear to what extent epidemiologic studies could detect possible associations between very brief (≤10-minute), geographically localized, peak $SO_2$ exposures and respiratory effects in asthmatic individuals. In the absence of such data, it is not possible to associate peak ambient $SO_2$ concentrations with excess asthma mortality rates reported to be observed among nonwhite population groups in large urban areas.

*Frequency of Exposure Considerations.* Based on this assessment of the available health effects information, the authors of the Criteria Document Supplement (EPA, 1994a) concluded that an important consideration in determining the public health significance of the reported $SO_2$ induced effects is the likely frequency that an asthmatic individual would be exposed to a 5-minute peak $SO_2$ concentration ≥0.6 ppm. Because asthmatic individuals must be at elevated ventilation in order to experience significant bronchoconstriction in response to peak $SO_2$ concentrations, any analysis undertaken to estimate the size of the asthmatic population potentially at risk from such exposures must account for both the likelihood that an asthmatic individual will be outdoors at sufficient ventilation and the likelihood that he or she will encounter an $SO_2$ concentration of concern.

2. Air Quality and Exposure Considerations

A central issue raised during the comment period on the 1988 proposal concerned whether a 1-hour standard of 0.4 ppm, based on a typical peak-to-mean ratio of approximately 2 to 1, would provide adequate protection from high 5-minute peak $SO_2$ levels near all sources. Based on examination of more recent data, the staff concluded (EPA, 1994b) that no typical peak-to-mean ratio exists that can be used to determine a uniformly-applicable hourly standard. Given the broad range of hourly values associated with 5-minute peaks of $SO_2$ (EPA, 1994b, Table 3–2), it was concluded that reliance on any hourly peak-to-mean ratio would risk over-controlling some sources (if a high peak-to-mean ratio is assumed and a low hourly standard chosen) or under-controlling other sources (if a low peak-to-mean ratio is assumed and a high hourly standard chosen).

The available 5-minute $SO_2$ data examined in the staff paper supplement (EPA, 1994b, pp. 34–37) clearly indicate that high 5-minute peak $SO_2$ concentrations can occur with some frequency near some sources. Absent comprehensive data on 5-minute peak $SO_2$ levels, the staff used hourly data to estimate the likely nationwide prevalence of high short-term $SO_2$ peaks. The staff examined all hourly averages reported in the AIRS database for the year 1992 and applied different peak-to-mean ratios to produce upper and lower bound estimates of 5-minute peaks ≥0.25 ppm. The method used for calculating the incidence of short-term peaks is given in the Staff Paper Supplement (EPA, 1994b). The lower bound estimate of the number of 5-minute peaks ≥0.75 ppm $SO_2$ indicated that 50 monitors, in 38 counties which contained 18 urban areas, would register at least one 5-minute peak of $SO_2$ ≥0.75 ppm. The upper bound estimate was that 132 monitors, in 91 counties with 65 urban areas might experience a short-term peak of $SO_2$ ≥0.75 ppm. The same analysis indicated that 132 monitors, in 91 counties containing 65 urban areas, would be the lower bound estimate of the occurrence of at least one 5-minute peak of $SO_2$ ≥0.50 ppm. The upper bound estimate was that 247 monitors in 148 counties with 124 urban areas might record at least one 5-minute peak of $SO_2$ ≥0.50 ppm. This analysis also suggests that the number of monitoring sites likely to record multiple high 5-minute peaks in a single year, or over several years, can vary considerably (EPA, 1994b, pgs. 41–42).

The use of existing hourly data to assess the potential prevalence of 5-minute peak $SO_2$ levels has other limitations beyond those introduced by the use of peak-to-mean ratios. The existing monitoring network is designed to accurately characterize ambient air quality associated with 3-hour, 24-hour, and annual $SO_2$ concentrations rather than to detect short-term peaks $SO_2$ levels. As a result, the EPA's monitoring guidance on siting criteria, the spanning of $SO_2$ instruments, and instrument response time could lead to underestimates of high 5-minute peaks and thus the 1-hour averages for hours containing those peaks. Of these factors, monitoring siting may be the largest potential source of underestimation of $SO_2$ peaks and therefore changes in monitoring siting and density near $SO_2$ sources most likely to produce high 5-minute peaks should increase the number of high 5-minute peaks and associated 1-hour averages recorded.

In addition to estimating the occurrence of peak $SO_2$ levels in the ambient air, an important consideration in assessing the public health significance of $SO_2$-induced effects is determining the likely frequency that an asthmatic individual will be exposed (EPA, 1994a, p. 51). To address this issue, exposure analyses have been conducted that predict both the frequency of high $SO_2$ peaks (through air quality modeling) and the probability that an asthmatic individual will be outdoors at sufficient ventilation (>35 L/min) to experience an $SO_2$-induced effect. The methodologies employed in these analyses, together with the associated uncertainties, are discussed in some detail in the Staff Paper Supplement (EPA, 1994b, pp. 46–47, appendix B).

These analyses indicate that 68,000 to 166,000 asthmatic individuals (or 0.7 to 1.8 percent of the total asthmatic population) potentially could be exposed one or more times, while outdoors at exercise, to 5 minute peaks of $SO_2$ ≥0.5 ppm. Fewer asthmatic individuals are likely to be exposed to ≥0.6 ppm $SO_2$ under the same conditions. The estimated number of asthmatic individuals exposed one or more times results in an estimate of 180,000 to 395,000 total exposure events of which the utility sector accounts for about 68,000. After full implementation of the title IV program of the Act, in the year 2015, the number of exposure events at ≥0.5 ppm $SO_2$ attributable to the utility sector is estimated to drop to 40,000, contingent on trading decisions.

Based on the available air quality and exposure data assessed in the Staff Paper Supplement (EPA, 1994b) and summarized above, the Administrator concurs with the staff and CASAC's views that the likelihood that asthmatic individuals will be exposed to 5- to 10-minute peak $SO_2$ concentration of concern, while outdoors and at exercise, is relatively low when viewed from a national perspective. The Administrator takes note, however, as did the staff, that the data also indicate high peak $SO_2$ concentrations can occur around certain sources or source types (EPA, 1994b, p. 37) with some frequency, suggesting that asthmatic individuals who reside in the vicinity of such sources or source types may be at greater health risk than indicated for the asthmatic population as a whole.

*C. Regulatory Considerations*

Taking into account the staff's assessments and the advice and recommendations of the CASAC, the Administrator has considered whether additional regulatory measures are needed to protect asthmatic individuals against short-term (5- to 10-minute) peak $SO_2$ exposures. In her judgment, the current 3-hour, 24-hour, and annual standards appear to provide substantial protection against the health effects associated with short-term $SO_2$ exposures. As indicated by the air quality analyses described above, the current standards, together with implementation of title IV of the Act, markedly limit the frequency and extent of short-term concentrations of concern. The exposure analyses that take into account normal day-to-day activity patterns further suggest that the risk is relatively low that individuals with mild or moderate asthma will experience exposure conditions approximating those that produced effects of concern in controlled human studies. In view of those analyses, the nature of the reported effects, the effectiveness of bronchodilator medication to prevent or ameliorate $SO_2$ effects if available and properly used, and the fact that similar events can be provoked more frequently by other stimuli, the Administrator concurs with the staff's and the CASAC's assessment that the public health risk posed by short-term peak $SO_2$ levels is limited when viewed from a national perspective and does not constitute a broad national public health problem.

The Administrator is mindful, however, that the available data indicate that those asthmatic individuals who reside in proximity to certain individual sources or source types will be at higher risk of being exposed to short-term peak $SO_2$ levels than the asthmatic population as a whole. While some asthma specialists question the health significance of the reported health effects, the Administrator notes that others believe the effects are significant and that additional protection is warranted. This information, combined with uncertainties regarding the use of bronchodilator medication prior to exercise, particularly among asthmatic children and asthmatic individuals who may not perceive a need to medicate regularly prior to engaging in outdoor activities, suggests to the Administrator that additional regulatory measures may be needed.

In their assessment of the available scientific and technical information, the EPA staff recommended a range of concern for the Administrator's consideration when examining the potential need for new regulatory measures to provide additional public health protection beyond that provided by the existing set of standards (EPA, 1994b). This range, based on the most recent assessments presented in the criteria document and staff paper supplements and summarized above, is 0.6 to 1.0 ppm $SO_2$. The staff's assessment concluded that a substantial percentage (20 percent or more) of mild to moderate asthmatic individuals exposed to 0.6 to 1.0 ppm $SO_2$ for 5 to 10 minutes during moderate exercise would be expected to have respiratory function changes and severity of respiratory symptoms that clearly exceed those experienced from typical daily variation in lung function or in response to other stimuli (e.g., moderate exercise or cold/dry air). For many of the responders the effects are likely to be both perceptible and thought to be of some immediate health concern, i.e., to cause disruption of ongoing activities, use of bronchodilator medication, and/or possibly seeking of medical attention. At $SO_2$ concentrations at or below 0.5 ppm, the staff concluded that at most only 10 to 20 percent of mild and moderate asthmatic individuals exposed to 0.2 to 0.5 ppm $SO_2$ during moderate exercise are likely to experience lung function changes distinctly larger than those typically experienced and that, compared to the response at 0.6 to 1.0 ppm $SO_2$, the response at or below 0.5 ppm $SO_2$ is less likely to be perceptible and of immediate health concern.

In considering the staff's most recent assessment of the available health information, the Administrator found it to be generally consistent with the staff's 1986 review. During both reviews there has been divergent opinion as to the appropriate level for the lower bound for the range of concern. Both assessments, however, concluded that 1.0 ppm $SO_2$ is the appropriate upper bound. At that level there is clear concern that if an asthmatic individual is exposed while at exercise to 1.0 ppm $SO_2$ for 5 minutes the risk of significant functional and symptomatic responses will be high. This finding in 1986 led several CASAC members to recommend a 1-hour standard level that would restrict the concentration of 5-minute $SO_2$ peaks to 0.6 to 0.8 ppm in order to preclude 5-minute peaks of 1.0 ppm $SO_2$ (Lippmann, 1987). The Administrator finds the staff's present recommendations consistent with that point of view.

The Administrator also took note that the current CASAC review panel, while acknowledging the existence of a wide spectrum of views among asthma specialists regarding the clinical and public health significance of the reported effects, did not comment on the range of concern or present the individual panel members' views as to the significance of the reported effects in its "closure" letter. At the April 12, 1994 "closure" meeting, however, the panel found that the range recommended by the staff was consistent with the available scientific information. Three members of the panel who addressed the public health significance of the reported effects in their written comments concluded that segments of the asthmatic population exposed to peak $SO_2$ concentrations while at elevated ventilation were at risk of incurring clinically significant effects if not properly medicated. While the basis for their judgments differed, their views as to the 5-minute concentrations of concern overlapped (0.4 to 0.8 ppm $SO_2$; above 0.6 ppm $SO_2$; and 0.6 to 1.0 ppm $SO_2$) and are in general agreement with both the 1986 and 1994 staff assessments. On the other hand, another panel member who addressed the general issue, while recognizing that $SO_2$ can cause bronchoconstriction, questioned the public health significance of short-term peak $SO_2$ exposures, based in part on his judgment that the likelihood of an asthmatic individual being exposed while at exercise is exceedingly low given the protection afforded by the existing standards. In its closure letter, the CASAC expressed the view that such exposures are rare events and that the likelihood of such exposures should be considered in selecting an appropriate regulatory response.

Based on its assessment of the available data, the staff recommended consideration of three regulatory alternatives: (1) Revising the existing NAAQS by adding a new 5-minute standard implemented through a risk-based targeted strategy, (2) establishing a new regulatory program under section 303 of the Act, or (3) augmenting the implementation of current NAAQS by focusing on those sources likely to cause high 5-minute peaks. In considering these alternatives, the Administrator has taken into account the divergent views expressed by the public, asthma specialists, and the CASAC with respect to the public health significance of short-term $SO_2$ exposures and the appropriate degree of protection needed. In doing so she is mindful that in the absence of conclusive scientific and technical information, the Act requires that the Administrator make a judgmental determination as to whether the reported effects endanger public health and pose an unacceptable risk of harm. At the April 12, 1994 CASAC meeting and in written comment, individual members of the 1994 CASAC panel recognized that choosing among the regulatory alternatives presented in the staff paper supplement must be guided by legal and policy considerations, given the nature of the available scientific and technical information and the divergent views as to the health significance of the reported effect and the pollution level of concern.

The Administrator therefore is proposing for public comment three alternative regulatory approaches for supplementing the protection provided by the current standards if additional protection is judged to be necessary. In so doing, the Administrator has carefully considered the 1994 CASAC review panel's strong recommendation that any additional regulatory measures be implemented through a risk-based, targeted strategy. Consistent with this recommendation, all three regulatory alternatives under consideration, as described below, are based upon such a strategy. The Administrator believes it is important to air the key issues and uncertainties fully and specifically requests broad public comment and deliberation on these alternatives.

1. 5-Minute NAAQS Alternative

After considering the staff's recommendations and the views of the 1986 and 1994 CASAC review panels, the Administrator believes that it is both appropriate and necessary to solicit public comment on a 5-minute NAAQS of 0.60 ppm $SO_2$. Based on the staff's assessments of the available scientific and technical information, the Administrator is concerned that 5-minute peak $SO_2$ levels beginning at 0.60 ppm and above may present an unacceptable risk of harm to asthmatic individuals who have not premedicated with beta-agonist bronchodilators and are exposed at elevated ventilation. In proposing a 5-minute NAAQS, the Administrator is particularly concerned that asthmatic individuals in the proximity of sources with a high potential to cause or contribute to a 5-minute peak $SO_2$ concentration greater than 0.60 ppm may be at substantially greater risk of experiencing an exposure event, which triggers bronchoconstriction, than the asthmatic population as a whole. Adoption and implementation of a 5-minute NAAQS of 0.60 ppm $SO_2$ would prevent such exposures and further reduce the likelihood that an asthmatic individual would be exposed at elevated ventilation to lesser concentrations. Therefore, it is the Administrator's provisional judgment that a 5-minute NAAQS of 0.60 ppm $SO_2$ would adequately protect the public health.

In assessing the possible need for additional protection against peak $SO_2$ exposures, the Administrator has considered the specific issue of medication usage. While it is clear from the available data that the use of beta-agonist bronchodilators to prevent the effects of other stimuli (e.g., exercise, cold/dry air) will also prevent or ameliorate the effects of $SO_2$, there is considerable debate as to compliance rates and therefore the degree of protection provided. As one CASAC panel member noted, "many moderate asthmatics, particularly those from urban areas and lower economic status, may have less than ideal medical follow-up and are prone to irregular medication use and frequent deterioration" (Schachter, 1994). In public comment on the 1988 proposal, a number of individuals made the point that asthmatic children, who are dependent on adults for their medication and care, are more likely to be unprotected and therefore at particular risk from $SO_2$ exposures of concern. Other commenters on the criteria document and staff paper supplements noted that asthmatic individuals who do not perceive the need to medicate prior to engaging in strenuous outdoor activities would also be at increased risk from $SO_2$ exposures. While the Administrator believes these are important considerations, the overriding issue is whether the availability of, and reliance on, prophylactic medications should be viewed as an alternative to further regulatory action to reduce the risk posed by high peak $SO_2$ concentrations in the ambient air. In this regard, the Administrator is concerned whether reliance on medications, even if taken to prevent the effects caused by other stimuli, as an alternative to environmental controls would be an appropriate public policy choice, particularly given the potential environmental equity issues involved.

In seeking comment on a possible 5-minute NAAQS of 0.60 ppm $SO_2$, to further reduce the risk posed by high peak $SO_2$ concentrations, the Administrator concurs with the staff's recommendation that such a standard be implemented through a risk-based targeted approach. By focusing on those sources or source types that are most likely to cause or contribute to high 5-minute $SO_2$ concentrations and thus pose the greatest risk to asthmatic individuals, such a program would be effective in reducing peak $SO_2$ concentrations of concern. In response to questions raised by the 1994 CASAC review panel, the Agency continues to believe that such a program would be enforceable, based on its longstanding enforcement experience.

The Administrator recognizes, however, as did the 1994 CASAC review panel,[3] that the adoption of a 5-minute NAAQS might not be appropriate given the nature of the problem or the most efficient means of achieving the desired reductions. Under sections 108 through 110 of the Act, NAAQS and State plans to implement them are designed to address air pollution problems that emanate from numerous and diverse sources whose collective emissions contribute to unacceptable pollution levels, rather than from a limited number of discrete point sources that cause only very localized pollution problems. Moreover, the implementation process for a 5-minute NAAQS (described in detail in the 40 CFR part 51 document to be published shortly in the **Federal Register**) could impose significant planning and other requirements on the States and the regulated community that are neither very efficient nor necessary for addressing the limited number of point sources that the EPA believes may produce high 5-minute peak $SO_2$ levels. While the targeting strategy presented in the part 51 notice is designed to reduce such burdens to the extent practicable under the Act, the implementation process includes a number of time-consuming steps (e.g., area designations) that are not particularly germane, given the nature of the problem, and could significantly delay effective remediation. With these factors in mind and in view of her desire to provide such additional protection (beyond the existing NAAQS) as may be appropriate in the most efficient manner, the Administrator is also advancing for public comment the alternative of establishing a new control program

[3] In its "closure letter", the 1994 CASAC panel stated, "It was the consensus of CASAC that any regulatory strategy to ameliorate such exposure be risk-based—targeted on the most likely sources of short-term sulfur dioxide spikes rather than imposing short-term standards on all sources. All of the nine CASAC Panel members recommended that Option 1, the establishment of a new 5-minutes standard, not be adopted. Reasons cited for this recommendation included: the clinical experiences of many ozone experts which suggest that the effects are short-term, readily reversible, and typical of response seen with other stimuli. Further, the committee viewed such exposures as rare events which will even become rarer as sulfur dioxide emissions are further reduced as the 1990 amendments are implemented. In addition, the committee pointed out that enforcement of a short-term NAAQS would require substantial technical resources. Furthermore, the committee did not think that such a standard would be enforceable . . ." To the extent CASAC comments about enforcement of a short-term NAAQS took into account such factors as cost and technological feasibility, the courts have held that such factors are not appropriate considerations in the establishment or revision of NAAQS. The extent to which these factors influenced the CASAC recommendation regarding a 5-minute NAAQS is unclear.

based on sections 303, 110(a)(2)(G), and 301(a) of the Act.

2. Section 303 Program

As an alternative to a new 5-minute NAAQS, the staff recommended in the staff paper supplement that consideration be given to establishing a new regulatory program under section 303 to supplement the protection provided by the existing NAAQS. The staff recommended that the new program establish a target level for control in the range of 0.60 to 1.0 ppm $SO_2$, expressed as the maximum 5-minute block average in 1 hour, and that the program be implemented through a risk-based, targeted strategy. This approach would supplement the existing NAAQS by, in effect, placing a cap on ambient short-term peak $SO_2$ levels. Exceedance of this cap would lead to source-specific control efforts designed to prevent recurrence of such peak levels, thus providing additional protection to asthmatic individuals in proximity to the source(s) involved.

Section 303 authorizes the Administrator to bring suits for injunctive relief or to issue appropriate administrative orders if air pollution levels in an area pose "an imminent and substantial endangerment to public health or welfare, or the environment." Although section 303 is probably best known in connection with EPA regulations for the prevention of "emergency episodes" involving high concentrations of criteria pollutants (40 CFR part 51, subpart H), the Agency interprets it as providing authority to act in a variety of circumstances, including situations involving pollution concentrations lower than "emergency" levels and incidents involving industrial accidents or malfunctions (EPA, 1983b, pp. 1–2, 5).[4] Section 110(a)(2)(G) of the Act requires State implementation plans (SIP's) to contain authority comparable to section 303 and adequate contingency plans to implement that authority. As indicated above, the program proposed in this notice would be based on both of these provisions, as well as section 301(a) of the Act, which grants general authority to prescribe regulations necessary to carry out the functions of the Administrator.

Although the proposed program would differ in some respects from the approach adopted in the Agency's "emergency episodes" program, it would be based on some of the same fundamental concepts. The emergency episodes program was designed to supplement the NAAQS by providing additional protection in situations not effectively addressed by them, i.e., in periods of air stagnation when air pollution levels can build up to levels well in excess of the NAAQS. Under the program, SIP's are required to include contingency plans that specify two or more stages of episode criteria—such as the alert, warning, and emergency levels specified in example regulations issued by the EPA—and progressively more stringent abatement actions, including shutting down entire industries to the extent necessary, as pollution levels advance from one stage to another (see 40 CFR part 51, subpart H and appendix L). The episode criteria and associated abatement actions are preventive measures designed to ensure that certain pollution concentrations—referred to as significant harm levels (SHL's)—are never achieved.[5]

Although the Agency established SHL's for these purposes at concentrations associated with relatively severe health effects, the use of section 303 to protect public health is not limited to situations involving such extreme conditions. By design, the SHL's are levels that should never be reached, and relatively drastic measures to prevent their occurrence, including court actions for injunctive relief, are authorized at a lower level, usually the "emergency" level (EPA, 1993b, pp. 4–5). Indeed, abatement measures may be required at even lower levels (*id.*), both to prevent air quality levels from deteriorating further (36 FR 20513, Oct. 23, 1971), and to avoid less serious health effects that can occur at those levels (39 FR 9672, 9673, Mar. 13, 1974).

Even where there is uncertainty about a threatened harm, the EPA interprets section 303 as authorizing action where there is a "reasonable medical concern" about public health (EPA, 1983b, p. 4). More generally, the courts have construed similar provisions in other EPA statutes liberally, indicating that action under them is not limited to extreme, extraordinary, or "crisis" situations but may be based on circumstances posing a "reasonable cause for concern that someone or something may be exposed to a risk of harm" if remedial action is not taken (see, e.g., *U.S.* versus *Conservation Chemical Co.*, 619 F. Supp. 162, 194 (W.D.Mo. 1985); EPA, 1993b, pp. 10–13 (CWA section 504); EPA, 1991, pp. 5–7 (SDWA section 1431); EPA, 1983b, pp. 2–5 (CAA section 303); EPA, 1983a, pp. 8–9 (CERCLA section 106(a))). For these and other reasons, the Agency believes that its authority to address threats to public health or welfare or the environment under section 303 is not limited to situations involving pollutant concentrations associated with severe effects.[6]

Like the emergency episodes program, the new section 303 program would attempt to avoid the need for ad hoc court actions by establishing a framework for remedial efforts in advance through the Agency's rulemaking authority. However, because 5-minute peak $SO_2$ concentrations of concern can occur rapidly, with little or no prior build-up of $SO_2$ levels, and because such peak concentrations are relatively quickly dispersed, the Agency believes that a section 303 program modeled closely on the emergency episodes program would not provide an effective response. Instead, the Administrator concurs with the staff recommendation that a health-based, ambient-air target or trigger level be established if this alternative is selected, and that sources that cause or contribute to exceedances of the trigger level be identified and regulated on a case-by-case, source-specific basis to prevent 5-minute peaks of concern from recurring. Given the nature of the problem being addressed, the trigger level would need to be preventive in nature; that is, it would need to be set at a level designed to ensure that pollution levels that might pose a significant risk to the public health would not occur in the ambient air.

If this alternative is selected, it is the Administrator's provisional judgment, based on her assessment of available health information and for the reasons discussed above, that the appropriate trigger level for the section 303 program would be 0.60 ppm $SO_2$ as measured in the ambient air, so as to provide the same level and degree of protection as would be afforded by a possible new 5-minute NAAQS. As discussed earlier,

[4] Similar provisions in other EPA statutes have been similarly construed (see, e.g., EPA 1993b (section 504 of the Clean Water Act); EPA 1991 (section 1431 of the Safe Drinking Water Act); EPA 1983a (section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act)).

[5] This preventive approach—combining elements of rulemaking and advance planning—helps to avoid some of the practical problems associated with attempting to address emergency episodes by seeking injunctive relief on an ad hoc basis.

[6] This conclusion is consistent with the legislative history of section 303, as well as that of similar provisions in other EPA statutes (see, e.g., S. Rep. No. 91–1196, 91st Cong., 2d Sess. 35–36 (1970) (section 303 authority applies not only in situations involving incapacitating body damage, irreversible body damage, and increases in mortality but also "whenever air pollution agents reach levels of concentration that are associated with . . . the production of significant health effects . . . in any significant portion of the general population"). It is also consistent with the steady pattern of broadening and strengthening of section 303 evident in all amendments to the Act since 1967 see, e.g., S. Rep. No. 101–228, 101st Cong., 1st Sess. 370–71 (1989)).

the Administrator is concerned that 5-minute peak $SO_2$ concentrations of 0.60 ppm and above may present an unacceptable risk of harm to asthmatic individuals who have not premedicated with beta- agonist bronchodilators and are exposed at elevated ventilation.

The details of the proposed section 303 program will be described in the **Federal Register** in the document concerning implementation issues. Like the emergency episodes program, the proposed program would require States to adopt SIP provisions containing necessary legal authority and contingency plans. Once a violation of the trigger level proposed in today's notice was detected, the State and the pertinent emission source(s) would need to take steps to determine the cause of the violation, and the source(s) would need to implement appropriate remedial actions to prevent recurrences of such emissions. The EPA would also be able to take action, either by enforcing the SIP provisions or directly under its section 303 authority.

The proposed section 303 program would offer several distinct advantages. It would provide an enforceable, health-based target to guide the actions of the regulated community, and it could be focused specifically on those sources most likely to cause or contribute to high 5-minute peak $SO_2$ exposures. Once information became available that a source had caused or contributed to an exceedance of the trigger level, appropriate actions could be initiated quickly. While some SIP revisions would be necessary for States to implement this program, more time-consuming aspects of the SIP process such as designations could be avoided. The EPA would also be able to take action directly if necessary. The likelihood that this program could bring about prompt and effective remediation of problems causing high 5-minute peak $SO_2$ levels is a factor of considerable importance to the Administrator.

3. Retain Current Standards

The Administrator has also considered the staff's third alternative of retaining the current set of standards but augmenting their implementation by focusing on those sources that are most likely to produce high 5-minute peak $SO_2$ levels. The targeting strategy and implementation plan will be discussed more specifically in the **Federal Register** document on implementation issues. This approach would be aimed at assuring that the existing standards were met through more targeted monitoring, including the routine collection and reporting of 5-minute data, and more vigorous enforcement of existing regulatory provisions governing good operating practices, upsets, and malfunctions. The Administrator believes that additional risk reductions can be achieved by these means, and the EPA is presently taking steps to initiate such activities. In summary, the EPA is requesting public comment on three alternative approaches for supplementing the protection provided by the current standards against the health risk posed by short-term peak $SO_2$ levels if additional protection is judged to be necessary. Given the available scientific and analytical data, the final selection of the most appropriate course of action will be based in large part on policy and legal considerations. To better inform the Administrator's final determination, the EPA specifically requests public comment in several key areas. First, the EPA requests the submittal of additional factual information on the frequency of occurrence of 5-minute peak $SO_2$ levels in the ambient air, as well as information on the source or source types and the nature of the events that are most likely to give rise to such peak $SO_2$ levels. Such information would assist in determining the most effective regulatory response. Second, throughout the review there has been considerable debate as to the adequacy of the available exposure analyses. In light of the uncertainties in these analyses, the EPA requests the submission of data that would allow for better characterization of the asthmatic population at risk and of the frequency that an asthmatic individual would likely be exposed to peak $SO_2$ concentrations, particularly at levels of 0.60 ppm and above, while at elevated ventilation. Third, of particular interest to the Administrator is the issue of the medical significance of the reported $SO_2$ induced effects. Given the broad diversity of opinion of the asthma specialists that have participated in the review to date, the EPA specifically requests other members of the medical community who are experts in this area to submit their views on this important issue. Finally, the EPA requests comment on the appropriateness of the 0.60 ppm level for 5-minute NAAQS and the section 303 program, and whether a numerical value below or above 0.60 ppm would be more appropriate to protect asthmatic individuals.

*D. Averaging Convention for the Standards*

The averaging convention specifies the interpretation of standards for a particular averaging time (in this case, 3-hour, 24-hour, annual) with respect to when (time and day) the averaging period(s) begins and ends. The two major alternative averaging conventions are known as "block" and "running." Under the block convention, periods such as 24 hours and 3 hours are measured sequentially and do not overlap; when one averaging period ends, the next begins. For example, one 24-hour measurement would be taken from midnight on day one to midnight on day two; the next would begin at midnight on day two. Under the running convention, measurements are allowed to overlap. Thus, if one 24-hour period were measured from midnight to midnight, the next might be measured from 1 a.m. to 1 a.m. or from 12:01 a.m. to 12:01 a.m. Given a fixed standard level, running averages would produce a somewhat more restrictive standard (Faoro, 1983; Possiel, 1985).

Although the wording of the original 24-hour, 3-hour, and annual $SO_2$ standards was ambiguous on the matter, the earliest actions of the EPA signify that the block averaging convention was intended for these standards (OAQPS, l986), and block averages have generally been used in implementing the standards.[7] The use of running averages would therefore represent a tightening of the standards. Because the Administrator has determined, for the reasons explained in this notice and in the April 21, 1993 notice on the secondary NAAQS (58 FR 21351), that protection of the public health and welfare does not require tightening the existing standards, the Administrator proposes to retain the block averaging convention for the 24-hour, 3-hour, and annual standards. To eliminate any future questions on this aspect of the standards, clarifying language is being proposed in the regulation (40 CFR 50.4 and 50.5).

*E. Form of the Current Standards*

In revising the standards for ozone and particulate matter, the EPA concluded that it would be appropriate to make technical improvements to the form in which the standards were expressed (44 FR 8202, Feb. 8, 1979; 52 FR 24653, July 1, 1987). These improvements were embodied in a revised statistical form for the

[7] Although EPA generally does not specify use of a running average in evaluating $SO_2$ SIP's for attainment and maintenance of the NAAQS, running averages have been used in a limited number of instances. In the enforcement context, in cases where supplementary control systems (SCS) were used as an interim measure to protect the NAAQS at primary copper smelters, consent decrees for such facilities specified running average requirements see, e.g., U.S. v. Phelps Dodge Corp. Civil No. 81–088–TUC–MAR (D. Ariz. filed October 20, 1986)).

standards, which was intended to maintain desired health protection while improving ease of implementation. The decisions on the statistical form were made in conjunction with decisions on the level of the standard. The EPA has also considered the alternative of expressing the $SO_2$ standards in a similar statistical form, with one expected exceedance per year for the 24-hour and 3-hour standards and expressing the annual standard as an expected annual mean. The EPA examined the relative protection afforded by the current standards if they were expressed in statistical form (EPA, 1984a; Frank, 1987). These analyses found that the standards expressed in a statistical form would afford reduced protection against the 24-hour, annual, and 3-hour health and welfare effects associated with these averaging periods and, in addition, would significantly reduce the degree of protection the existing set of standards provides against 5-minute peak $SO_2$ exposures. Thus, adopting a statistical form would necessitate revisions to the levels of the existing 24-hour, 3-hour, and annual standards to maintain the requisite level of protection needed. In the judgment of the Administrator, the limited technical advantages of adopting a statistical form for these standards are not sufficient to warrant the administrative burden associated with such a change.

In advancing the new alternatives of a 5-minute NAAQS and a section 303 program for public comment, however, the Administrator believes it is appropriate to propose that they take a statistical form as recommended by the staff. In reaching a judgment that a new 5-minute NAAQS of 0.60 ppm $SO_2$ or a new section 303 trigger level of 0.60 ppm $SO_2$ may be needed to provide additional public health protection, the Administrator was cognizant of and took into account that these measures would be expressed in the statistical form when determining the level to be proposed for each alternative. The EPA is, however, requesting comment on whether more than one expected exceedance should be allowed as suggested by the staff (EPA 1994b, pp. 60–62). In seeking comment on this question, the EPA is concerned that a single upset or malfunction during a day could cause multiple exceedances of the proposed 5-minute standard level or the alternative section 303 trigger level despite a source operator's good faith and willingness to take prompt and effective abatement action.

*F. Other Technical Changes*

The EPA is proposing to make some minor technical changes in the part 50 regulations concerning the $SO_2$ standards (Frank, 1988). First, the levels for the primary and secondary NAAQS would be restated in ppm rather than µg/m³ (40 CFR 50.4 and 50.5). This would be done to make the $SO_2$ NAAQS consistent with other pollutants and to improve understanding by the public. The levels would be restated as follows: (a) The level of the annual standard is 0.030 parts per million (ppm) (approximately 80 µg/m³), (b) the level of the 24-hour standard is 0.14 ppm (approximately 365 µg/m³), and (c) the level of the 3-hour standard is 0.5 ppm (approximately 1300 µg/m³). Secondly, explicit rounding conventions would be added (40 CFR 50.4 and 50.5). This would aid State and local air pollution control agencies in interpreting the standard. Finally, data completeness and handling conventions would be specified (40 CFR 50.4 and 50.5). These conventions would be consistent with the definitions used with ozone and would ensure that omission or deletion of some hourly or 5-minute data will not negate obvious exceedances (see 40 CFR part 50, appendix H for the equivalent ozone language).

## VI. Federal Reference Methods and Equivalent Methods

The Federal Reference Method for measuring ambient concentrations of $SO_2$ set forth in appendix A of part 50 is not capable of providing 5-minute average concentration measurements. Even if it could, such a manual method would not be practical for 5-minute measurements because of the large number of individual samples that would have to be obtained and analyzed. Clearly, an automated, continuous monitoring method (equivalent method) is required for 5-minute monitoring. This requirement is innocuous, however, since the reference method is now rarely used for routine field monitoring, even for 3-hour or 24-hour measurements, having already been replaced with use of continuous, instrumental equivalent methods. Thus, no revisions are proposed to the reference method.

Although most of these instrumental equivalent methods provide nominally continuous $SO_2$ concentration measurements, these measurements are almost universally reduced to standardized hourly averages (block averages, by convention, as opposed to running or overlapping averages) for purposes of recording, validation, storage, interpretation, and use. (Longer-term averages are computed from the hourly averages.) Accordingly, the performance of the instruments is usually optimized by the manufacturer toward production of hourly averages. Specifically, the response of the analyzers may be intentionally slowed to provide concentration measurements that change more slowly than the actual input concentration. This "smoothing" filters random fluctuations (noise), provides more stable readings for instrument operators, aids calibration accuracy, and facilitates more accurate integration of the readings into hourly averages.

When such instruments are used to obtain 5-minute average concentration measurements, however, the slowed response often causes the measurements to underestimate the actual peak concentration of short-duration concentration peaks (Eaton et al., 1991; Eaton et al., 1993). The degree of error is estimated to be from a few percent to as much as 20 or 25 percent, depending on the response time of the instrument and the sharpness (height to duration ratio) of the concentration peak. (The smoothed measurements correspondingly overestimate the duration of the peak such that the peak is correctly integrated for longer averaging periods such as 1 hour.)

Fortunately, more accurate 5-minute average concentration measurements can be obtained from most of the equivalent method analyzers available currently by relatively minor modifications to increase their response times. These modifications may include minor electronic adjustments, substitution of modified circuit cards or software programs, or increased flow rates, and the modifications could also likely be made available for existing analyzers through either user or manufacturer retrofitting. Prior to promulgation of one of the regulatory alternatives, $SO_2$ analyzer manufacturers would be informed of the new requirements for faster response time for both new and existing analyzers as may be appropriate.

Based on this assessment, the EPA is proposing to establish special, supplemental performance specifications that would be applicable to equivalent method analyzers used for 5-minute $SO_2$ monitoring. These new performance specifications would be added to 40 CFR part 53, which sets forth the provisions under which the EPA designates reference and equivalent methods for air monitoring to determine attainment of the NAAQS. Part 53 gives the quantitative performance specifications and other requirements that a candidate method must meet to be designated as a reference or equivalent method, as well as the detailed test procedures by which the various performance parameters are to be measured.

Capability for accurate 5-minute monitoring requires more stringent specifications for certain performance parameters than are required for 1-hour average measurements. The primary performance specifications that must be changed are those having to do with the response time of the analyzer. These are the "rise time" and "fall time" specifications of part 53, which describe the time required for the output measurement or signal of the analyzer to respond to increases or decreases, respectively, in the input concentration. More specifically, these times are defined as the time required for the instrument measurement to reach 95 percent of the final, stable reading after a step increase or decrease (respectively) in the input concentration. For 1-hour average $SO_2$ measurements, analyzer response can be relatively slow; the specifications in part 53 for rise and fall time are both 15 minutes. Typical rise and fall times of several widely used designated $SO_2$ equivalent method analyzers are between 2 and 5 minutes.

However, as noted previously, such an analyzer may underestimate the actual 5-minute average concentration of a short-term concentration peak by as much as 20 or 25 percent, depending on the response time of the instrument and the nature (shape) of the concentration peak. To provide more accurate 5-minute measurements, the maximum rise and fall time specifications must be reduced to 2 minutes or less. Accordingly, part 53 is proposed to be amended by adding supplemental maximum rise and fall time specifications of 2 minutes to be applicable to designated equivalent methods for $SO_2$ that would be used for 5-minute monitoring.

Another performance parameter that is associated with rise and fall time (and sometimes included in the generic term "response time") is "lag time," which describes the time between the presentation of a step change in the input concentration and the first indication of the change in the measurement readings. Although the lag time represents a delay in the presentation of concentration measurement readings by the analyzer, technically it does not affect the ultimate accuracy or precision of 5-minute measurements relative to the accuracy or precision of 1-hour measurements. Therefore, no supplemental lag time specification is needed for 5-minute monitoring.

The only other performance specification that is of special concern for 5-minute monitoring is the measurement range of the analyzer. Measurements of 5-minute $SO_2$ concentrations in source-targeted areas where high short-term concentrations may occur would likely require a higher measurement range than for monitoring in other areas. It is expected that a 1.0 ppm measurement range would be adequate for most 5-minute monitoring sites. However, accurate measurements require that the measured concentration not exceed the measurement range during any portion of the 5-minute averaging period. Therefore, measurement ranges higher than 1.0 ppm may be needed at some monitoring sites.

Part 53 specifies a base measurement range of 0.5 ppm and permits alternative ranges up to 1.0 ppm. All designated equivalent methods for $SO_2$ in wide use today have 1.0 ppm measurement ranges that are approved for use under their equivalent method designations. Further, if a higher range is needed at a particular monitoring site, provisions in 40 CFR part 58, appendix C, section 2.6 allow individual approval of ranges higher than 1.0 ppm at sites where such a higher range is justified. Accordingly, only a minor change is proposed to part 53—to require a 1.0 ppm range for equivalent methods for $SO_2$ that would be used for 5-minute monitoring.

The currently existing rise and fall time and range specifications in 40 CFR part 53 (for 1-hour average measurements) are not proposed to be changed. Hence, there would be no change in the base requirements in 40 CFR part 53 for designation of equivalent methods for $SO_2$. The new, supplemental rise and fall time and range specifications being proposed would be applicable only to designated equivalent methods used for 5-minute monitoring and would create a subset of $SO_2$ equivalent methods that would be additionally approved for 5-minute monitoring. Methods that meet all of the existing performance specifications but not the supplemental specifications for rise and fall time and range would be acceptable for all NAAQS monitoring other than 5-minute monitoring. This situation would be similar to that for other performance parameters where, for example, some designated equivalent methods are approved for use on multiple measurement ranges or over a wider operating temperature range than the minimum range specified. In all such cases, the additional performance qualifications, over the minimum requirements of 40 CFR part 53, are clearly identified and indicated in the equivalent method description. This description appears in both the notice of designation published in the **Federal Register** and in the List of Reference and Equivalent Methods maintained in accordance with § 53.8(c) and distributed to the EPA Regional Offices and to others upon request.

Manufacturers of new $SO_2$ analyzers may redesign their analyzers to provide for additional ranges, faster response, or capability for user-selection of these parameters. The test procedures to show that an analyzer meets the new supplemental range and rise and fall time specifications for 5-minute monitoring are the same range and rise and fall time test procedures currently described in 40 CFR part 53. Test results from these tests would be submitted along with the results from the other tests in an application for an equivalent method determination under 40 CFR part 53. A manufacturer of an existing analyzer that is currently designated as an equivalent method for $SO_2$ but does not meet the new supplemental specifications for range and rise and fall time would be encouraged to develop modifications to the analyzer that would allow it to meet the new specifications. The manufacturer should then carry out appropriate tests to demonstrate that the modified analyzer meets the new specifications and apply for approval of the modifications under § 53.14 (modification of a reference or equivalent method). Manufacturers should note, however, that tests other than the range and rise and fall time tests may have to be carried out, since increasing the range or response time could have a possible adverse effect on other performance parameters, such as noise and lower detectable limit. Ideally, such analyzer modifications should be made available to users in the form of a retrofit kit for user installation, if possible. Alternatively, the analyzer may have to be returned to the factory for the modifications to meet the new 5-minute monitoring specifications.

No other changes to 40 CFR part 53 are deemed necessary to support the 5-minute monitoring requirement.

## VII. Regulatory Impacts

### *A. Regulatory Impacts Administrative Requirements*

Under Executive Order 12866 (58 FR 51713, Oct. 4, 1993), the EPA must determine whether a regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order. The Order defines a "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another Agency;

(3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this notice is a significant regulatory action because of its potential to have an annual effect on the economy of $100 million or more. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

### Summary of Regulatory Impacts

The EPA has prepared and entered into the docket a draft regulatory impact analysis (RIA) entitled "Regulatory Impact Analysis for the Proposed Regulatory Options to Address Short-Term Peak Sulfur Dioxide Exposures (June 1994)." This draft RIA includes estimates of costs, economic impacts, and net benefits associated with implementation of the regulatory alternatives discussed above. The proposed regulatory action is intended to be implemented through a risk-based, targeted monitoring strategy given the localized nature of the short-term $SO_2$ problem. Absent specific information on which sources would be impacted under this implementation strategy, modeling is used to identify $SO_2$ sources likely to cause exceedances of either the 0.60 ppm $SO_2$, 1 or 5 expected exceedance forms of the standard. Although there are large uncertainties associated with the modeling analysis, such analyses are currently the only available tools for predicting sources of short-term $SO_2$ peaks and estimating associated control costs for reducing peak, ambient concentrations. Given the modeling uncertainties, as well as that the modeling analyses are not reflective of the specific sources to be targeted by States under a risk-based, targeted implementation strategy, the following estimated impacts should be viewed with caution.

### Short-term $SO_2$ NAAQS Regulatory Alternative

The cost estimates for the short-term $SO_2$ NAAQS regulatory alternative represent a snapshot of the estimated total industry costs that could be incurred at some unspecified time in the future following full implementation of a short-term $SO_2$ NAAQS. The costs are based on the use of add-on control devices and fuel switching to lower-sulfur fuels. Given that EPA believes that many sources will be able to reduce their peaks through other, nontechnological means, this assumption may result in overstating costs. With this caveat in mind, nonutility annualized costs are estimated to be approximately $250 million for an ambient $SO_2$ concentration level of 0.60 ppm, 1 expected exceedance. Annualized costs for a 0.60 ppm, 5 annual exceedance concentration level are estimated to be approximately $160 million. It is estimated that $SO_2$ will be reduced by approximately 910 thousand tons, and 560 thousand tons for the 1 and 5 exceedance cases, respectively. Incremental to the title IV requirements and attainment of the existing $SO_2$ NAAQS, total utility annualized costs in 2005 are estimated to be an additional $1.5 billion for the 0.60 ppm, 1 expected exceedance case, and $400 million for the 5 expected exceedance case. Estimated total utility $SO_2$ emissions in 2005 are not expected to change given the title IV emissions trading program.

Administrative costs are estimated to be approximately $18 million for the short-term NAAQS regulatory alternative. Monitoring costs are estimated to be minimal.

### Section 303 Regulatory Alternative

The section 303 regulatory alternative may provide for lower control costs at the national level relative to the cost estimates for the short-term $SO_2$ NAAQS. First, under the section 303 program, sources would be allowed to use intermittent controls and other practices normally barred by section 123 of the Act (e.g., supplemental control systems, stack height in excess of GEP) to prevent exceedances of a 5-minute trigger level. These types of controls are generally less costly to employ relative to add-on controls. Secondly, given the timetables in the Act regarding SIP development and attainment of the NAAQS, it is probable that emission reductions from a section 303 program could be achieved in a more timely fashion. While some SIP revisions would be necessary for States to implement the section 303 program, more time-consuming aspects of the SIP process such as designations could be avoided. There is a greater likelihood that the section 303 program could bring about more prompt and effective remediation of high 5-minute $SO_2$ concentration relative to the short-term NAAQS alternative. In respect to total annual emission reductions, it is likely that the section 303 program would achieve less emission reductions than a short-term NAAQS program. Administrative costs are expected to be minimal as some resource-intensive components of the SIP process could be bypassed under a section 303 program. Likewise, monitoring costs are estimated to be minimal.

### Analysis of Potential Benefits

A quantitative analysis of the benefits of reducing short-term $SO_2$ peaks through implementation of the regulatory options under consideration in this RIA is not possible at this time. Results of a staff paper exposure analysis conducted on a subset of $SO_2$ sources potentially affected by this rulemaking indicate that as many as 180,000–395,000 exposure events above 0.5 ppm $SO_2$ may occur among 68,000–166,000 exercising asthmatics nationally every year. Moreover, this analysis shows that there is a clustering of risk of exposure around a subset of those $SO_2$ sources analyzed. It is expected that reductions in short-term $SO_2$ peaks resulting from this rulemaking could reduce potential risks of adverse respiratory effects (e.g., bronchoconstriction, wheezing, chest tightness, shortness of breath) among exercising asthmatic individuals that are potentially exposed to these high 5-minute $SO_2$ ambient concentrations. Additionally, reductions in adverse welfare effects due to $SO_2$ such as improvements in visual air quality and reductions in ecosystem impacts, odors, and materials damage, and reductions in adverse health and welfare effects due to particulate matter may be achieved as a result of implementing the regulatory alternatives considered in this document today.

A final RIA will be issued at the time of promulgation of final standards. This draft RIA has not been considered in issuing this proposal. In accordance with Executive Order 12866, this proposed rule was submitted to OMB for review. Written comments from OMB and the EPA written responses to these comments are available for public inspection at the EPA's Central Docket Section (Docket No. A–84–25), South Conference Center, Room 4, Waterside Mall, 401 M Street, SW., Washington, DC.

*B. Impact on Small Entities*

Pursuant to the EPA guidelines issued in response to the Regulatory Flexibility Act, 5 U.S.C., 600 et seq., a regulatory flexibility analysis has been prepared and is discussed in the draft RIA cited above. The analysis examined industry-wide cost and economic impacts for nonutility and utility sources of $SO_2$ emissions likely to be impacted by the regulatory alternatives discussed in this notice. The EPA also analyzed various industries for the existence of small entities. Given data limitations and because the regulatory alternatives would be implemented through a risk-based targeted strategy described in the Federal Register document on implementation issues, it was not feasible to quantitatively ascertain whether small entities within a given industry category would be differentially impacted when compared to the industry category as a whole.

*C. Reduction of Governmental Burden*

Executive Order 12875 ("Enhancing the Intergovernmental Partnership") is designed to reduce the burden to State, local, and tribal governments of the cumulative effect of unfunded Federal mandates, and recognizes the need for these entities to be free from unnecessary Federal regulation to enhance their ability to address problems they face and provides for Federal agencies to grant waivers to these entities from discretionary Federal requirements. In accordance with the purposes of Executive Order 12875, the EPA will consult with representatives of State, local, and tribal governments to inform them of the requirements for implementing the alternative regulatory measures being proposed to address short-term peak $SO_2$ exposures. The EPA will summarize the concerns of the governmental entities and respond to their comments prior to taking final action.

*D. Environmental Justice*

Executive Order 12898 requires that each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The requirements of Executive Order 12898 have been addressed in the draft RIA cited above.

On average, approximately 25 percent of the total population and 14 percent of total households residing in geographic areas that are potentially impacted by short-term $SO_2$ peaks of 0.60 ppm or greater are nonwhite and below the poverty level, respectively. These estimates exceed the national averages of 19.7 percent and 12.7 percent, respectively. It also follows that, on average, 25 percent of the asthmatics potentially exposed to short-term $SO_2$ peaks of 0.60 ppm or greater are nonwhite. Upon closer examination, 44 percent of these potentially $SO_2$-impacted areas have a nonwhite population greater than the national average with 24 percent between 1 and 2 times greater, 10 percent between 2 and 3 times greater, 7 percent between 3 and 4 times greater, and 3 percent between 4 and 5 times greater.

*E. Impact on Reporting Requirements*

Air quality monitoring activities that would occur as a result of this proposed rule would increase the costs and man-hour burdens to State and local agencies for conducting ambient $SO_2$ surveillance required by 40 CFR part 58 and currently approved under OMB Control Number 2060–0084. Increased costs would result from the relocation of some monitors currently operated as part of the State and Local Air Monitoring Stations (SLAMS) networks and from the purchase and operation of additional monitors in a small number of agencies (see the related document to be published shortly in the **Federal Register** revising 40 CFR parts 51 and 58 for information on compliance with Paperwork Reduction Act requirements).

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**Appendix I to the Preamble**

February 19, 1987.

The Honorable Lee M. Thomas,
*Administrator, U.S. Environmental Protection Agency, Washington, DC 20460.*

Dear Mr. Thomas: The Clean Air Scientific Advisory Committee (CASAC) has completed its review of the 1986 Addendum to the 1982 Staff Paper on Sulfur Oxides (*Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information*) prepared by the Agency's Office of Air Quality Planning and Standards (OAQPS).

The Committee unanimously concludes that this document is consistent in all significant respects with the scientific evidence presented and interpreted in the combined Air Quality Criteria Document for Particulate Matter/Sulfur Oxides (1982) and its 1986 Addendum, on which CASAC issued its closure letter on December 15, 1986. The Committee believes that the 1986 Addendum to the 1982 Staff Paper on Sulfur Oxides provides you with the kind and amount of technical guidance that will be needed to make appropriate decisions with respect to the standards. The Committee's major findings and conclusions concerning the various scientific issues and studies discussed in the Staff Paper Addendum are contained in the attached report.

Thank you for the opportunity to present the Committee's views on this important public health and welfare issue.

Sincerely,

Morton Lippmann, Ph.D.,
*Chairman, Clean Air Scientific Advisory Committee.*

cc: A. James Barnes
Gerald Emison
Lester Grant
Vaun Newill
John O'Connor
Craig Potter
Terry Yosie

**Summary of Major Scientific Issues and CASAC Conclusions on the 1986 Draft Addendum to the 1982 Sulfur Oxides Staff Paper**

The Committee found the technical discussions contained in the Staff Paper Addendum to be scientifically thorough and acceptable, subject to minor editorial revisions. This document is consistent in all significant respects with the scientific evidence presented in the 1982 combined Air Quality Criteria Document for Particulate Matter/Sulfur Oxides and its 1986 Addendum, on which the Committee issued its closure letter on December 15, 1986.

### Scientific Basis for Primary Standards

The Committee addressed the scientific basis for a 1-hour, 24-hour, and annual primary standards at some length in its August 26, 1983 closure letter on the 1982 Sulfur Oxides Staff Paper. That letter was based on the scientific literature which had been published up to 1982. The present review has examined the more recently published studies.

It is clear that no single study of $SO_2$ can fully address the range of public health issues that arise during the standard setting process. The Agency has completed a thorough analysis of the strengths and weaknesses of various studies and has derived its recommended ranges of interest by evaluating the weight of the evidence. The Committee endorses this approach.

The Committee wishes to comment on several major issues concerning the scientific data that are available. These issues include:

- Recent studies more clearly implicate particulate matter than $SO_2$ as a longer-term public health concern at low exposure levels.
- A majority of Committee members believe that the effects reported in the clinical studies of asthmatics represent effects of significant public health concern.
- The exposure uncertainties associated with a 1-hour standard are quite large. The relationship between the frequency of short-term peak exposures and various scenarios of asthmatic responses is not well understood. Both EPA and the electric power industry are conducting further analyses of a series of exposure assessment issues. Such analyses have the potential to increase the collective understanding of the relationship between $SO_2$ exposures and responses observed in subgroups of the general population.
- The number of asthmatics vulnerable to peak exposures near electric power plants, given the protection afforded by the current standards, represents a small number of people. Although the Clean Air Act requires that sensitive population groups receive protection, the size of such groups has not been defined.

CASAC believes that this issue represents a legal/policy matter and has no specific scientific advice to provide on it.

CASAC's advice on primary standards for three averaging times is presented below:

*1-Hour Standard*—It is our conclusion that a large, consistent data base exists to document the bronchoconstrictive response in mild to moderate asthmatics subjected in clinical chambers to short-term, low levels of sulfur dioxide while exercising. There is, however, no scientific basis at present to support or dispute the hypothesis that individuals participating in the $SO_2$ clinical studies are surrogates for more sensitive asthmatics. Estimates of the size of the asthmatic population that experience exposures to short-term peaks of $SO_2$ (0.2–0.5 parts per million (ppm) $SO_2$ for 5–10 minutes) during light to moderate exercise, and that can be expected to exhibit a bronchoconstrictive response, varies from 5,000 to 50,000.

The majority of the Committee believes that the scientific evidence supporting the establishment of a new 1-hour standard is stronger than it was in 1983. As a result, and in view of the significance of the effects reported in these clinical studies, there is strong, but not unanimous support for the recommendation that the Administrator consider establishing a new 1-hour standard for $SO_2$ exposures. The Committee agrees that the range suggested by EPA staff (0.2–0.5 ppm) is appropriate, with several members of the Committee suggesting a standard from the middle of this range. The Committee concludes that there is not a scientifically demonstrated need for a wide margin of safety for a 1-hour standard.

*24-Hour Standard*—The more recent studies presented and analyzed in the 1986 Staff Paper Addendum, in particular, the episodic lung function studies in children (Dockery et al., and Dassen et al.) serve to strengthen our previous conclusion that the rationale for reaffirming the 24-hour standard is appropriate.

*Annual Standard*—The Committee reaffirms its conclusion, voiced in its 1983 closure letter, that there is no quantitative basis for retaining the current annual standard. However, a decision to abolish the annual standard must be considered in the light of the total protection that is to be offered by the suite of standards that will be established.

The above recommendations reflect the consensus position of CASAC. Not all CASAC reviewers agree with each position adopted because of the uncertainties associated with the existing scientific data. However, a strong majority supports each of the specific recommendations presented above, and the entire Committee agrees that this letter represents the consensus position.

### Secondary Standards

The 3-hour secondary standard was not addressed at this review.

**APPENDIX II to the Preamble**

June 1, 1994.

Honorable Carol M. Browner,
*Administrator, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460.*

Subject: Clean Air Scientific Advisory Committee Closure on the Supplements to Criteria Document and Staff Position Papers for $SO_2$

Dear Ms. Browner: The Clean Air Scientific Advisory Committee (CASAC) at a meeting on April 12, 1994, completed its review of the documents: Supplement to the Second Addendum (1986) to Air Quality Criteria for Particulate Matter and Sulfur Oxides; Assessment of New Findings on Sulfur Dioxide and Acute Exposure Health Effects in Asthmatics; and Review of the National Ambient Air Quality Standards for Sulfur Oxides: Updated Assessment of Scientific and Technical Information, Supplement to the 1986 OAQPS Staff Paper Addendum. The Committee notes, with satisfaction, the improvements made in the scientific quality and completeness of the documents.

With the changes recommended at our March 12 session, written comments submitted to the Agency subsequent to the meeting, and the major points provided below, the documents are consistent with the scientific evidence available for sulfur dioxide. They have been organized in a logical fashion and should provide an adequate basis for a regulatory decision. Nevertheless, there are four major points which should be called to your attention while reviewing these materials:

1. A wide spectrum of views exists among the asthma specialists regarding the clinical and public health significance of the effects of 5 to 10 minute concentrations of sulfur dioxide on asthmatics engaged in exercise. On one end of the spectrum is the view that spirometric test responses can be observed following such short-term exposures and they are a surrogate for significant health effects. Also, there is some concern that the effects are underestimated because moderate asthmatics, not severe asthmatics, were used in the clinical tests.

At the other end of the spectrum, the significance of the spirometric test results are questioned because the response is similar to that evoked by other commonly encountered, non-specific stimuli such as exercise alone, cold, dry air inhalation, vigorous coughing, psychological stress, or even fatigue. Typically, the bronchoconstriction reverses itself within one or two hours, is not accompanied by a late-phase response (often more severe and potentially dangerous than the immediate response), and shows no evidence of cumulative or long-term effects. Instead, it is characterized by a short-term period of bronchoconstriction, and can be prevented or ameliorated by beta-agonist aerosol inhalation.

2. It was the consensus of CASAC that the exposure scenario of concern is a rare event. The sensitive population in this case is an unmedicated asthmatic engaged in moderate exercise who happens to be near one of the several hundred sulfur dioxide sources that have the potential to produce high ground-level sulfur dioxide concentrations over a small geographical area under rare adverse meteorological conditions. In addition, CASAC pointed out that sulfur dioxide emissions have been significantly reduced since EPA conducted its exposure analysis and emissions will be further reduced as the 1990 Clean Air Act Amendments are implemented. Consequently, such exposures will become even rarer in the future.

3. It was the consensus of CASAC that any regulatory strategy to ameliorate such exposures be risk-based—targeted on the most likely sources of short-term sulfur dioxide spikes rather than imposing short-term standards on all sources. All of the nine CASAC Panel members recommended that Option 1, the establishment of a new 5-minutes standard, not be adopted. Reasons cited for this recommendation included: the clinical experiences of many ozone experts which suggest that the effects are short-term, readily reversible, and typical of response seen with other stimuli. Further, the committee viewed such exposures as rare events which will even become rarer as sulfur dioxide emissions are further reduced as the 1990 amendments are implemented. In addition, the committee pointed out that enforcement of a short-term NAAQS would require substantial technical resources. Furthermore, the committee did not think that such a standard would be enforceable (see below).

4. CASAC questioned the enforceability of a 5-minute NAAQS or "target level." Although the Agency has not proposed an air monitoring strategy, to ensure that such a standard or "target level" would not be exceeded, we infer that potential sources would have to be surrounded by concentric circles of monitors. The operation and maintenance of such monitoring networks would be extremely resource intensive. Furthermore, current instrumentation used to routinely monitor sulfur dioxide does not respond quickly enough to accurately characterize 5-minute spikes.

The Committee appreciates the opportunity to participate in this review and looks forward to receiving notice of your decision on the standard. Please do not hesitate to contact me if CASAC can be of further assistance on this matter.

Sincerely,

George T. Wolff, Ph.D.,

*Chair, Clean Air Scientific Advisory Committee.*

### List of Subjects

*40 CFR Part 50*

Environmental protection, Air pollution control, Carbon monoxide, Lead, Nitrogen dioxide, Ozone, Particulate matter, Sulfur oxides.

*40 CFR Part 53*

Environmental protection, Administrative practice and procedure, Air pollution control, Carbon monoxide, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements.

Dated: November 1, 1994.

**Carol M. Browner,**

*Administrator.*

For the reasons set forth in the preamble, chapter I of title 40 of the Code of Federal Regulations is proposed to be amended as follows:

## PART 50—NATIONAL PRIMARY AND SECONDARY AMBIENT AIR QUALITY STANDARDS

1. The authority citation for part 50 continues to read as follows:

**Authority:** Secs. 109 and 301(a), Clean Air Act, as amended (42 U.S.C. 7409, 7601(a)).

2. Section 50.4 is revised to read as follows:

### § 50.4 National primary ambient air quality standards for sulfur oxides (sulfur dioxide).

(a) The level of the annual standard is 0.030 parts per million (ppm), not to be exceeded in a calendar year. The annual arithmetic mean shall be rounded to three decimal places (fractional parts equal to or greater than 0.0005 ppm must be rounded up).

(b) The level of the 24-hour standard is 0.14 parts per million (ppm), not to be exceeded more than once per calendar year. The 24-hour averages shall be determined from successive nonoverlapping 24-hour blocks starting at midnight each calendar day and shall be rounded to two decimal places (fractional parts equal to or greater than 0.005 ppm must be rounded up).

(c) The level of the 5-minute standard is 0.60 parts per million (ppm), not to be exceeded more than once per calendar year, as determined in accordance with appendix I of this part.

(d) Sulfur oxides shall be measured in the ambient air as sulfur dioxide by the reference method described in appendix A of this part or by an equivalent method designated in accordance with part 53 of this chapter.

(e) To demonstrate attainment, the annual arithmetic mean and the second-highest 24-hour averages must be based upon hourly data that are at least 75 percent complete in each calendar quarter. A 24-hour block average shall be considered valid if at least 75 percent of the hourly averages for the 24-hour period are available. In the event that only 18, 19, 20, 21, 22, or 23 hourly averages are available, the 24-hour block average shall be computed as the sum of the available hourly averages using 18, 19, etc. as the divisor. If less than 18 hourly averages are available, but the 24-hour average would exceed the level of the standard when zeros are substituted for the missing values, subject to the rounding rule of paragraph (b) of this section, then this shall be considered a valid 24-hour average. In this case, the 24-hour block average shall be computed as the sum of the available hourly averages divided by 24.

3. Section 50.5 is revised to read as follows:

### § 50.5 National secondary ambient air quality standard for sulfur oxides (sulfur dioxide).

(a) The level of the 3-hour standard is 0.5 parts per million (ppm), not to be exceeded more than once per calendar year. The 3-hour averages shall be determined from successive nonoverlapping 3-hour blocks starting at midnight each calendar day and shall be rounded to 1 decimal place (fractional parts equal to or greater than 0.05 ppm must be rounded up).

(b) Sulfur oxides shall be measured in the ambient air as sulfur dioxide by the reference method described in appendix A of this part or by an equivalent method designated in accordance with Part 53 of this chapter.

(c) To demonstrate attainment, the second-highest 3-hour average must be based upon hourly data that are at least 75 percent complete in each calendar quarter. A 3-hour block average shall be considered valid only if all three hourly averages for the 3-hour period are available. If only one or two hourly averages are available, but the 3-hour average would exceed the level of the standard when zeros are substituted for the missing values, subject to the rounding rule of paragraph (a) of this section, then this shall be considered a valid 3-hour average. In all cases, the 3-hour block average shall be computed as the sum of the hourly averages divided by 3.

4. Appendix I is added to part 50 to read as follows:

### Appendix I to Part 50—Interpretation of the 5-Minute National Ambient Air Quality Standard for Sulfur Dioxide

1.0 *General.*

1.1 This appendix explains the computations necessary for analyzing sulfur dioxide data to determine attainment of the 5-minute standard specified in 40 CFR 50.4. Sulfur dioxide is measured in the ambient air by the reference method specified in Appendix A of this part or an equivalent method designated in accordance with part 53 of this chapter.

1.2 Several terms used in this appendix must be defined. A "5-minute hourly maximum" for $SO_2$ refers to the highest of the 12 possible nonoverlapping 5-minute $SO_2$ averages calculated or measured during a clock hour. The term "exceedance" of the 5-minute standard means a 5-minute hourly maximum that is greater than the level of the 5-minute standard after rounding to the nearest hundredth ppm (i.e. values ending in or greater than 0.005 ppm are rounded up; e.g., a value of 0.605 would be rounded to 0.61, which is the smallest value for an exceedance). The term "year" refers to a calendar year. The term "quarter" refers to a calendar quarter. The 5-minute $SO_2$ standard is expressed in terms of the number of exceedances per year after adjusting for missing data (if required) and after averaging over a two year period.

2.0 Attainment Determination.

2.1 Under 40 CFR 50.4(c) the 5-minute standard is attained when the number of exceedances per year is less than or equal to one. In general, this determination is to be made by recording the number of 5-minute hourly maximum exceedances at a monitoring site for each year, using the calculations in section 3.2 to compensate for missing data (if required), averaging the number of exceedances over a two year period, and comparing the number of exceedances (rounded to the nearest integer) to the number of allowable exceedances.

2.2 There are less stringent requirements for showing that a monitor has failed an attainment test and thus has recorded a violation of the sulfur dioxide standards. Although it is necessary to meet the minimum data completeness requirements to use the computational formula described in section 3.2, this criterion does not apply when there are obvious nonattainment situations. For example, when a site fails to meet the completeness criteria, nonattainment of the 5-minute standard can still be established on the basis of the observed number of exceedances in a year (e.g. three observed exceedances in a single year).

3.0 Calculations for the 5-Minute Standard

3.1 Calculating a 5-Minute hourly maximum. A 5-minute hourly maximum value for $SO_2$ is the highest of the 5-minute averages from the twelve possible nonoverlapping periods during a clock hour. These 5-minute values shall be rounded to the nearest hundredth ppm (fractional values equal to or greater than 0.005 ppm are rounded up). A 5-minute maximum shall be considered valid if (1) 5-minute averages were available for at least 9 of the twelve five-minute periods during the clock hour or (2) the value of the 5-minute average exceeds the level of the 5-minute standard.

3.2 Calculating estimated exceedances for a year.

3.2 Because of practical considerations, a 5-minute maximum $SO_2$ value may not be available for each hour of the year. To account for the possible effect of incomplete data, an adjustment must be made to the data collected at a particular monitoring location to estimate the number of exceedances in a year. The adjustment is made on a quarterly basis to ensure that the entire year is adequately represented. In this adjustment, the assumption is made that the fraction of missing values that would have exceeded the standard level is identical to the fraction of measured values above this level.

3.2.2 The computation for incomplete data is to be made for all NAMS and SLAMS sites with 50 percent to 90 percent complete data in each quarter. If a site has more than 90 percent complete data in a quarter, no adjustment for missing data is required. If a site has less than 50 percent complete data in a quarter, no adjustment for missing data is required and the observed exceedances are used. To demonstrate attainment, a site must have at least 75 percent complete data in each quarter.

3.2.3 The estimate of the expected number of exceedances for the quarter is equal to the observed number of exceedances plus an increment associated with the missing data. The following formula must be used for these computations:

$$e_q=v_q+[(v_q/n_q)\times(N_q-n_q]=v_q\times N_q/n_q \quad [1]$$

where

$e_q$=the estimated number of exceedances for quarter q,

$v_q$=the observed number of exceedances for quarter q,

$N_q$=the number of hours in quarter q, and

nq=the number of hours in the quarter with valid 5-minute hourly $SO_2$ maximums

q=the index for each quarter, q=1, 2, 3 or 4.

The estimated number of exceedances for the quarter must be rounded to the nearest hundredth (fractional values equal to or greater than 0.005 are rounded up).

3.2.4 The estimated number of exceedances for the year, e, is the sum of the estimates for each quarter.

$$e=\sum_{q=1}^{4} e_q \quad [2]$$

The estimated number of exceedances for a single year must be rounded to one decimal place (fractional values equal to or greater than 0.05 are rounded up).

3.2.5 The number of exceedances is then estimated by averaging the individual annual estimates over a two year period, rounding to the nearest integer, and comparing with the allowable exceedance rate of one per year (fractional values equal to or greater than 0.5 are rounded up; e.g., an estimated number of exceedances of 1.5 would be rounded to 2, which is the lowest value for nonattainment).

3.2.6 *Example.*

i. During the most recent quarter, 1210 out of a possible 2208 5-minute hourly maximums were recorded, with one observed exceedance of the 5-minute standard. Using formula [1], the estimated number of exceedances for the quarter is

$e=1\times2208/1210=1.825$ or 1.83

ii. If the estimated exceedances for the other four quarters were 0.0, then using formula [2], the estimated number of exceedances for the year is

$1.83+0.0+0.0+0.0=1.83$ or 1.8

iii. If the estimated number of exceedances for the previous year was 0.0, then the expected number of exceedances is estimated by

$(1.8+0.0)/2=0.9$ or 1

iv. Since 1 does not exceed the allowable number of exceedances, this monitoring site would not fail the attainment test.

## PART 53—AMBIENT AIR MONITORING REFERENCE AND EQUIVALENT METHODS

1. The authority citation for part 53 continues to read as follows:

**Authority:** Sec. 301(a) of the Clean Air Act (42 U.S.C. sec. 1857g(a)), as amended by sec. 15(c)(2) of Pub. L. 91–604, 84 Stat. 1713, unless otherwise noted.

2. Section 53.20 is amended by adding two sentences to the end of paragraph (b) and by revising the table to paragraph (c) to read as follows:

### § 53.20 General provisions.

* * * * *

(b) * * * Candidate methods for sulfur dioxide may be additionally approved for use in obtaining 5-minute average concentration measurements by meeting all of the specified requirements for both the 0 to 0.5 ppm and 0 to 1.0 ppm ranges and meeting the supplemental specifications for rise and fall time given in Table B–1. Such additional approval for 5-minute monitoring shall be included in any equivalent method designation determination for the method and shall be identified in the **Federal Register** notice of designation required under § 53.8(a), the notice to the applicant required under § 53.8(b), and the list of designated methods required under § 53.8(c).

(c) * * *

TABLE B–1.—PERFORMANCE SPECIFICATIONS FOR AUTOMATED METHODS

| Performance parameter | Units | Sulfur dioxide | Photochemical oxidants | Carbon monoxide | Nitrogen dioxide | Definitions and test procedures |
|---|---|---|---|---|---|---|
| 1. Range Supplemental, 5-minute[2] | ppm[1] | 0–0.5 | 0–0.5 | 0–50 | 0–0.5 | Sec. 53.23(a). |
| | ppm | 0–1.0 | | | | |
| 2. Noise | ppm | 0.005 | 0.005 | 0.50 | 0.005 | Sec. 53.23(b). |
| 3. Lower detectable limit | ppm | 0.01 | 0.01 | 1.0 | 0.01 | Sec. 53.23(c). |
| 4. Interference equivalent: | | | | | | |
| Each interferant | ppm | ±0.02 | ±0.02 | ±1.0 | ±0.02 | Sec. 53.23(d). |
| Total interferant | ppm | ±0.06 | ±0.06 | ±1.5 | ±0.04 | |
| 5. Zero drift, 12 and 24 hour | ppm | ±0.02 | ±0.02 | ±1.0 | ±0.02 | Sec. 53.23(e). |
| 6. Span drift, 24 hour: | | | | | | |
| 20 percent of upper range limit | Percent | ±20.0 | ±20.0 | ±10.0 | ±20.0 | Sec. 53.23(e). |
| 80 percent of upper range limit | Percent | ±5.0 | ±5.0 | ±2.5 | ±5.0 | |
| 7. Lag time | Minutes | 20 | 20 | 10 | 20 | Sec. 53.23(e). |
| 8. Rise time Supplemental, 5-minute[2] | Minutes | 15 | 15 | 5 | 15 | Sec. 53.23(e). |
| | Minutes | 2 | | | | |
| 9. Fall time Supplemental, 5-minute[2] | Minutes | 15 | 15 | 5 | 15 | Sec. 53.23(e). |
| | Minutes | 2 | | | | |
| 10. Precision: | | | | | | |
| 20 percent of upper range limit | ppm | 0.010 | 0.010 | 0.5 | 0.020 | Sec.53.23(e) |
| 80 percent of upper range limit | ppm | 0.015 | 0.010 | 0.5 | 0.030 | |

[1] Parts per million by volume. To convert from parts per million to µg/m³ at 25 °C and 760 mm Hg, multiply by M/0.02447, where M is the molecular weight of the gas.

[2] Supplemental specifications applicable to sulfur dioxide equivalent methods to be additionally approved for use for 5-minute monitoring.

* * * * *

[FR Doc. 94–27646 Filed 11–14–94; 8:45 am]

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Tuesday
November 15, 1994

# Part IV

# Department of the Interior

## Fish and Wildlife

## 50 CFR Part 17

**Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule**

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

# Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of review.

SUMMARY: In this notice the U.S. Fish and Wildlife Service (Service) presents an updated compilation of vertebrate and invertebrate animal taxa native to the United States that are being reviewed for possible addition to the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973, as amended (Act). Such taxa are generally referred to as listing candidates (candidates). The changes in this document from previous animal notices of review primarily involve: (1) the addition of new candidate taxa; (2) changes in category for some candidates; (3) additions and deletions in State historic distributions; and (4) changes in status trend for some candidate taxa. Procedures initiated in the previous animal notice of review (November 21, 1991, 56 FR 58804) that are being continued include: (1) a category (PE or PT) for species that are currently proposed for listing under the Act; (2) alphabetical organization by scientific name of taxa under each major group heading (class or order) identified in previous notices; (3) the omission of taxa that have been identified as non-candidates in previous notices; and (4) identification of a Fish and Wildlife Service Region with lead responsibility for each taxon. While it is prudent to take candidate taxa into account during environmental planning, neither the substantive nor procedural provisions of the Act apply to a taxon that is designated as a candidate. (Species that have been proposed for listing are covered by the conference procedure of Section 7(a)(4) of the Act).

Through the publication of this notice, the Service also requests any additional status information that may be available. This information will be considered in preparing listing documents and future revisions and/or supplements to the notice of review. It will also assist the Service in monitoring changes in the status of listing candidates.

DATE: Comments are requested until the publication of an update of this notice, anticipated in 1996.

ADDRESSES: Interested persons or organizations should submit comments regarding particular taxa to the Regional Director of the Region specified with each taxon as having the lead responsibility for that taxon. Comments of a more general nature may be submitted to: Chief—Division of Endangered Species, U.S. Fish and Wildlife Service, Mail Stop 452 ARLSQ, Washington, D.C. 20240. Written comments and materials received in response to this notice will be available for public inspection by appointment in the Regional Offices listed below.

*Region 1.*—California, Hawaii, Idaho, Nevada, Oregon, Washington, Commonwealth of the Northern Mariana Islands, and Pacific Territories of the United States.

Regional Director (TE), U.S. Fish and Wildlife Service, Eastside Federal Complex, 911 N.E. 11th Avenue, Portland, Oregon 97232–4181 (503–231–6241).

*Region 2.*—Arizona, New Mexico, Oklahoma, and Texas.

Regional Director (TE), U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505–766–3972).

*Region 3.*—Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.

Regional Director (TE), U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111 (612–725–3276).

*Region 4.*—Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the U.S. Virgin Islands.

Regional Director (TE), U.S. Fish and Wildlife Service, 1875 Century Boulevard, Atlanta, Georgia 30303 (404–679–7103).

*Region 5.*—Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia.

Regional Director (TE), U.S. Fish and Wildlife Service, 300 Westgate Center Drive, Hadley, Massachusetts 01035–9589 (413–253–8615).

*Region 6.*—Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming.

Regional Director (TE), U.S. Fish and Wildlife Service, P.O. Box 25486, Denver Federal Center, Denver, Colorado 80225 (303–236–7398).

*Region 7.*—Alaska.

Regional Director (TE), U.S. Fish and Wildlife Service, 1011 East Tudor Street, Anchorage, Alaska 99501 (907–786–3605).

FOR FURTHER INFORMATION CONTACT: Jamie Rappaport Clark, Chief, Division of Endangered Species (703–358–2171) or Endangered Species Coordinator(s) in the appropriate Regional Office(s) listed above.

SUPPLEMENTARY INFORMATION:

## Background

The Endangered Species Act (16 U.S.C. 1531 *et seq.*) requires the Secretary of the Interior (or Commerce according to vested program responsibilities) to determine whether wildlife and plant species are endangered or threatened, based on the best available scientific and commercial data, after conducting a review of their status. In regulations found at 50 CFR 424.15 the Service advises that it may publish comprehensive notices of such review. These notices contain the names of the species considered to be candidates for listing under the Act and indicate whether sufficient scientific or commercial information is available to warrant proposing to list them. They also solicit additional information regarding any of the species mentioned.

The Service has for many years been gathering data on taxa of animals native to the United States that appeared, at least at times, to merit consideration for addition to the List of Endangered and Threatened Wildlife. The accompanying table identifies many of these taxa (including, by definition, biological subspecies and certain distinct population segments of vertebrate animals) and assigns each taxon to one of the categories described below. In revising this compilation the Service relies on information from status surveys conducted for candidate assessment and on other information from State Heritage Programs, from other State and Federal Agencies (such as the Forest Service and the Bureau of Land Management), from knowledgeable scientists, and from comments received in response to previous notices of review.

Unless it is the subject of a current published proposed rule to determine endangered or threatened status, none of these taxa receives substantive or procedural protection pursuant to the Act (species that are the subject of a final listing rule are removed from this table at each periodic updating). The Act requires, however, monitoring the status of certain candidate taxa to prevent their extinction while awaiting listing decisions. The Service intends to monitor the status of all listing candidates to the fullest extent possible.

emphasizing monitoring of species for which available scientific and commercial information indicates imminent threat (see the listing priority guidelines published September 21, 1983, 48 FR 43098).

Many of the taxa in the accompanying table were covered in the Service's previous animal notices of review. The preceding animal notice of review was published in the FEDERAL REGISTER of November 21, 1991 (56 FR 58804–58836). Previous to that a comprehensive animal notice was published January 6, 1989 (54 FR 554–579), with minor corrections on August 10, 1989 (54 FR 32833). Earlier comprehensive reviews for vertebrate animals were published on September 18, 1985 (50 FR 37958–37967), and on December 30, 1982 (47 FR 58454–58460). An initial comprehensive review for invertebrate animals was published May 22, 1984 (49 FR 21664–21675). This revised notice supersedes all previous animal notices of review.

The Service has assigned lead responsibility to one of its Regional Offices for each candidate species that occurs in more than one Service Region. The comments received in response to the previous animal notices of review have been provided for review to the Region having lead responsibility for each candidate species mentioned in the comment. The Service will likewise consider all information provided in response to this notice of review in deciding whether or not to propose species for listing and when to undertake necessary listing actions. All comments received become part of the administrative record for the species mentioned.

Some taxa covered by the previous notices have had final determinations of endangered or threatened status and, therefore, are not included in this notice of review (for the current U.S. Lists of Endangered and Threatened Wildlife and Plants contact any of the offices in the above "**ADDRESSES**" section). Also, former animal candidates that have been assigned in previous notices to categories 3A, 3B or 3C (see definitions below) are not repeated here, except in cases where subsequent category changes were necessary.

## Current Notice

This notice reflects the Service's current judgment of the possible vulnerability and status trends of native U.S. animal taxa. Taxa in the notice are assigned to several status categories, noted in the "Category" column at the left side of the table.

Codes for the major status categories of taxa in the first column of the table are explained below:

PE—Taxa already proposed to be listed as endangered.

PT—Taxa already proposed to be listed as threatened.

1—Taxa for which the Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Proposed rules have not yet been issued because this action is precluded at present by other listing activity. In accordance with the policy announced in a statement published May 12, 1993 (58 FR 28034–28035), all species that have been the subject of a petition determination of "warranted but precluded" for listing are automatically assigned to Category 1 of the next comprehensive notice of review unless they are proposed or determined to be "not warranted" in the interim. Development and publication of proposed rules on Category 1 taxa are anticipated, however, and the Service encourages other Federal agencies to give consideration to such taxa in environmental planning.

2—Taxa for which information now in the possession of the Service indicates that proposing to list as endangered or threatened is possibly appropriate, but for which persuasive data on biological vulnerability and threat are not currently available to support proposed rules. The Service emphasizes that these taxa are not being proposed for listing by this notice, and there are no current plans for such proposals until additional supporting information becomes available. Further biological research and field study usually will be necessary to ascertain the status of taxa in this category. It is likely that many will be found not to warrant listing, either because they are not threatened or endangered or because they do not qualify as species under the definition in the Act, while others will be found to be in greater danger of extinction than some taxa already found in Category 1. An asterisk (*) beside the category number indicates that the species may possibly be extinct. The Service hopes that this notice will encourage necessary research on vulnerability, taxonomy, and/or threats for these taxa.

Taxa that once were considered for listing as threatened or endangered but are no longer under such consideration are included in Category 3. Taxa in category 3 are not current candidates for listing. Such taxa are further divided into three subcategories to indicate the reason(s) for their removal from consideration:

3A—Taxa for which the Service has persuasive evidence of extinction. If rediscovered, such taxa might acquire high priority for listing. At this time, however, the best available information indicates that the taxa in this subcategory, or the habitats from which they were known, have been lost.

3B—Names that, on the basis of current taxonomic understanding (usually as represented in published revisions and monographs), do not represent distinct taxa meeting the Act's definition of "species"; it also includes vertebrate populations that do not meet this definition. Such supposed entities could be reevaluated in the future on the basis of new information.

3C—Taxa that have proven to be more abundant or widespread than previously believed and/or those that are not subject to any identifiable threat. If further research or changes in habitat conditions indicate a significant decline in any of these taxa, they may be reevaluated for possible inclusion in categories 1 or 2. Taxa assigned to Category 3C in previous notices whose status is unchanged have been omitted from the current compilation. Any taxon omitted from a previous notice will still be treated by the Service as belonging to Category 3.

The taxa in categories 1 and 2 of this notice are considered by the Service as candidates for possible addition to the List of Endangered and Threatened Wildlife. The Service encourages their consideration in long-range environmental planning, such as in environmental impact analysis under the National Environmental Policy Act of 1969 (implemented at 40 CFR Parts 1500–1508). Information regarding the range, status, and habitat needs of such species is available from the Service's Regional Offices (see "**ADDRESSES**" above).

The Service is aware of some misinterpretations that have been made of Category 3 subcategories in the past. In particular, Category 3A has been interpreted as either a comprehensive compilation of extinct species or as a list of species that became extinct while undergoing status review. Neither interpretation is correct. In fact, status review of the overwhelming majority of species identified in Category 3A revealed extinction that had occurred well before passage of the Endangered Species Act of 1973. A common misinterpretation of Category 3C is that a status review indicates those species have special sensitivity or vulnerability to extinction. Although this might be true of some of them, it is not necessarily true of all or even a majority of them.

A second status column in the table indicates status trend, where known. Please note, however, that status trend is only a small part of the whole picture of a taxon's status and may undergo frequent and/or rapid reversals owing to natural and man-made causes. Each species' status is identified as I, S, D, U, or N, which stand, respectively, for Improving, Stable, Declining, Unknown, or Not applicable. "Improving" indicates those species known to be increasing in numbers and/or whose threats to their continued existence are lessening in the wild. "Stable" indicates those species known to have stable numbers over the recent past and/or whose threats have remained relatively constant. "Declining" indicates decreasing numbers and/or increasing threats. "Unknown" is for those species where additional survey work is required to determine their current trends. "Not applicable" applies to species in Category 3.

*Summary of Status Categories*

For ease of reference, numerical totals for candidates in the various status categories are provided below:

Proposed for Listing—52 (including PE—44 and PT—8)

Category 1—86

Category 2—1,919 (Representing about 2,001 taxa)

Category 3—90 (including 3A—32, 3B—14, and 3C—44)

This and previous animal notices have identified a total of 424 category 3 taxa (including 3A—156, 3B—61, and 3C—207).

*Request for Information*

The Service hereby requests that any further information on the vulnerable taxa named in this notice be submitted as soon as possible and on a continuing basis, including:

(1) Data indicating that a taxon should be assigned to a category other than the one in which it appears;

(2) Nominations of taxa not included;

(3) Recommendations of area as critical habitat for a candidate taxon, or indications that a proposal of critical habitat would not be prudent for a taxon;

(4) Documentation of threats to any of the included taxa;

(5) Information concerning the degrees of threats;

(6) identification of taxonomic or nomenclatural changes for any of the taxa, including the acceptability of the indicated vertebrate populations; .

(7) Appropriate common name suggestions; or

(8) Identification of mistakes, such as errors in the indicated historical distributions.

The Service will consider all information received in response to this notice. Substantive changes will be published in the **Federal Register** on a two-year cycle.

*Organization of the Table*

The following table is arranged alphabetically by names of genera, species, and relevant subspecies under the major group headings (class or order as it provides a practical grouping). Useful synonyms and subgeneric scientific names appear in parentheses (the synonyms preceded by an equal sign) and are displaced to the right in some instances to avoid affecting the alphabetical order. Some taxa that have not yet been formally described in the scientific literature have been included. Such taxa are identified by a generic or specific name (in italics) followed by "sp." or "ssp." (not italicized, or alphabetized).

The scientific community is making some progress in standardizing common names at the species level (but very little at the level of subspecies). Standardized common names are incorporated in these notices as they become available. Any common names replaced in the process of standardization will be repeated at least once (given in parentheses with an equal sign). The flux in common names, the inclusion of vernacular and composite subspecific names, and the fact that a majority of invertebrates still lack a standardized name combine to make common names relatively useless for organizing the table. This notice also presents a group name (in parentheses) for many species, notably mollusks and insects, whose standardized common name given alone would have little recognition value to most users of the table.

For each taxon in the table, the assigned status category appears in the first column on the left. The second column contains the current status trend information. Column three indicates the Service Region with lead responsibility (see "**ADDRESSES**" section above). Following the scientific name of each species or subspecies (fourth column) is the family designation (column five) and any common or vernacular name (column six). Column seven contains the known historical ranges for all included taxa, indicated by postal code abbreviations for States and U.S. possessions (many taxa may no longer occur in all of the areas shown). In the section on birds, the abbreviation "N" indicates the nesting range of the species, and the abbreviation "V" indicates additional areas in which the species is a regular visitor. In only the sections on insects, an asterisk (*) beside the name of a State signifies a lack of sightings, to the Service's knowledge, since 1963 for that State.

**Author**

This notice was compiled from evaluations by the Service's Ecological Services staff biologists in the Service's Regional Offices and Field Stations. It was compiled and edited by Dr. George Drewry of the Division of Endangered Species in the Service's Washington Office.

**List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

**Authority**

This notice is published under the authority of the Endangered Species Act (16 U.S.C. 1531 *et seq.*).

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| | | | **VERTEBRATES** | | | |
| | | | MAMMALS. | | | |
| 2 | U | R1 | *Ammospermophilus nelsoni* | Sciuridae | Nelson's antelope ground squirrel | CA. |
| 2 | U | R1 | *Aplodontia rufa californica* | Aplodontidae | Mountain beaver (Mono Basin population). | CA. |
| 2 | U | R1 | *Aplodontia rufa phaea* | Aplodontidae | Point Reyes mountain beaver | CA. |
| 2 | U | R1 | *Arborimus albipes* | Muridae | White-footed vole | CA, OR. |
| 2 | U | R1 | *Arborimus pomo* | Muridae | California red tree vole | CA, OR |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 3C | N | R5 | *Blarina brevicauda aloga* | Soricidae | Martha's Vineyard short-tailed shrew | MA. |
| 2 | S | R5 | *Blarina brevicauda compacta* | Soricidae | Nantucket short-tailed shrew | MA. |
| 2 | U | R4 | *Blarina brevicauda shermani* | Soricidae | Sherman's short-tailed shrew | FL. |
| 2 | U | R2 | *Blarina hylophaga (=brevicauda) plumbea.* | Soricidae | Aransas short-tailed shrew | TX. |
| 2 | U | R1 | *Brachylagus idahoensis* | Leporidae | Pygmy rabbit | CA, ID, MT, NV, OR, UT, WA, WY. |
| 2 | U | R2 | *Choeronycteris mexicana* | Phyllostomidae | Mexican long-tongued bat | AZ, CA, NM, TX, Mexico, Central & South America. |
| 2 | U | R4 | *Clethrionomys gapperi maurus* | Muridae | Kentucky red-backed vole | KY. |
| 1 | D | R2 | *Conepatus leuconotus texensis* | Mustelidae | Gulf Coast hog-nosed skunk | TX, Mexico. |
| 2 | U | R6 | *Conepatus mesoleucus figginsi* | Mustelidae | Colorado hog-nosed skunk | CO. |
| 2 | U | R2 | *Conepatus mesoleucus telmalestes* | Mustelidae | Big Thicket hog-nosed skunk | TX. |
| 2 | U | R2 | *Cynomys ludovicianus arizonensis* | Sciuridae | Arizona black-tailed prairie dog | AZ, NM, TX, Mexico. |
| 2 | U | R1 | *Dipodomys californicus (=heermanni) eximius.* | Heteromyidae | Marysville California kangaroo rat (=M. Heerman's k.r.). | CA. |
| 2 | U | R2 | *Dipodomys elator* | Heteromyidae | Texas kangaroo rat | OK, TX. |
| 3B | N | R1 | *Dipodomys elephantinus* | Heteromyidae | Big-eared kangaroo rat | CA. |
| 2 | U | R1 | *Dipodomys heermanni berkleyensis* | Heteromyidae | Berkeley kangaroo rat | CA |
| 2 | H | R1 | *Dipodomys heermanni dixoni* | Heteromyidae | Merced kangaroo rat | CA |
| 2 | U | R1 | *Dipodomys merriami collinus* | Heteromyidae | Earthquake Merriam's kangaroo rat | CA |
| 2 | U | R6 | *Dipodomys merriami frenatus* | Heteromyidae | Virgin Merriam's kangaroo rat | UT. |
| 1 | D | R1 | *Dipodomys merriami parvus* | Heteromyidae | San Bernadino Merriam's kangaroo rat. | CA. |
| 2 | U | R6 | *Dipodomys microps alfredi* | Heteromyidae | Gunnison Island kangaroo rat | UT. |
| 2 | U | R2 | *Dipodomys microps leucotis* | Heteromyidae | Marble Canyon kangaroo rat | AZ. |
| 2 | U | R6 | *Dipodomys microps russeolus* | Heteromyidae | Dolphin Island chisel-toothed kangaroo rat. | UT. |
| 2 | U | R1 | *Dipodomys nitratoides brevinasus* | Heteromyidae | Short-nosed kangaroo rat | CA. |
| 2 | U | R6 | *Dipodomys ordii cineraceus* | Heteromyidae | Dolphin Island ord's kangaroo rat | UT. |
| PE | U | R1 | *Dugong dugon* | Dugongidae | Dugong | PW |
| 1 | D | R1 | *Emballonura semicaudata* | Emballonuridae | Sheath-tailed bat (Agiguan, American Samoa populations). | AS, CM (Agiguan) |
| 2* | E | R1 | *Emballonura semicaudata* | Emballonuridae | Sheath-tailed bat (Guam, Rota populations). | GU, CM (Rota) |
| 2 | U | R1 | *Emballonura semicaudata* | Emballonuridae | Sheath-tailed bat (Caroline Islands populations). | TT (Caroline Islands). |
| 2 | U | R2 | *Euderma maculatum* | Vespertilionidae | Spotted bat | AZ, CA, CO, ID, MT, NM, NV, OR, UT, WY, TX, Canada, Mexico. |
| 1 | D | R4 | *Eumops glaucinus floridanus* | Molossidae | Florida mastiff-bat | FL. |
| 2 | U | R2 | *Eumops perotis californicus* | Molossidae | Greater western mastiff-bat | AZ, CA, NM, TX, Mexico. |
| 2 | U | R2 | *Eumops underwoodi* | Molossidae | Underwood's mastiff-bat | AZ, Mexico, Central America. |
| 2 | U | R1 | *Eutamias palmeri* | Sciuridae | Palmer's chipmunk | NV. |
| 2 | U | R2 | *Eutamias quadrivittatus australis* | Sciuridae | Organ Mountains Colorado chipmunk. | NM. |
| 2 | U | R1 | *Eutamias umbrinus nevadensis* | Sciuridae | Hidden Forest Uinta chipmunk | NV. |
| 2 | U | R2 | *Felis concolor browni* | Felidae | Yuma puma | AZ, CA, Mexico. |
| 2 | U | R3 | *Felis concolor schorgeri* | Felidae | Wisconsin puma | IA, IL, KS, MN, MO, WI, Canada. |
| 2 | U | R6 | *Felis lynx canadensis* | Felidae | North American lynx | AK, CO, ID, ME, MI, MN, MT, ND, NH, NV, NY, OR, UT, VT, WA, WI, WY, Canada. |
| 2 | U | R2 | *Geomys bursarius arenarius* | Geomyidae | Desert pocket gopher | NM, TX |
| 3C | N | R4 | *Geomys bursarius breviceps* | Geomyidae | Mer Rouge pocket gopher | LA. |
| 2 | U | R4 | *Geomys cumberlandius* | Geomyidae | Cumberland pocket gopher | GA. |
| 2 | U | R2 | *Geomys personatus maritimus* | Geomyidae | Maritime Texas pocket gopher | TX. |
| 2 | U | R2 | *Geomys personatus streckeri* | Geomyidae | Carrizo Springs Texas pocket gopher. | TX. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R2 | *Geomys texensis bakeri* | Geomyidae | Baker's Llano pocket gopher | TX |
| 2 | D | R1 | *Glaucomys sabrinus californicus* | Sciuridae | San Bernardino northern flying squirrel. | CA. |
| 2 | U | R6 | *Gulo gulo luscus* | Mustelidae | North American wolverine | CO, ID, MN, MT, ND, NV, UT, WY. |
| 2 | U | R1 | *Gulo gulo luteus* | Mustelidae | California wolverine | CA, NV, OR, WA. |
| 2 | U | R6 | *Idionycteris (=Plecotus) phyllotis* | Vespertilionidae | Allen's (Mexican) big-eared bat | AZ, CA, CO, NM, NV, UT, Mexico |
| 2 | U | R1 | *Lepus americanus tahoensis* | Leporidae | Sierra Nevada snowshoe hare | CA, NV. |
| 2 | D | R1 | *Lepus californicus bennettii* | Leporidae | San Diego black-tailed jackrabbit | CA, Mexico. |
| 2 | U | R2 | *Lepus callotis gaillardi* | Leporidae | White-sided jack rabbit | NM, Mexico. |
| 2 | U | R2 | *Lutra canadensis sonora* | Mustelidae | Southwestern otter | AZ, CA, CO, NM, UT. |
| 2 | U | R2 | *Macrotus californicus* | Phyllostomidae | California leaf-nosed bat | AZ, CA, Mexico. |
| 2 | U | R1 | *Martes pennanti pacifica* | Mustelidae | Pacific fisher | CA, OR, WA. |
| 2 | U | R1 | *Microdipodops megacephalus albiventer.* | Heteromyidae | Desert Valley kangaroo mouse | NV. |
| 2 | U | R1 | *Microdipodops megacephalus nasutus.* | Heteromyidae | Fletcher dark kangaroo mouse | NV. |
| 2 | U | R5 | *Microtus breweri* | Muridae | Beach vole | MA. |
| 2 | U | R1 | *Microtus californicus mohavensis* | Muridae | Mojave river vole | CA. |
| 3C | N | R1 | *Microtus californicus sanpabloensis* | Muridae | San Pablo California vole | CA. |
| 2 | D | R1 | *Microtus californicus stephensi* | Muridae | Stephens' California vole (=meadow mouse). | CA. |
| 2 | U | R1 | *Microtus californicus vallicola* | Muridae | Owens Valley California vole | CA. |
| 2 | S | R5 | *Microtus chrotorrhinus carolinensis* | Muridae | Southern rock vole | NC, TN, VA, WV. |
| 2 | U | R2 | *Microtus mexicanus navaho* | Muridae | Navaho Mountain Mexican vole | AZ, UT. |
| 2 | U | R1 | *Microtus montanus fucosus* | Muridae | Pahranagat Valley montane vole | NV. |
| 2 | U | R1 | *Microtus montanus nevadensis* | Muridae | Ash Meadows montane vole | NV. |
| 2 | U | R6 | *Microtus montanus rivularis* | Muridae | Virgin River montane vole | UT. |
| 2 | U | R7 | *Microtus oeconomus amakensis* | Muridae | Amak tundra vole | AK. |
| 2 | U | R7 | *Microtus oeconomus elymocetes* | Muridae | Montague tundra vole | AK. |
| 2 | U | R1 | *Microtus pennsylvanicus kincaidi* | Muridae | Potholes meadow vole | WA. |
| 2 | S | R5 | *Microtus pennsylvanicus provectus* | Muridae | Block Island meadow vole | RI. |
| 2 | U | R5 | *Microtus pennsylvanicus shattucki* | Muridae | Penobscot meadow vole | ME. |
| 3C | N | R1 | *Microtus townsendii pugeti* | Muridae | Shaw Island Townsend's vole | WA. |
| 2 | U | R4 | *Mustela frenata peninsulae* | Mustelidae | Florida long-tailed weasel | FL. |
| 2 | U | R4 | *Myotis austroriparius* | Vespertilionidae | Southeastern myotis (bat) | AL, AR, FL, GA, IL, IN, KY, LA, MO, MS, NC, OK, SC, TN, TX. |
| 2 | U | R6 | *Myotis ciliolabrum* | Vespertilionidae | Small-footed myotis (bat) | AZ, CA, CO, ID, MT, ND, NE, NM, NV, SD, TX, UT, WA, Mexico |
| 2 | U | R6 | *Myotis evotis* | Vespertilionidae | Long-eared myotis (bat) | AZ, CA, CO, ID, MT, ND, NE, NM, NV, OR, SD, TX, UT, WA, Canada, Mexico |
| 2 | D | R5 | *Myotis leibii (=M. subulatus l.)* | Vespertilionidae | Eastern small-footed bat | AR, CT, DE, GA, IL, IN, KY, MA, MD, ME, MO, NC, NH, NJ, NY, OH, OK, PA, RI, SC, TN, VA, VT, WV, Canada. |
| 2 | U | R2 | *Myotis lucifugus occultus* | Vespertilionidae | Occult little brown bat | AZ, CA, NM, TX, Mexico. |
| 2 | U | R6 | *Myotis thysanodes* | Vespertilionidae | Fringed myotis (bat) | AZ, CA, CO, ID, MT, NE, NM, NV, SD, TX, UT, WA, Canada, Mexico |
| 2 | U | R2 | *Myotis velifer* | Vespertilionidae | Cave myotis (bat) | AZ, CA, NE, NM, NV, TX, Mexico |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R6 | *Myotis volans* | Vespertilionidae | Long-legged myotis (bat) | AZ, CA, CO, ID, MT, ND, NE, NM, NV, SD, TX, UT, WA, Canada, Mexico |
| 2 | U | R1 | *Myotis yumanensis* | Vespertilionidae | Yuma myotis (bat) | AZ, CA, CO, ID, MT, NM, NV, TX, UT, WA, Canada, Mexico |
| 2 | U | R4 | *Neofiber alleni* | Muridae | Round-tailed muskrat | FL, GA. |
| 2 | U | R4 | *Neotoma floridana haematoreia* | Muridae | Southern Appalachian eastern woodrat. | GA, NC, SC. |
| 2 | U | R1 | *Neotoma fuscipes annectens* | Muridae | San Francisco dusky-footed woodrat | CA. |
| 2 | U | R1 | *Neotoma fuscipes luciana* | Muridae | Monterey dusky-footed woodrat | CA. |
| 1 | D | R1 | *Neotoma fuscipes riparia* | Muridae | San Joaquin Valley woodrat | CA. |
| 2 | U | R1 | *Neotoma lepida intermedia* | Muridae | San Diego desert woodrat | CA. |
| 2 | D | R5 | *Neotoma magister (=N. floridana m.)* | Muridae | Alleghany (=Eastern) woodrat | AL, CT*, GA, IN, KY, MD, NC, NJ, NY*, OH, PA, TN, VA, WV. |
| 2 | U | R2 | *Neotoma mexicana bullata* | Muridae | Santa Catalina Mountains woodrat | AZ. |
| 2 | U | R2 | *Neotoma micropus leucophaea* | Muridae | White Sands woodrat | NM. |
| 2 | U | R2 | *Nyctinomops macrotis (=Tadarida m., T. molossa).* | Molossidae | Big free-tailed bat | AZ, CO, NM, UT, Mexico, South America |
| 2 | U | R6 | *Ochotona princeps barnesi* | Ochotonidae | Barnes' pika | UT. |
| 2 | U | R6 | *Ochotona princeps cinnamomea* | Ochotonidae | Cinnamon pika | UT. |
| 2 | U | R6 | *Ochotona princeps lasalensis* | Ochotonidae | La Sal pika | UT. |
| 2 | D | R6 | *Ochotona princeps moorei* | Ochotonidae | Heliotrope pika | UT. |
| 2 | U | R2 | *Ochotona princeps nigrescens* | Ochotonidae | Goat Peak pika | NM. |
| 2 | U | R6 | *Ochotona princeps wasatchensis* | Ochotonidae | Wasatch pika | UT. |
| 2 | U | R4 | *Odocoileus virginianus hiltonensis* | Cervidae | Hilton Head white-tailed deer | SC. |
| 2 | U | R4 | *Odocoileus virginianus nigribarbis* | Cervidae | Blackbeard Island white-tailed deer | GA. |
| 2 | U | R4 | *Odocoileus virginianus taurinsulae* | Cervidae | Bulls Island white-tailed deer | SC. |
| 2 | U | R4 | *Odocoileus virginianus venatoria* | Cervidae | Hunting Island white-tailed deer | SC. |
| 2 | U | R2 | *Ondatra zibethicus ripensis* | Cricetidae | Pecos River muskrat | NM, TX |
| 2 | D | R1 | *Onychomys torridus ramona* | Muridae | Southern grasshopper mouse | CA, Mexico. |
| 2 | U | R1 | *Onychomys torridus tularensis* | Muridae | Tulare grasshopper mouse | CA |
| 2 | U | R2 | *Oryzomys couesi aquaticus* | Cricetidae | Coues' rice rat | TX, Mexico. |
| 2 | S | R1 | *Ovis canadensis californiana* | Bovidae | California bighorn sheep | CA, ID, OR, WA, Canada. |
| PE | D | R1 | *Ovis canadensis cremnobates* | Bovidae | Peninsular bighorn sheep | CA, Mexico. |
| PE | E | R2 | *Panthera onca* | Felidae | Jaguar, U.S. population | AZ, CA, CO, LA, NM, TX |
| 2 | U | R1 | *Perognathus alticola alticola* | Heteromyidae | White-eared pocket mouse | CA. |
| 2 | U | R1 | *Perognathus alticola inexpectatus* | Heteromyidae | Tehachapi white-eared pocket mouse. | CA. |
| 2 | U | R2 | *Perognathus amplus ammodytes* | Heteromyidae | Coconino Arizona pocket mouse | AZ. |
| 2 | U | R2 | *Perognathus amplus amplus* | Heteromyidae | Yavapai Arizona pocket mouse | AZ. |
| 2 | U | R2 | *Perognathus amplus cineris* | Heteromyidae | Wupatki Arizona pocket mouse | AZ. |
| 2 | U | R1 | *Perognathus californicus femoralis (subgen. Chaetodipus).* | Heteromyidae | Dulzura California pocket mouse | CA, Mexico. |
| 2 | D | R1 | *Perognathus fallax fallax (subgen. Chaetodipus).* | Heteromyidae | Northwestern San Diego pocket mouse. | CA, Mexico. |
| 2 | U | R1 | *Perognathus fallax pallidus (subgen. Chaetodipus).* | Heteromyidae | Pallid San Diego pocket mouse | CA. |
| 2 | U | R2 | *Perognathus flavus goodpasteri* | Heteromyidae | Silky pocket mouse | AZ. |
| 2 | U | R1 | *Perognathus inoratus* | Heteromyidae | San Joaquin pocket mouse (includes all ssp.). | CA |
| 2 | U | R2 | *Perognathus intermedius nigrimontis* | Heteromyidae | Black Mountain pocket mouse | AZ. |
| 2 | D | R1 | *Perognathus longimembris bangsi* | Heteromyidae | Palm Springs little pocket mouse | CA. |
| 2 | D | R1 | *Perognathus longimembris brevinasus.* | Heteromyidae | Los Angeles little pocket mouse | CA. |
| 2 | U | R1 | *Perognathus longimembris internationalis.* | Heteromyidae | Jacumba little pocket mouse | CA, Mexico. |
| 2 | U | R2 | *Peromyscus eremicus papagensis* | Muridae | Pinacate cactus mouse | AZ, Mexico. |
| 2 | U | R2 | *Peromyscus eremicus pullus* | Muridae | Black Mountain cactus mouse | AZ. |
| 2 | D | R4 | *Peromyscus floridanus* | Muridae | Florida mouse | FL. |
| 2 | U | R5 | *Peromyscus leucopus ammodytes* | Muridae | Monomoy white-footed mouse | MA. |
| 3C | N | R5 | *Peromyscus leucopus easti* | Muridae | Pungo white-footed mouse | VA. |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 3C | N | R5 | *Peromyscus leucopus fusus* | Muridae | Martha's Vineyard white-footed mouse. | MA. |
| 2 | U | R1 | *Peromyscus maniculatus anacapae* | Muridae | Anacapa deer mouse | CA. |
| 2 | U | R1 | *Peromyscus maniculatus clementis* | Muridae | San Clemente deer mouse | CA. |
| 2 | U | R4 | *Peromyscus polionotus leucocephalus.* | Muridae | Santa Rosa beach mouse | FL. |
| 1 | D | R4 | *Peromyscus polionotus peninsularis* | Muridae | St. Andrews beach mouse | FL. |
| 2 | S | R2 | *Peromyscus truei comanche* | Muridae | Palo Duro mouse | TX. |
| 2 | U | R4 | *Plecotus rafinesquii* | Vespertilionidae | Rafinesque's (=southeastern) big-eared bat. | AL, AR, FL, GA, IL, IN, KY, LA, MO, MS, NC, OH, OK, SC, TN, TX, VA, WV. |
| 2 | U | R2 | *Plecotus townsendii pallescens* | Vespertilionidae | Pale Townsend's (=western) big-eared bat. | AZ, CA, CO, ID, KS, MT, ND, NE, NM, OK, SD, Mexico. |
| 2 | D | R1 | *Plecotus townsendii townsendii* | Vespertilionidae | Pacific Townsend's (=western) big-eared bat. | CA, ID, NV, OR, WA, Canada. |
| 2 | U | R4 | *Procyon lotor auspicatus* | Procyonidae | Key Vaca raccoon | FL. |
| 2 | U | R4 | *Procyon lotor incautus* | Procyonidae | Key West raccoon | FL. |
| 1 | S | R1 | *Pteropus mariannus mariannus* | Pteropodidae | Mariana flying fox (Agiguan, Tinian, Saipan populations). | MP. |
| 2 | S | R1 | *Pteropus mariannus mariannus* | Pteropodidae | Mariana flying fox (Rota, northern island populations). | MP. |
| 2 | S | R1 | *Pteropus mariannus paganensis* | Pteropodidae | Pagan Mariana flying fox (=Pagan fruit bat). | MP. |
| 2 | D | R1 | *Pteropus samoensis samoensis* | Pteropodidae | Samoan flying fox (=Samoan fruit bat). | AS, Western Samoa. |
| 2 | U | R6 | *Rangifer tarandus caribou* | Cervidae | Woodland caribou (Montana population). | MT. |
| 2 | U | R2 | *Reithrodontomys megalotis arizonensis.* | Muridae | Chiricahua western harvest mouse | AZ. |
| 2 | U | R6 | *Reithrodontomys megalotis ravus* | Muridae | Stansbury Island harvest mouse | UT. |
| 2 | U | R4 | *Scalopus aquaticus bassi* | Talpidae | Englewood mole | FL. |
| 2 | U | R2 | *Scalopus aquaticus texanus* | Talpidae | Presidio mole | TX. |
| 2 | U | R1 | *Scapanus latimanus parvus* | Talpidae | Alameda Island mole | CA |
| 2 | U | R2 | *Sciurus arizonensis catalinae* | Sciuridae | Santa Catalina Mountains squirrel | AZ. |
| 2 | U | R2 | *Sciurus nayaritensis chiricahuae* | Sciuridae | Chiricahua Nayarit squirrel | AZ. |
| 2 | D | R4 | *Sciurus niger avicennia* | Sciuridae | Mangrove fox squirrel | FL. |
| 2 | D | R4 | *Sciurus niger shermani* | Sciuridae | Sherman's fox squirrel | FL. |
| 2 | U | R2 | *Sigmodon arizonae jacksoni* | Muridae | Yavapai Arizona cotton rat | AZ. |
| 2 | D | R1 | *Sigmodon arizonae plenus* | Muridae | Colorado River cotton rat | CA. |
| 2 | U | R2 | *Sigmodon fulviventer goldmani* | Muridae | Hot Springs cotton rat | NM. |
| 2 | U | R2 | *Sigmodon hispidus eremicus* | Muridae | Yuma hispid cotton rat | CA, AZ, Mexico. |
| 2 | U | R4 | *Sigmodon hispidus insulicola* | Muridae | Insular hispid cotton rat | FL. |
| 2 | U | R2 | *Sigmodon ochrognathus* | Muridae | Yellow-nosed cotton rat | AZ, NM, TX, Mexico. |
| 2 | U | R7 | *Sorex alaskanus* | Soricidae | Glacier Bay water shrew | AK. |
| 2 | U | R2 | *Sorex arizonae* | Soricidae | Arizona shrew | AZ, NM. |
| 2 | U | R5 | *Sorex cinereus nigriculus* | Soricidae | Tuckahoe masked shrew | NJ. |
| 2 | U | R7 | *Sorex hydrodromus* | Soricidae | Pribilof Islands shrew | AK. |
| 3C | N | R1 | *Sorex lyelli* | Soricidae | Mt. Lyell shrew | CA. |
| 1 | D | R1 | *Sorex ornatus relictus* | Soricidae | Buena Vista Lake ornate shrew | CA. |
| 2 | U | R1 | *Sorex ornatus salarius* | Soricidae | Monterey ornate shrew | CA. |
| 2 | D | R1 | *Sorex ornatus salicornicus* | Soricidae | Salt marsh ornate shrew | CA. |
| 2 | U | R1 | *Sorex ornatus sinuosus* | Soricidae | Suisun ornate shrew | CA. |
| 2 | U | R1 | *Sorex ornatus willetti* | Soricidae | Santa Catalina ornate shrew | CA. |
| 2 | U | R5 | *Sorex palustris punctulatus* | Soricidae | Southern water shrew | MD, NC, PA, TN, VA, WV. |
| 2 | D | R6 | *Sorex preblei* | Soricidae | Preble's shrew | ID, MT, NV, OR, UT, WA, WY. |
| 2 | U | R1 | *Sorex trowbridgii destructioni* | Soricidae | Destruction Island shrew | WA. |
| 2 | U | R1 | *Sorex vagrans halicoetes* | Soricidae | Salt marsh vagrant shrew | CA. |
| 2 | S | R1 | *Spermophilus brunneus* ssp. | Sciuridae | Northern Idaho ground squirrel | ID. |
| 2 | S | R1 | *Spermophilus brunneus* ssp. | Sciuridae | Southern Idaho ground squirrel | ID. |
| 2 | D | R1 | *Spermophilus mohavensis* | Sciuridae | Mohave ground squirrel | CA. |
| 2 | D | R1 | *Spermophilus tereticaudus chlorus* | Sciuridae | Coachella Valley round-tailed ground squirrel. | CA. |
| 2 | D | R6 | *Spermophilus tridecemlineatus alleni* | Sciuridae | Allen's 13-lined ground squirrel | WY. |
| 2 | U | R1 | *Spermophilus washingtoni* | Sciuridae | Washington ground squirrel | WA, OR |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R1 | *Spilogale putorius amphiala* | Mustelidae | Channel Islands spotted skunk | CA. |
| 2 | U | R6 | *Spilogale putorius interrupta* | Mustelidae | Plains spotted skunk | AR, CO, IA, IL, LA, KS, MN, MO, NE, OK, SD, TX, WI, WY. |
| 2 | U | R4 | *Stenoderma rufum* | Phyllostomidae | Desmarest's fig-eating bat | PR. |
| 1 | D | R1 | *Sylvilagus bachmani riparius* | Leporidae | Riparian brush rabbit | CA. |
| 2 | U | R5 | *Sylvilagus floridanus hitchensi* | Leporidae | Smiths Island cottontail rabbit | VA. |
| 2 | U | R2 | *Sylvilagus floridanus robustus* | Leporidae | Davis Mountains cottontail rabbit | TX. |
| 2 | U | R4 | *Sylvilagus obscurus* | Leporidae | Appalachian cottontail | AL, GA, MD, NC, NY, PA, SC, TN, VA, WV |
| 2 | D | R5 | *Sylvilagus transitionalis* | Leporidae | New England cottontail rabbit | CT, MA, ME, NH, NY, PA, RI, VT. |
| 2 | U | R5 | *Synaptomys borealis sphagnicola* | Muridae | Northern bog lemming | ME, NH, Canada. |
| 3A | N | R6 | *Synaptomys cooperi paludis* | Muridae | Kansas bog lemming | KS. |
| 3A | N | R6 | *Synaptomys cooperi relictus* | Muridae | Nebraska bog lemming | NE. |
| 2 | U | R2 | *Tamias canipes* | Sciuridae | Gray-footed chipmunk | NM, TX |
| 2 | D | R1 | *Tamias speciosus speciosus* | Sciuridae | Lodgepole chipmunk | CA |
| 2 | U | R6 | *Tamias umbrinus sedulus* | Sciuridae | Mount Ellen Uinta chipmunk | UT. |
| 2 | D | R1 | *Thomomys mazama glacialis* | Geomyidae | Roy Prairie pocket gopher | WA. |
| 2 | U | R1 | *Thomomys mazama helleri* | Geomyidae | Goldbeach western pocket gopher | OR. |
| 2 | U | R1 | *Thomomys mazama louiei* | Geomyidae | Louie's western pocket gopher | WA. |
| 2* | E | R1 | *Thomomys mazama tacomensis* | Geomyidae | Tacoma western pocket gopher | WA. |
| 2 | U | R1 | *Thomomys umbrinus abstrusus* | Geomyidae | Fish Spring pocket gopher | NV. |
| 3B | N | R1 | *Thomomys umbrinus amargosae* | Geomyidae | Amargosa southern pocket gopher | CA. |
| 2 | U | R6 | *Thomomys umbrinus bonnevillei* | Geomyidae | Bonneville southern pocket gopher | UT. |
| 2 | U | R6 | *Thomomys umbrinus convexus* | Geomyidae | Clear Lake pocket gopher | UT. |
| 2 | U | R1 | *Thomomys umbrinus curtatus* | Geomyidae | San Antonio pocket gopher | NV. |
| 2 | U | R1 | *Thomomys umbrinus detumidus* | Geomyidae | Pistol River pocket gopher | OR. |
| 2 | U | R6 | *Thomomys umbrinus dissimilis* | Geomyidae | Mount Ellen pocket gopher | UT. |
| 2 | U | R2 | *Thomomys umbrinus guadalupensis* | Geomyidae | Guadalupe southern pocket gopher | NM, TX. |
| 2 | U | R2 | *Thomomys umbrinus hualpaiensis* | Geomyidae | Hualapai southern pocket gopher | AZ. |
| 2 | U | R2 | *Thomomys umbrinus limpiae* | Geomyidae | Limpia southern pocket gopher | TX. |
| 2 | U | R2 | *Thomomys umbrinus mearnsi* | Geomyidae | Mearns' southern pocket gopher | NM. |
| 2 | U | R6 | *Thomomys umbrinus minimus* | Geomyidae | Stansbury Island pocket gopher | UT. |
| 2 | U | R2 | *Thomomys umbrinus muralis* | Geomyidae | Prospect Valley pocket gopher | AZ. |
| 2 | U | R6 | *Thomomys umbrinus nesophilus* | Geomyidae | Antelope Island pocket gopher | UT. |
| 2 | U | R2 | *Thomomys umbrinus paguatae* | Geomyidae | Cebolleta southern pocket gopher | NM. |
| 2 | U | R6 | *Thomomys umbrinus powelli* | Geomyidae | Salt Gulch pocket gopher | UT. |
| 2 | U | R2 | *Thomomys umbrinus quercinus* | Geomyidae | Pajarito southern pocket gopher | AZ. |
| 2 | U | R6 | *Thomomys umbrinus robustus* | Geomyidae | Skull Valley pocket gopher | UT. |
| 2 | U | R6 | *Thomomys umbrinus sevieri* | Geomyidae | Swasey Spring pocket gopher | UT. |
| 2 | U | R2 | *Thomomys umbrinus suboles* | Geomyidae | Searchlight southern pocket gopher | AZ. |
| 2 | U | R2 | *Thomomys umbrinus subsimilis* | Geomyidae | Harquahala southern pocket gopher | AZ. |
| 2 | U | R2 | *Thomomys umbrinus texensis* | Geomyidae | Limpia Creek pocket gopher | TX. |
| 2 | U | R1 | *Urocyon littoralis catalinae* | Canidae | Santa Catalina Island fox | CA. |
| 2 | S | R1 | *Urocyon littoralis clementae* | Canidae | San Clemente Island fox | CA. |
| 2 | S | R1 | *Urocyon littoralis dickeyi* | Canidae | San Nicolas Island fox | CA. |
| 2 | S | R1 | *Urocyon littoralis littoralis* | Canidae | San Miguel Island fox | CA. |
| 2 | S | R1 | *Urocyon littoralis santacruzae* | Canidae | Santa Cruz Island fox | CA. |
| 2 | S | R1 | *Urocyon littoralis santarosae* | Canidae | Santa Rosa Island fox | CA. |
| 1 | D | R4 | *Ursus americanus floridanus* | Ursidae | Florida black bear | FL, GA. |
| 2 | D | R6 | *Vulpes velox* | Canidae | Swift fox (U.S. population) | CO, KS, MT, ND, NE, NM, OK, SD, TX, WY. |
| 2 | U | R1 | *Vulpes vulpes necator* | Canidae | Sierra Nevada red fox | CA, NV. |
| 2 | S | R2 | *Zapus hudsonius luteus* | Zapodidae | New Mexican meadow jumping mouse. | AZ, NM. |
| 2 | D | R6 | *Zapus hudsonius preblei* | Zapodidae | Preble's meadow jumping mouse | CO, WY. |
| 2 | U | R1 | *Zapus trinotatus orarius* | Zapodidae | Point Reyes jumping mouse | CA. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| | | | BIRDS. | | | |
| 2 | D | R2 | *Accipiter gentilis* | Accipitridae | Northern goshawk (North American pop.). | N=AK, AZ, CA, ID, MA, MD, ME, MI, MN, MT, ND, NE, NH, NM, NV, NY, OR, PA, SD, TX, UT, VT, WA, WI, WV, WY, Canada, V=AL, AR, FL, GA, IA, IL, IN, KS, KY, LA, MO, MS, NC, OH, OK, SC, TN, TX, VA, Mex |
| PE | D | R4 | *Accipiter striatus venator* | Accipitridae | Puerto Rican sharp-shinned hawk | PR |
| 2 | D | R1 | *Agelaius tricolor* | Emberizidae | Tricolored blackbird | CA, NV, OR, Mexico. |
| 2 | U | R4 | *Aimophila aestivalis* | Emberizidae | Bachman's sparrow | AL, AR, FL, GA, IL, IN, KY, LA, MD, MO, MS, NC, OH, OK, PA, SC, TN, TX, VA, WV. |
| 2 | S | R2 | *Aimophila botterii texana* | Emberizidae | Texas Botteri's sparrow | TX, Mexico. |
| 2 | D | R1 | *Aimophila ruficeps canescens* | Emberizidae | Southern California rufous-crowned sparrow. | CA, Mexico. |
| 2 | D | R6 | *Ammodramus bairdii* | Emberizidae | Baird's sparrow | N=MN, MT, ND, SD, WY, Canada; V=CO, ID, KS, MO, NE, OK, NM, TX, Mexico. |
| 2 | D | R1 | *Amphispiza belli belli* | Emberizidae | Bell's sage sparrow | CA, Mexico. |
| 2 | S | R4 | *Anas bahamensis bahamensis* | Anatidae | Lesser white-cheeked pintail | PR, VI, West Indies, South America. |
| 2 | U | R1 | *Aphelocoma coerulescens cana* | Corvidae | Eagle Mountain scrub jay | CA. |
| 2 | S | R2 | *Arremonops rufivirgatus rufivirgatus* | Emberizidae | Texas (=Sennett's) olive sparrow | TX, Mexico. |
| 1 | S | R1 | *Artamus leucorhynchus pelewensis* | Artamidae | Palau white-breasted wood-swallow | TT (Caroline Islands). |
| 1 | S | R1 | *Asio flammeus ponapensis* | Strigidae | Ponape short-eared owl | TT (Caroline Islands). |
| 2 | U | R1 | *Asio flammeus sandwichensis* | Strigidae | Hawaiian short-eared owl | HI |
| 2 | D | R1 | *Athene cunicularia hypugea* | Strigidae | Western burrowing owl | AZ, CA, CO, ID, IA, KS, LA, MN, MT, ND, NE, NM, NV, OK, OR, TX, SD, WA, WY, Canada, Mexico |
| 2 | D | R7 | *Brachyramphus brevirostris* | Alcidae | Kittlitz's murrelet | AK, Russia |
| 2 | D | R7 | *Brachyramphus marmoratus marmoratus.* | Alcidae | Marbled murrelet northern pop. | AK, Canada. |
| 2 | S | R2 | *Buteo nitidus maximus* | Accipitridae | Northern gray hawk | N=AZ, NM, TX, Mexico. |
| PE | U | R4 | *Buteo platypterus brunnescens* | Accipitridae | Puerto Rican broad-winged hawk | PR. |
| 2 | D | R6 | *Buteo regalis* | Accipitridae | Ferruginous hawk | N=CO, ID, KS, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY, Canada: V=AZ, CA, Mexico. |
| 3B | N | R1 | *Campylorhynchus brunneicapillus couesi.* | Troglodytidae | San Diego (coastal population) cactus wren. | CA, Mexico. |
| 2 | D | R5 | *Catharus minimus bicknelli* | Muscicapidae | Bicknell's thrush | N=MA, ME, NH, NY, VT, Canada. |
| 2 | D | R1 | *Centrocercus urophasianus phaios* | Phasianidae | Western sage grouse | OR, WA, Canada. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 3C | N | R6 | *Charadrius alexandrinus nivosus* | Charadriidae | Western snowy plover (interior population). | N=CA, CO, KS, NM, NV, OK, OR, TX, UT, WA, WY: V=AZ, Mexico. |
| 2 | U | R4 | *Charadrius alexandrinus tenuirostris* | Charadriidae | Southeastern snowy plover | AL, FL, LA, MS, PR, Greater Antilles. |
| 2 | D | R6 | *Charadrius montanus* | Charadriidae | Mountain plover | N=CO, KS, MT, ND, NE, NM, OK, SD, TX, UT, WY: V=AZ, CA, NV, Mexico. |
| 1 | D | R1 | *Chasiempis sandwichensis gayi* | Pachycephalidae | Oahu elepaio | HI |
| 2 | D | R6 | *Chlidonias niger* | Laridae | Black tern | CA, CO, ID, IA, IL, IN, KS, ME, MI, MN, MO, MT, NE, ND, NY, NV, OH, OR, SD, UT, WA, WI, WY, Canada. |
| 2 | U | R4 | *Columba leucocephala* | Columbidae | White-crowned pigeon | FL, West Indies, Central America. |
| 2 | D | R7 | *Contopus borealis* | Tyrannidae | Olive-sided flycatcher | N=AK, Canada V= |
| 2 | I | R6 | *Cygnus buccinator* | Anatidae | Trumpeter swan (Rocky Mountain population). | ID, MT, WY. |
| 2 | U | R4 | *Dendrocygna arborea* | Anatidae | West Indian whistling duck | PR, VI, West Indies. |
| 2 | D | R1 | *Dendrocygna bicolor* | Anatidae | Fulvous whistling duck (SW U.S. population). | N=AZ, CA: V=Mexico. |
| 2 | U | R4 | *Dendroica angelae* | Emberizidae | Elfin woods warbler | PR. |
| 2 | D | R3 | *Dendroica cerulea* | Emberizidae | Cerulean warbler | AL, AR, CN, DE, IA, IL, IN, KS, KY, LA, MA, MD, MI, MN, MO, MS, NC, NE, NH, NJ, NY, OH, OK, PA, RI, TN, TX, VA, VT, WI, WV, Canada. |
| 2 | U | R4 | *Dendroica dominica stoddardi* | Emberizidae | Stoddard's yellow-throated warbler | AL, FL. |
| 2 | D | R1 | *Ducula oceanica ratakensis* | Columbidae | Radak Micronesian pigeon | TT (Marshall Islands). |
| 2 | U | R1 | *Ducula oceanica teraokai* | Columbidae | Truk Micronesian pigeon | TT (Caroline Islands). |
| 2 | U | R4 | *Egretta rufescens* | Ardeidae | Reddish egret | N=FL, TX, Mexico, West Indies: V=AL, CA, LA, MS. |
| 2 | U | R2 | *Empidonax fulvifrons pygmaeus* | Tyrannidae | Buff-breasted flycatcher (northern) | AZ, NM, Mexico |
| 2 | D | R1 | *Empidonax traillii brewsteri* | Tyrannidae | Little willow flycatcher | CA, OR, WA, British Columbia |
| PE | D | R2 | *Empidonax traillii extimus* | Tyrannidae | Southwestern willow flycatcher | AZ, CA, CO, NM, TX, UT, Mexico. |
| 3C | N | R1 | *Eremophila alpestris actia* | Alaudidae | California horned lark | CA, Mexico. |
| 2 | U | R4 | *Falco sparverius paulus* | Falconidae | Southeastern American kestrel | AL, FL, GA, LA, MS. |
| 2 | U | R4 | *Fulica caribaea* | Rallidae | Caribbean coot | PR, VI, West Indies. |
| 1 | D | R1 | *Gallicolumba stairi* | Columbidae | Friendly ground dove | AS |
| 2 | U | R2 | *Geothlypis trichas insperata* | Emberizidae | Brownsville common yellowthroat | TX, Mexico. |
| 2 | S | R1 | *Geothlypis trichas sinuosa* | Emberizidae | Saltmarsh common yellowthroat | CA. |
| 1 | D | R2 | *Glaucidium brasilianum cactorum* | Strigidae | Cactus ferruginous pygmy-owl | AZ, TX, Mexico. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R6 | *Histrionicus histrionicus* | Anatidae | Harlequin duck | AK, AR, AZ, CA, CO, CT, DE, IA, ID, KS, MA, MD, ME, MO, MN, NE, NH, NJ, NM, NV, MT, OK, OR, RI, SD, TX, UT, WA, WY, Canada. |
| 2 | U | R2 | *Icterus cucullatus cucullatus* | Emberizidae | Mexican hooded oriole | TX, Mexico. |
| 2 | U | R2 | *Icterus cucullatus sennetti* | Emberizidae | Sennett's hooded oriole | TX, Mexico. |
| 2 | U | R2 | *Icterus graduacauda audubonii* | Emberizidae | Audubon's oriole | TX, Mexico. |
| 2 | D | R1 | *Ixobrychus exilis hesperis* | Ardeidae | Least bittern | AZ, CA, NV, OR, UT, Mexico. |
| 2 | U | R7 | *Lagopus mutus evermanni* | Phasianidae | Evermann's rock ptarmigan | AK |
| 2 | U | R7 | *Lagopus mutus yunaskensis* | Phasianidae | Yunaska rock ptarmigan | AK. |
| 2 | S | R3 | *Lanius ludovicianus migrans* | Laniidae | Migrant loggerhead shrike | N=AR, CT, DC, DE, IA, IL, IN, KS, KY, MA, MD, ME, MI, MN, MO, NC, ND, NE, NH, NJ, NY, OH, OK, PA, RI, TN, TX, VA, VT, WI, WV, Canada: V=AL, FL, GA, LA, MS, SC. |
| 2 | U | R3 | *Laterallus jamaicensis* | Rallidae | Black rail | AL, AR, AZ, CA, CT, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, MI, MO, MS, NC, NJ, NY, OH, OK, PA, RI, SC, TN, TX, VA, WI, WV, WY. |
| 2 | U | R1 | *Loxops caeruleirostris* | Fringillidae | Kauai akepa | HI |
| 2 | S | R1 | *Melospiza melodia maxillaris* | Emberizidae | Suisun song sparrow | CA. |
| 2 | U | R1 | *Melospiza melodia pusillula* | Emberizidae | Alameda (South Bay) song sparrow | CA. |
| 2 | U | R1 | *Melospiza melodia samuelis* | Emberizidae | San Pablo song sparrow | CA. |
| 2 | U | R1 | *Moho bishopi* | Melephagidae | Bishop's o'o | HI. |
| 2 | S | R7 | *Numenius tahitiensis* | Scolopacidae | Bristle-thighed curlew | N=AK: V=HI, Central Pacific Islands. |
| 2 | D | R1 | *Oceanodroma castro cryptoleucura* | Hydrobatidae | Band-rumped storm petrel | HI. |
| 2 | U | R1 | *Oceanodroma homochroa* | Hydrobatidae | Ashy storm-petrel | CA |
| 1 | D | R1 | *Oreomystis bairdi* | Fringillidae | Kauai creeper | HI |
| 3C | N | R1 | *Oreortyx pictus* | Phasianidae | Mountain quail | CA, ID, NV, OR, WA. |
| 2 | U | R4 | *Otus nudipes newtoni* | Strigidae | Virgin Islands screech owl | PR, VI. |
| 2 | S | R4 | *Oxyura jamaicensis jamaicensis* | Anatidae | West Indian ruddy duck | PR, VI, West Indies. |
| 2 | U | R2 | *Parula pitiayumi nigrilora* | Emberizidae | Tropical parula (=Olive-backed warbler). | TX, Mexico. |
| 2 | S | R1 | *Passerculus sandwichensis beldingi* | Emberizidae | Belding's savannah sparrow | CA, Mexico. |
| 2 | U | R1 | *Passerculus sandwichensis rostratus* | Emberizidae | Large-billed savannah sparrow | N=Mexico: V=AZ, CA. |
| 2 | U | R4 | *Passerina ciris ciris* | Emberizidae | Eastern painted bunting | NC, SC, GA, FL, West Indies |
| 2 | D | R1 | *Pipilo erythrophthalmus clementae* | Emberizidae | San Clemente rufous-sided towhee | CA. |
| 2 | I | R1 | *Plegadis chihi* | Threskiornithidae | White-faced ibis | N=AZ, CA, CO, KS, NE, NM, NV, OK, OR, SD, TX, UT: V=ID, WY, Mexico. |
| PT | | R7 | *Polysticta stelleri* | Anatidae | Steller's eider (AK breeding pop.) | AK, Russia |
| 1 | D | R1 | *Porzana tubuensis* | Rallidae | Spotless crake | AS |

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|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R4 | *Pterodroma hasitata* | Procellaridae | Black-capped petrel | N=West Indies–Haiti; V=NC, SC, GA, West Indies |
| 1 | D | R1 | *Ptilinopus perousii perousii* | Columbidae | Many-colored fruit dove | AS |
| 2 | U | R4 | *Rallus longirostris insularum* | Rallidae | Mangrove clapper rail | FL. |
| 2 | D | R7 | *Rissa brevirostris* | Laridae | Red-legged kittiwake | AK, Russia |
| 1 | S | R1 | *Rukia ruki* | Zosteropidae | Truk greater white-eye | TT (Caroline Islands). |
| 2 | U | R1 | *Sterna elegans* | Laridae | Elegant tern | CA, Mexico. |
| 2 | D | R3 | *Sterna hirundo* | Laridae | Common tern (Great Lakes population). | IL, IN, MI, MN, NY, OH, PA, WI, Canada. |
| 2 | D | R1 | *Sterna nilotica vanrossemi* | Laridae | Van Rossem's gull-billed tern | CA, Mexico |
| 2 | D | R1 | *Strix occidentalis occidentalis* | Strigidae | California spotted owl | CA, NV. |
| 2 | D | R1 | *Synthliboramphus (=Endomychura) hypoleuca scrippsi.* | Alcidae | Xantus' murrelet | CA, Mexico. |
| 2 | D | R5 | *Thryomanes bewickii altus* | Troglodytidae | Appalachian Bewick's wren | AL, GA, KY, MD, NC, OH, PA, SC, TN, VA, WV, Canada. |
| 2 | U | R1 | *Toxostoma lecontei macmillanorum* | Mimidae | San Joaquin LeConte's thrasher | CA |
| 2 | D | R1 | *Tympanuchus phasianellus columbianus.* | Phasianidae | Columbian sharp-tailed grouse | CA, CO, ID, OR, MT, NV, UT, WA, WY, Canada. |
| 1 | D | R1 | *Zosterops conspicillatus rotensis* | Zosteropidae | Rota bridled white-eye | MP. |
| | | | REPTILES. | | | |
| 2 | U | R4 | *Ameiva wetmorei* | Teiidae | Blue-tailed ground lizard | PR. |
| 2 | U | R1 | *Anniella pulchra nigra* | Anniellidae | Black California legless lizard | CA. |
| 2 | D | R1 | *Anniella pulchra pulchra* | Anniellidae | Silvery legless lizard | CA, Mexico |
| 2 | U | R4 | *Anolis cooki* | Iguanidae | Cook's anole | PR. |
| 2 | U | R4 | *Anolis occultus* | Iguanidae | Puerto Rican pygmy anole | PR. |
| 2 | U | R4 | *Arrhyton exiguum exiguum* | Colubridae | Culebra garden snake | PR. |
| 2 | U | R1 | *Charina bottae umbratica* | Boidae | Southern rubber boa | CA. |
| 2 | U | R1 | *Clemmys marmorata marmorata* | Emydidae | Northwestern pond turtle | CA, NV, OR, WA, Canada. |
| 2 | U | R1 | *Clemmys marmorata pallida* | Emydidae | Southwestern pond turtle | CA. |
| 2 | U | R5 | *Clemmys muhlenbergii* | Emydidae | Bog turtle (southern pop.) | CT, DE, GA, MA, MD, NC, NY, NJ, PA, RI, SC, VA. |
| 1 | U | R5 | *Clemmys muhlenbergii* | Emydidae | Bog turtle (northern pop.) | CT, DE, GA, MA, MD, NC, NY, NJ, PA, RI, SC, VA. |
| 2 | S | R3 | *Clonophis kirtlandii* | Colubridae | Kirtland's snake | IL, IN, KY, MI, OH, PA. |
| 2 | U | R2 | *Cnemidophorus burti* | Teiidae | Canyon (giant) spotted whiptail | AZ, NM. |
| 2 | S | R2 | *Cnemidophorus dixoni* | Teiidae | Gray-checkered whiptail | NM, TX. |
| 2 | D | R1 | *Cnemidophorus hyperythrus* | Teiidae | Orange-throated whiptail | CA, Mexico. |
| 2 | D | R1 | *Cnemidophorus tigris multiscutatus* | Teiidae | Coastal western whiptail | CA, Mexico. |
| 2 | U | R1 | *Coleonyx switaki (=Anarbylus s.)* | Eublepharidae | Barefoot gecko | CA, Mexico. |
| 2 | U | R1 | *Coleonyx variegatus abbotti* | Gekkonidae | San Diego banded gecko | CA, Mexico. |
| 2 | U | R1 | *Crotalus ruber ruber* | Viperidae | Northern red diamond rattlesnake | CA, Mexico. |
| 2 | U | R2 | *Crotaphytus reticulatus* | Iguanidae | Reticulate collared lizard | TX, Mexico. |
| 2 | U | R4 | *Diadophis punctatus acricus* | Colubridae | Key ringneck snake | FL. |
| 2 | U | R1 | *Diadophis punctatus modestus* | Colubridae | San Bernardino ringneck snake | CA. |
| 2 | U | R1 | *Diadophis punctatus similis* | Colubridae | San Diego ringneck snake | CA, Mexico. |
| 2 | U | R1 | *Elgaria (=Gerrhonotus) panamintina* | Anguidae | Panamint alligator lizard | CA. |
| 2 | D | R6 | *Emydoidea blandingii* | Emydidae | Blanding's turtle | IA, IL, IN, MI, MN, NE, NY, OH, PA, SD, WI, WY. |
| 2 | U | R4 | *Eumeces egregius egregius* | Scincidae | Florida Keys mole skink | FL. |
| 2 | U | R4 | *Eumeces egregius insularis* | Scincidae | Cedar Key mole skink | FL. |
| 2 | S | R2 | *Eumeces gilberti arizonensis* | Scincidae | Arizona Gilbert's skink | AZ. |
| 2 | D | R1 | *Eumeces skiltonianus interparietalis* | Scincidae | Coronado skink | CA, Mexico. |
| 2 | U | R2 | *Gopherus agassizii (=Xerobates a.)* | Testudinidae | Desert tortoise (Sonoran Desert population). | AZ, Mexico. |
| 2 | D | R4 | *Gopherus polyphemus* | Testudinidae | Gopher tortoise (eastern population) | AL, FL, GA, SC. |
| 3C | N | R4 | *Graptemys barbouri* | Emydidae | Barbour's map turtle | AL, FL, GA. |
| 1 | D | R2 | *Graptemys caglei* | Emydidae | Cagle's map turtle | TX. |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R6 | *Graptemys pseudogeographica* | Emydidae | False map turtle | IN, MO, MN, ND, WI. |
| 2 | U | R1 | *Heloderma suspectum cinctum* | Helodermatidae | Banded Gila monster (Pops. W & N of Colorado R.). | AZ, CA, NV, UT |
| 2 | D | R4 | *Heterodon simus* | Colubridae | Southern hognose snake | AL, FL, GA, MS, NC, SC. |
| 2 | U | R3 | *Kinosternon flavescens flavescens* | Kinosternidae | Yellow mud turtle (northern populations). | IA, IL, MO, NE. |
| 2 | U | R2 | *Kinosternon hirtipes murrayi* | Kinosternidae | Big Bend mud turtle | TX, Mexico. |
| 2 | D | R1 | *Lampropeltis zonata parvirubra* | Colubridae | San Bernardino mountain king snake | CA |
| 2 | U | R1 | *Lampropeltis zonata pulchra* | Colubridae | San Diego Mountain king snake | CA. |
| 2 | U | R2 | *Lichanura trivirgata* | Boidae | Rosy boa | AZ, CA, Mexico |
| 2 | D | R4 | *Macroclemys temmincki* | Chelydridae | Alligator snapping turtle | AR, AL, FL, GA, IL, IN, KY, KS, LA, MO, MS, OK, TN, TX. |
| 2 | U | R2 | *Malaclemys terrapin littoralis* | Emydidae | Texas diamondback terrapin | LA, TX. |
| 2 | U | R4 | *Malaclemys terrapin pileata* | Emydidae | Mississippi diamondback terrapin | AL, FL, GA, LA, MS |
| 2 | S | R5 | *Malaclemys terrapin terrapin* | Emydidae | Northern diamondback terrapin | CT, DE, MD, NC, NJ, NY, MA, RI, VA. |
| 2 | D | R1 | *Masticophis flagellum ruddocki* | Colubridae | San Joaquin whipsnake | CA |
| PE | D | R1 | *Masticophis lateralis euryxanthus* | Colubridae | Alameda striped racer | CA. |
| 2 | U | R4 | *Nerodia clarkii* | Colubridae | Gulf salt marsh snake | AL, FL, LA, MS, TX. |
| PT | U | R3 | *Nerodia erythrogaster neglecta* | Colubridae | Northern copperbelly water snake | IL, IN, KY, MI, OH. |
| 2 | U | R2 | *Nerodia harteri harteri* | Colubridae | Brazos water snake | TX. |
| PT | D | R3 | *Nerodia sipedon insularum* | Colubridae | Lake Erie water snake | OH, Canada. |
| 2 | U | R4 | *Ophisaurus compressus* | Anguidae | Island glass lizard | FL, GA, SC. |
| 2 | D | R4 | *Ophisaurus mimicus* | Anguidae | Mimic glass lizard | AL, FL, GA, LA, MS, NC, SC |
| 2 | D | R2 | *Phrynosoma cornutum* | Iguanidae | Texas horned lizard | AZ, AR, CO, KS, LA, MO, NM, OK, TX, Mexico. |
| 2 | D | R1 | *Phrynosoma coronatum blainvillii* | Iguanidae | San Diego horned lizard | CA, Mexico. |
| 2 | D | R1 | *Phrynosoma coronatum frontale* | Iguanidae | California horned lizard | CA |
| 2 | U | R6 | *Phrynosoma douglassii brevirostra* | Iguanidae | Eastern short-horned lizard | CO, MT, ND, NE, SE, UT, WY, Canada. |
| PT | D | R1 | *Phrynosoma mcallii* | Iguanidae | Flat-tailed horned lizard | AZ, CA, Mexico. |
| 2 | U | R4 | *Pituophis melanoleucus lodingi* | Colubridae | Black pine snake | AL, LA, MS. |
| 2 | U | R4 | *Pituophis melanoleucus melanoleucus.* | Colubridae | Northern pine snake | AL, GA, NC, NJ, SC, TN, VA, WV. |
| 2 | D | R4 | *Pituophis melanoleucus mugitus* | Colubridae | Florida pine snake | AL, FL, GA, SC. |
| 2 | U | R1 | *Pituophis melanoleucus pumilis* | Colubridae | Santa Cruz Island gopher snake | CA. |
| 2 | U | R4 | *Pituophis melanoleucus ruthveni* | Colubridae | Louisiana pine snake | LA, TX. |
| 2 | U | R4 | *Pseudemys* sp. | Emydidae | Mississippe redbelly turtle | MS |
| 2 | U | R4 | *Pseudemys (decussata) stejnegeri* | Emydidae | Jicotea | PR. |
| 2 | D | R4 | *Regina septemvittata* ssp. | Colubridae | Queen snake | AR, MO |
| 2 | U | R1 | *Salvadora hexalepis virgultea* | Colubridae | Coast patch-nosed snake | CA. |
| 2 | D | R1 | *Sauromalus obesus* | Iguanidae | Chuckwalla | AZ, CA, NV, UT, Mexico. |
| 2 | D | R2 | *Sceloporus arenicolus (=S. graciosus a.).* | Iguanidae | Dunes sagebrush lizard | TX, NM. |
| 2 | U | R6 | *Sceloporus graciosus graciosus* | Iguanidae | Northern sagebrush lizard | AZ, CA, ID, MT, ND, NE, NM, OR, WA. |
| 3C | N | R1 | *Sceloporus graciosus vandenburgianus.* | Iguanidae | Southern sagebrush lizard | CA, Mexico. |
| 2 | D | R4 | *Sceloporus woodi* | Iguanidae | Florida scrub lizard | FL. |
| 2 | U | R3 | *Sistrurus catenatus catenatus* | Viperidae | Eastern massasauga | IA, IL, IN, MI, MO, MN, NY, OH, PA, WI, Canada. |
| 2 | D | R4 | *Stilosoma extenuatum* | Colubridae | Short-tailed snake | FL. |
| 2 | U | R6 | *Storeria occipitomaculata pahasapae* | Colubridae | Black Hills redbelly snake | SD, WY |
| 2 | D | R4 | *Tantilla oolitica* | Colubridae | Rimrock crowned snake | FL. |
| 2 | S | R5 | *Thamnophis brachystoma* | Colubridae | Short-headed garter snake | NY, PA. |
| 2 | D | R2 | *Thamnophis eques* | Colubridae | Mexican garter snake | AZ, NM, Mexico. |
| 2 | U | R1 | *Thamnophis hammondii* | Colubridae | Two-striped garter snake | CA. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R2 | *Thamnophis rufipunctatus* | Colubridae | Narrowhead garter snake | AZ, NM, Mexico. |
| 2 | D | R1 | *Thamnophis sirtalis* ssp. | Colubridae | South coast garter snake | CA |
| 2 | U | R2 | *Thamnophis sirtalis annectens* | Colubridae | Texas garter snake | KS, OK, TX. |
| 2 | U | R4 | *Tropidophis melanurus bucculentus* | Colubridae | Navassa dusky dwarf boa | Navassa Island. |
| 2 | D | R1 | *Uma notata notata* | Iguanidae | Colorado Desert fringed-toed lizard | CA, Mexico. |
| 2 | U | R2 | *Uma notata rufopunctata* | Iguanidae | Cowles fringe-toed lizard | AZ, Mexico. |
| 2 | S | R1 | *Xantusia henshawi gracilis* | Xantusiidae | sandstone night lizard | CA |
| 2 | D | R1 | *Xantusia vigilis sierrae* | Xantusiidae | Sierra night lizard | CA |
| | | | AMPHIBIANS. | | | |
| 1 | D | R1 | *Ambystoma californiense (=A. tigrinum c.).* | Ambystomatidae | California tiger salamander | CA. |
| 2 | D | R4 | *Ambystoma cingulatum* | Ambystomatidae | Flatwoods salamander | AL, FL, GA, MS, SC. |
| 1 | D | R2 | *Ambystoma tigrinum stebbinsi* | Ambystomatidae | Sonoran tiger salamander | AZ, Mexico. |
| 2 | D | R4 | *Aneides aeneus* | Plethodontidae | Green salamander (Southern Blue Ridge population). | GA, NC, SC. |
| 2 | S | R2 | *Aneides hardii* | Plethodontidae | Sacramento mountain salamander | NM. |
| 2 | D | R1 | *Ascaphus truei* | Ascaphidae | Tailed frog | CA, OR, WA, ID, MT |
| 2* | D | R1 | *Batrachoseps* sp. | Plethodontidae | Breckenridge Mountain slender salamander. | CA |
| 2 | U | R1 | *Batrachoseps campi* | Plethodontidae | Inyo Mountains slender salamander. | CA. |
| 2 | U | R1 | *Batrachoseps pacificus pacificus* | Plethodontidae | Channel Islands slender salamander | CA. |
| 2 | D | R1 | *Batrachoseps relictus (=pacificus)* | Plethodontidae | Relictual slender salamander | CA |
| 2 | U | R1 | *Batrachoseps simatus* | Plethodontidae | Kern Canyon slender salamander | CA. |
| 2 | U | R1 | *Batrachoseps stebbinsi* | Plethodontidae | Techachapi slender salamander | CA. |
| 2 | D | R6 | *Bufo boreas boreas* | Bufonidae | Boreal western toad (Rocky Mountains population). | CO, NM, WY. |
| 2 | D | R1 | *Bufo canorus* | Bufonidae | Yosemite toad | CA. |
| 2 | U | R1 | *Bufo exsul* | Bufonidae | Black toad | CA. |
| PE | D | R1 | *Bufo microscaphus californicus* | Bufonidae | Arroyo southwestern toad | CA, Mexico. |
| 2 | U | R2 | *Bufo microscaphus microscaphus* | Bufonidae | Arizona toad | AZ, CA, NM, NV, UT, Mexico. |
| 1 | D | R1 | *Bufo nelsoni* | Bufonidae | Amargosa toad | NV. |
| 2 | D | R4 | *Cryptobranchus alleganiensis* | Cryptobranchidae | Hellbender | AL, AR, GA, IA, IL, IN, KY, KS, MD, MN, MO, MS, NC, NY, OH, PA, SC, TN, VA, WV. |
| 2 | U | R4 | *Desmognathus aeneus* | Plethodontidae | Seepage salamander | AL, GA, NC, TN |
| 2 | U | R4 | *Desmognathus brimleyorum* | Plethodontidae | Ouachita dusky salamander | OK, AR. |
| 1 | D | R4 | *Eleutherodactylus cooki* | Leptodactylidae | Guajon, rock frog | PR. |
| 1 | D | R4 | *Eleutherodactylus eneidae* | Leptodactylidae | Mottled coqui (Eneida's coqui) | PR. |
| 1 | D | R4 | *Eleutherodactylus karlschmidti* | Leptodactylidae | Web-footed coqui | PR. |
| 2 | U | R1 | *Ensatina eschscholtzii croceator* | Plethodontidae | Yellow-blotched ensatina | CA. |
| 2 | U | R1 | *Ensatina eschscholtzii klauberi* | Plethodontidae | Large-blotched ensatina | CA. |
| 2 | U | R2 | *Eurycea* sp. | Plethodontidae | Buttercup Creek salamander | TX |
| 2 | U | R2 | *Eurycea* sp. | Plethodontidae | Georgetown salamander | TX |
| 2 | U | R2 | *Eurycea* sp. | Plethodontidae | Jollyville Plateau salamander | TX |
| 2 | U | R2 | *Eurycea* sp. | Plethodontidae | Salado salamander | TX |
| 2 | U | R4 | *Eurycea aquatica* | Plethodontidae | Dark-sided salamander | AL, TN. |
| 2 | U | R4 | *Eurycea junaluska* | Plethodontidae | Junaluska salamander | NC. |
| 2 | U | R2 | *Eurycea neotenes* | Plethodontidae | Texas salamander | TX. |
| PE | U | R2 | *Eurycea sosorum* | Plethodontidae | Barton Springs salamander | TX. |
| 2 | U | R2 | *Eurycea tridentifera* | Plethodontidae | Comal blind salamander | TX. |
| 2 | U | R4 | *Gyrinophilus palleucus* | Plethodontidae | Tennessee cave salamander (including Berry Cave salamander). | AL, GA, TN. |
| 2 | S | R5 | *Gyrinophilus subterraneus* | Plethodontidae | West Virginia spring salamander | WV. |
| 2 | U | R4 | *Haideotriton wallacei* | Plethodontidae | Georgia blind salamander | GA, FL. |
| 2 | D | R1 | *Hydromantes* sp. | Plethodontidae | Owens Valley web-toes salamander | CA |
| 2 | U | R1 | *Hydromantes brunus* | Plethodontidae | Limestone salamander | CA. |
| 2 | U | R1 | *Hydromantes platycephalus* | Plethodontidae | Mount Lyell salamander | CA. |
| 2 | S | R1 | *Hydromantes shastae* | Plethodontidae | Shasta salamander | CA. |
| 2 | U | R4 | *Necturus* sp. | Proteidae | Black Warrior waterdog | AL. |
| 2 | U | R2 | *Notophthalmus meridionalis* | Salamandridae | Black-spotted newt | TX, Mexico. |
| 2 | D | R4 | *Notophthalmus perstriatus* | Salamandridae | Striped newt | FL, GA |
| 3C | N | R4 | *Plethodon caddoensis* | Plethodontidae | Caddo Mountain salamander | AR. |
| 2 | U | R1 | *Plethodon elongatus* | Plethodontidae | Del Norte salamander | CA, OR. |
| 3C | N | R4 | *Plethodon fourchensis* | Plethodontidae | Fourche Mountain salamander | AR. |
| 2 | S | R5 | *Plethodon hubrichti* | Plethodontidae | Peaks of Otter salamander | VA. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R1 | *Plethodon larselli* | Plethodontidae | Larch Mountain salamander | OR, WA. |
| 2 | I | R2 | *Plethodon neomexicanus* | Plethodontidae | Jemez Mountains salamander | NM. |
| 2 | S | R5 | *Plethodon punctatus* | Plethodontidae | Cow Knob (=White-spotted) salamander. | VA, WV. |
| 2 | U | R1 | *Plethodon stormi (=P. elongatus s.)* | Plethodontidae | Siskiyou Mountains salamander | CA, OR. |
| 2 | U | R3 | *Pseudacris streckeri illinoensis* | Hylidae | Illinois Strecker's chorus frog | AR, IL, MO. |
| 2 | U | R4 | *Pseudobranchus striatus lustricolus* | Sirenidae | Gulf Hammock dwarf siren | FL. |
| 2 | D | R4 | *Rana areolata aesopus* | Ranidae | Florida crawfish (=gopher) frog | FL, GA. |
| 2 | D | R4 | *Rana areolata capito* | Ranidae | Carolina crawfish (=gopher) frog | GA, NC, SC. |
| 1 | D | R4 | *Rana areolata sevosa* | Ranidae | Dusky crawfish (=gopher) frog | AL, FL, LA, MS. |
| 2 | U | R1 | *Rana aurora aurora* | Ranidae | Northern red-legged frog | CA, OR, WA, Canada. |
| PE | D | R1 | *Rana aurora draytoni* | Ranidae | California red-legged frog | CA, Mexico. |
| 2 | D | R1 | *Rana boylii* | Ranidae | Foothill yellow-legged frog | CA, OR. |
| 2 | U | R1 | *Rana cascadae* | Ranidae | Cascades frog | CA, OR, WA. |
| 2 | D | R2 | *Rana chiricahuensis* | Ranidae | Chiricahua leopard frog | AZ, NM, Mexico. |
| 2 | D | R1 | *Rana muscosa* | Ranidae | Mountain yellow-legged frog | CA, NV. |
| 2 | S | R4 | *Rana okaloosae* | Ranidae | Florida bog frog | FL. |
| 2 | U | R6 | *Rana pretiosa* | Ranidae | Spotted frog (main population) | AK, ID, MT, WY, Canada. |
| 1 | D | R6 | *Rana pretiosa* | Ranidae | Spotted frog, West Coast, Great Basin, Wasatch Front pops.. | CA, ID, NV, OR, UT, WA, Canada. |
| 1 | D | R6 | *Rana pretiosa* | Ranidae | Spotted frog, West Desert (Utah) pop.. | UT. |
| 1 | D | R2 | *Rana subaquavocalis* | Ranidae | Ramsey Canyon leopard frog | AZ |
| 2 | U | R2 | *Rana tarahumarae* | Ranidae | Tarahumara frog | AZ, Mexico. |
| 2 | D | R2 | *Rana yavapaiensis* | Ranidae | Lowland (=Yavapai & San Felipe) leopard frog. | AZ, CA, NM, UT, Mexico. |
| 2 | D | R1 | *Rhyacotriton variegatus (=olympicus)* | Ambystomatidae | southern torrent (seep) salamander | CA, OR |
| 2 | D | R1 | *Scaphiopus hammondii* | Pelobatidae | western spadefoot (toad) | CA |
| 2 | U | R2 | *Siren intermedia texana* | Sirenidae | Rio Grande lesser siren | TX, Mexico. |
| 2 | U | R2 | *Typhlomolge robusta* | Plethodontidae | Robust (=Blanco) blind salamander | TX. |
| | | | FISHES. | | | |
| 2 | U | R3 | *Acipenser fulvescens* | Acipenseridae | Lake sturgeon | AL, AR, GA, IA, IL, IN, KS, KY, LA, MI, MN, MO, MS, NE, NY, OH, PA, SD, TN, VT, WI, WV, Canada. |
| 2 | D | R1 | *Acipenser medirostris* | Acipenseridae | Green sturgeon | CA, OR, WA, AK, Canada, |
| PE | D | R1 | *Acipenser transmontanus* | Acipenseridae | White sturgeon, Kootenai River population. | ID. |
| 2 | D | R2 | *Agosia chrysogaster* | Cyprinidae | Longfin dace | AZ, NM, Mexico |
| 2 | U | R3 | *Amblyopsis spelaea* | Amblyopsidae | Northern cavefish | IN, KY. |
| 2 | D | R1 | *Archoplites interruptus* | Centrarchidae | Sacramento perch (native population). | CA. |
| 2 | D | R2 | *Campostoma ornatum* | Cyprinidae | Mexican stoneroller | AZ, TX, Mexico. |
| 2 | S | R1 | *Catostomus* sp. | Catostomidae | Wall Canyon sucker | NV. |
| 2 | S | R1 | *Catostomus clarki* ssp. | Catostomidae | Meadow Valley Wash desert sucker | NV. |
| 2 | D | R2 | *Catostomus clarki* | Catostomidae | Desert sucker | AZ, NM, NV, UT, Mexico |
| 2 | D | R1 | *Catostomus clarki intermedius* | Catostomidae | White River desert sucker | NV. |
| 2 | U | R2 | *Catostomus discobolus yarrowi* | Catostomidae | Zuni bluehead (=Mountain) sucker | AZ, NM. |
| 2 | D | R2 | *Catostomus insignis* | Catostomidae | Sonora sucker | AZ, NM, Mexico |
| 2 | D | R2 | *Catostomus latipinnis* | Catostomidae | Flannelmouth sucker (lower Colorado R. basin pop.). | AZ, CA, NV, UT. |
| 2 | D | R1 | *Catostomus occidentalis lacusanserinus.* | Catostomidae | Goose Lake sucker | CA, OR. |
| 2 | U | R1 | *Catostomus rimiculus* ssp. | Catostomidae | Jenny Creek sucker | CA, OR. |
| 2 | D | R1 | *Catostomus santaanae* | Catostomidae | Santa Ana sucker | CA. |
| 2 | D | R1 | *Catostomus snyderi* | Catostomidae | Klamath largescale sucker | CA, OR. |
| 2 | U | R3 | *Coregonus kiyi* | Salmonidae | Kiyi | IL, IN, MI, MN, NY, WI, Canada. |
| 2 | U | R3 | *Coregonus reighardi* | Salmonidae | Shortnose cisco | IL, IN, MI, NY, WI, Canada. |
| 2 | U | R3 | *Coregonus zenithicus* | Salmonidae | Shortjaw cisco | IL, IN, MI, MN, WI, Canada. |
| 2 | U | R5 | *Cottus* sp. | Cottidae | Bluestone sculpin | VA, WV. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R1 | *Cottus asperrimus* | Cottidae | Rough sculpin | CA. |
| 2 | U | R1 | *Cottus bairdi* ssp. | Cottidae | Malheur mottled sculpin | OR. |
| 2 | D | R1 | *Cottus greenei* | Cottidae | Shoshone sculpin | ID |
| 2 | S | R1 | *Cottus leiopomus* | Cottidae | Wood River sculpin | ID. |
| 2 | U | R1 | *Cottus marginatus* | Cottidae | Margined sculpin | WA, OR |
| 2 | U | R1 | *Cottus tenuis* | Cottidae | Slender sculpin | OR. |
| 2 | S | R1 | *Crenichthys baileyi albivallis* | Cyprinodontidae | Preston White River springfish | NV. |
| 2 | S | R1 | *Crenichthys baileyi moapae* | Cyprinodontidae | Moapa White River springfish | NV. |
| 2 | D | R1 | *Crenichthys baileyi thermophilus* | Cyprinodontidae | Moorman White River springfish | NV. |
| 3C | N | R4 | *Crystallaria (=Ammocrypta) asprella* | Percidae | Crystal darter | AL, AR, FL, IA, IL, IN, KY, LA, MN, MO, MS, OH, OK, TN, WI, WV. |
| 2 | S | R3 | *Cycleptus elongatus* | Catostomidae | Blue sucker | AL, AR, IA, IL, IN, KS, KY, LA, MN, MO, MS, MT, ND, NE, NM, OH, OK, PA, SD, TN, TX, WI, WV, Mexico. |
| 2 | U | R4 | *Cyprinella callisema* | Cyprinidae | Ocmulgee shiner | GA |
| 2 | U | R4 | *Cyprinella callitaenia (=Notropis c.)* | Cyprinidae | Bluestripe shiner | AL, FL, GA. |
| 2 | U | R2 | *Cyprinella proserpina (=Notropis proserpinus).* | Cyprinidae | Proserpine shiner | TX, Mexico. |
| 2 | U | R2 | *Cyprinodon* sp. | Cyprinodontidae | Palomas pupfish | NM, Mexico. |
| 2 | D | R2 | *Cyprinodon eximius* | Cyprinodontidae | Conchos pupfish | TX, Mexico. |
| 2 | U | R1 | *Cyprinodon nevadensis calidae* | Cyprinodontidae | Tecopa pupfish | CA. |
| 2 | D | R1 | *Cyprinodon nevadensis shoshone* | Cyprinodontidae | Shoshone pupfish | CA. |
| 1 | D | R2 | *Cyprinodon pecosensis* | Cyprinodontidae | Pecos pupfish | NM, TX. |
| 2 | S | R2 | *Cyprinodon tularosa* | Cyprinodontidae | White Sands pupfish | NM. |
| 1 | D | R2 | *Dionda diaboli* | Cyprinidae | Devils River minnow | TX, Mexico. |
| 1 | S | R4 | *Elassoma alabamae* | Centrarchidae | Spring pygmy sunfish | AL. |
| 2 | U | R4 | *Elassoma boehlkei* | Centrarchidae | Carolina (=barred) pygmy sunfish | NC, SC. |
| PT | S | R4 | *Etheostoma (Ulocentra)* sp. | Percidae | Cherokee darter | GA. |
| 2 | U | R4 | *Etheostoma aquali* | Percidae | Coppercheek darter | TN. |
| 2 | D | R4 | *Etheostoma bellator* | Percidae | Warrior darter | AL |
| 2 | U | R4 | *Etheostoma brevirostrum* | Percidae | Holiday darter | AL, GA, TN |
| 2 | U | R4 | *Etheostoma chermocki* | Percidae | Vermilion darter | AL |
| 2 | D | R4 | *Etheostoma cinereum* | Percidae | Ashy darter | AL, GA, KY, TN, VA |
| 2 | U | R4 | *Etheostoma corona* | Percidae | Crown darter | AL, TN |
| 1 | D | R6 | *Etheostoma cragini* | Percidae | Arkansas darter | AR, CO, KS, MO, OK. |
| 2 | D | R4 | *Etheostoma ditrema* | Percidae | Coldwater darter | AL, GA, TN. |
| 2 | U | R4 | *Etheostoma douglasi* | Percidae | Tuskaloosa darter | AL |
| PT | | R4 | *Etheostoma etowahae* | Percidae | Etowah darter | GA. |
| 2 | U | R4 | *Etheostoma forbesi* | Percidae | Barrens darter | TN |
| 2 | D | R2 | *Etheostoma grahami* | Percidae | Rio Grande darter | TX, Mexico. |
| 2 | U | R5 | *Etheostoma maculatum* | Percidae | Spotted darter | IN, NY, OH, PA, WV. |
| 3C | N | R4 | *Etheostoma moorei* | Percidae | Yellowcheek darter | AR. |
| 2 | D | R4 | *Etheostoma nigrum susanae* | Percidae | Cumberland Johnny darter | KY. |
| 2 | D | R5 | *Etheostoma osburni* | Percidae | Finescale saddled darter | VA, WV. |
| 2 | S | R5 | *Etheostoma pellucidum (=Ammocrypta p.).* | Percidae | Eastern sand darter | IL, IN, KY, MI, NY, OH, PA, VT, WV. |
| 2 | U | R4 | *Etheostoma pseudovulatum* | Percidae | Egg-mimic darter | TN |
| 3C | N | R4 | *Etheostoma rupestre* | Percidae | Rock darter | AL, GA, MS. |
| 2 | U | R4 | *Etheostoma striatulum* | Percidae | Striated darter | TN. |
| 2 | D | R4 | *Etheostoma trisella* | Percidae | Trispot darter | AL, GA, TN. |
| 2 | S | R4 | *Etheostoma tuscumbia* | Percidae | Tuscumbia darter | AL, TN. |
| 2 | D | R4 | *Fundulus julisia* | Cyprinodontidae | Barrens topminnow | TN. |
| 2 | D | R6 | *Fundulus sciadicus* | Cyprinodontidae | Plains topminnow | SD, MN, IA, NE, CO, WY, KS, OK, MO. |
| 2 | S | R4 | *Fundulus waccamensis* | Cyprinodontidae | Waccamaw killifish | NC. |
| 2 | D | R2 | *Gambusia senilis* | Poeciliidae | Blotched gambusia | TX, Mexico. |
| 3B | N | R1 | *Gasterosteus aculeatus santaannae* | Gasterosteidae | Santa Ana threespine stickleback | CA. |
| 2 | U | R1 | *Gila alvordensis* | Cyprinidae | Alvord chub | NV, OR. |
| 1 | D | R1 | *Gila bicolor* ssp. | Cyprindidae | High Rock Springs tui chub | CA. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | D | R1 | *Gila bicolor* ssp. | Cyprinidae | Big Smoky Valley tui chub | NV. |
| 2 | U | R1 | *Gila bicolor* ssp. | Cyprinidae | Catlow tui chub | OR. |
| 2 | I | R1 | *Gila bicolor* ssp. | Cyprinidae | Dixie Valley tui chub | NV. |
| 2 | D | R1 | *Gila bicolor* ssp. | Cyprinidae | Fish Lake Valley tui chub | NV. |
| 2 | S | R1 | *Gila bicolor* ssp. | Cyprinidae | Hot Creek Valley tui chub | NV. |
| 2 | D | R1 | *Gila bicolor* ssp. | Cyprinidae | Pleasant Valley tui chub | NV. |
| 2 | U | R1 | *Gila bicolor* ssp. | Cyprinidae | Railroad Valley tui chub | NV. |
| 2 | U | R1 | *Gila bicolor* ssp. | Cyprinidae | Summer Basin tui chub | OR. |
| 2 | U | R1 | *Gila bicolor euchila* | Cyprinidae | Fish Creek Springs tui chub | NV. |
| 2 | U | R1 | *Gila bicolor eurysoma* | Cyprinidae | Sheldon tui chub | NV, OR. |
| 2 | U | R1 | *Gila bicolor isolata* | Cyprinidae | Independence Valley tui chub | NV. |
| 2 | U | R1 | *Gila bicolor newarkensis* | Cyprinidae | Newark Valley tui chub | NV. |
| 3C | N | R1 | *Gila bicolor obesa* | Cyprinidae | Lahontan Creek tui chub | NV. |
| 2 | U | R1 | *Gila bicolor oregonensis* | Cyprinidae | XL Spring (=Oregon Lakes) tui chub | OR. |
| 1 | D | R1 | *Gila bicolor vaccaceps* | Cyprinidae | Cowhead Lake tui chub | CA. |
| 2 | U | R6 | *Gila copei* | Cyprinidae | Leatherside chub | ID, UT, WY. |
| 2 | D | R2 | *Gila intermedia* | Cyprinidae | Gila chub | AZ, NM, Mexico. |
| 2 | D | R1 | *Gila orcutti* | Cyprinidae | Arroyo chub | CA |
| 2 | D | R2 | *Gila robusta* | Cyprinidae | Roundtail chub | AZ, CA, CO, NM, NV, UT, WY, Mexico. |
| 2 | D | R4 | *Hemitremia flammea* | Cyprinidae | Flame chub | AL, GA, TN |
| 2 | D | R6 | *Hybognathus argyritis* | Cyprinidae | Western silvery minnow | IA, IL, KS, MO, MT, ND, NE, SD, WY, Canada |
| 2 | D | R6 | *Hybognathus placitus* | Cyprinidae | Plains minnow | AR, CO, IA, IL, KS, KY, LA, MO, MT, ND, NE, NM, OK, SD, TX, WY. |
| 3C | N | R4 | *Hybopsis lineapunctata* | Cyprinidae | Lined chub | AL, GA, TN. |
| 2 | D | R1 | *Hysterocarpus traski pomo* | Embiotocidae | Russian River tule perch | CA. |
| 2 | D | R2 | *Ictalurus* sp. | Ictaluridae | Chihuahua catfish | NM, TX, Mexico |
| 2 | U | R2 | *Ictalurus lupus* | Ictaluridae | Headwater catfish | NM, TX, Mexico. |
| 1 | D | R6 | *Iotichthys phlegethontis* | Cyprinidae | Least chub | UT. |
| 2 | D | R1 | *Lampetra ayresi* | Petromyzontidae | River Lamprey | CA, OR, WA, AK |
| 2 | D | R1 | *Lampetra hubbsi* | Petromyzontidae | Kern Brook lamprey | CA. |
| 2 | D | R1 | *Lampetra tridentata* ssp. | Petromyzontidae | Goose Lake lamprey | CA, OR. |
| 2 | U | R1 | *Lampetra tridentata* | Petromyzontidae | Pacific lamprey | AK, CA, OR, WA, Canada |
| 2 | D | R1 | *Lavinia symmetricus* ssp. | Cyprinidae | Red Hills roach | CA |
| 2 | D | R1 | *Lavinia symmetricus mitrulus* | Cyprinidae | Pit roach | CA, OR. |
| 2 | U | R1 | *Lavinia symmetricus parvipinnis* | Cyprinidae | Gualala roach | CA. |
| 1 | S | R1 | *Lentipes concolor* | Gobiidae | O'opu alamo'o (goby) | HI. |
| PT | D | R6 | *Lepidomeda mollispinis mollispinis* | Cyprinidae | Virgin spinedace | AZ, NV, UT. |
| 2 | U | R2 | *Lythrurus (=Notropis) snelsoni* | Cyprinidae | Ouachita Mountain shiner | AR, OK. |
| 1 | D | R6 | *Macrhybopsis (=Hybopsis) gelida* | Cyprinidae | Sturgeon chub | AR, IA, IL, KY, KS, LA, MO, MS, MT, NE, ND, SD, WY, TN. |
| 1 | D | R6 | *Macrhybopsis (=Hybopsis) meeki* | Cyprinidae | Sicklefin chub | AR, IA, IL, KS, KY, LA, MO, MS, NE, ND, SD, TN. |
| 2 | D | R2 | *Macrhybopsis aestivalis tetranemus* | Cyprinidae | Arkansas River speckled chub | AR?CO, KS, NM, OK, TX. |
| 2 | D | R2 | *Micropterus treculi* | Centrarchidae | Guadalupe bass | TX. |
| 2 | U | R4 | *Moxostoma robustum* | Catostomidae | Robust (=bighead) redhorse | GA, SC*, NC*. |
| 2 | U | R6 | *Moxostoma valenciennesi* | Catostomidae | Greater redhorse | KY, IN, IL, MI, MN, ND, NY, OH, WI, Canada (Que.). |
| 3C | N | R4 | *Notropis asperifrons* | Cyprinidae | Burrhead shiner | AL, GA, TN. |
| 2 | D | R2 | *Notropis buccula* | Cyprinidae | Smalleye shiner | TX. |
| 2 | D | R2 | *Notropis chihuahua* | Cyprinidae | Chihuahua shiner | TX, Mexico. |
| PE | D | R2 | *Notropis girardi* | Cyprinidae | Arkansas River shiner (native pop. only). | AR, KS, NM, OK, TX. |
| 2 | U | R4 | *Notropis hypsilepis* | Cyprinidae | Highscale shiner | AL, GA |
| 2 | D | R2 | *Notropis jemezanus* | Cyprinidae | Rio Grande shiner | NM, TX, Mexico. |
| 2 | U | R4 | *Notropis melanostomus* | Cyprinidae | Blackmouth (=swamp) shiner | FL, MS. |
| 2 | U | R2 | *Notropis oxyrhynchus* | Cyprinidae | Sharpnose shiner | TX. |
| 2 | U | R4 | *Notropis ozarcanus* | Cyprinidae | Ozark shiner | AR, MO. |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | D | R5 | *Notropis semperasper* | Cyprinidae | Roughhead shiner | VA. |
| 1 | D | R6 | *Notropis topeka (=tristis)* | Cyprinidae | Topeka shiner | IA, KS, MN, MO, NE, SD. |
| 2 | U | R4 | *Notropis xaenurus* | Cyprinidae | Altamaha shiner | GA. |
| 2 | D | R4 | *Noturus* sp. | Ictaluridae | Saddled madtom | TN. |
| 2 | U | R4 | *Noturus* sp. | Ictaluridae | Chucky madtom | TN |
| 2 | U | R4 | *Noturus* sp. | Ictaluridae | Saddled madtom | TN |
| 2 | S | R5 | *Noturus gilberti* | Ictaluridae | Orangefin madtom | NC, VA. |
| 2 | D | R5 | *Noturus insignis* ssp. | Ictaluridae | Spotted madtom | VA, NC. |
| 3C | N | R4 | *Noturus lachneri* | Ictaluridae | Ouachita madtom | AR. |
| 3C | N | R4 | *Noturus munitus* | Ictaluridae | Frecklebelly madtom | AL, GA, LA, MS, TN. |
| 3C | N | R4 | *Noturus taylori* | Ictaluridae | Caddo madtom | AR. |
| 2 | S | R1 | *Novumbra hubbsi* | Umbridae | Olympic mudminnow | WA. |
| 2 | U | R1 | *Oncorhynchus (=Salmo) clarki* ssp. | Salmonidae | Snake River fine-spotted cutthroat trout. | ID, WY. |
| 3B | N | R1 | *Oncorhynchus (=Salmo) clarki* ssp. | Salmonidae | Willow/Whitehorse cutthroat trout | OR. |
| 2 | D | R6 | *Oncorhynchus (=Salmo) clarki lewisi* | Salmonidae | Westslope cutthroat trout | ID, MT, WY, WA, OR, Canada (Alb., B.C.) |
| 2 | D | R6 | *Oncorhynchus (=Salmo) clarki pleuriticus.* | Salmonidae | Colorado River cutthroat trout | CO, UT, WY. |
| 2 | D | R6 | *Oncorhynchus (=Salmo) clarki utah* | Salmonidae | Bonneville cutthroat trout | ID, UT, WY, NV. |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss* ssp. | Salmonidae | Catlow Valley redband trout | OR. |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss* ssp. | Salmonidae | Goose Lake redband trout | CA, OR. |
| 1 | D | R1 | *Oncorhynchus (=Salmo) mykiss* ssp. | Salmonidae | McCloud River redband trout | CA. |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss* ssp. | Salmonidae | Warner Valley redband trout | CA, OR, NV. |
| 2 | U | R1 | *Oncorhynchus (=Salmo) mykiss aguabonita.* | Salmonidae | Volcano Creek golden trout | CA. |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss aquilarum.* | Salmonidae | Eagle lake rainbow trout | CA |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss gibbsi.* | Salmonidae | Interior redband trout | ID, MT, NV, OR. |
| 2 | D | R1 | *Oncorhynchus (=Salmo) mykiss gilberti.* | Salmonidae | Kern River rainbow trout | CA. |
| 2 | D | R1 | *Oregonichthys kalawatseti* | Cyprinidae | Umpqua oregon chub | OR. |
| 2 | U | R5 | *Osmerus spectrum* | Osmeridae | Pygmy smelt | ME. |
| 2 | U | R4 | *Percina* sp. | Percidae | Alabama channel darter | AL. |
| 2 | U | R4 | *Percina* sp. | Percidae | Pearl channel darter | LA, MS. |
| 2 | U | R4 | *Percina* sp. | Percidae | Warrior bridled darter | AL. |
| 2 | D | R4 | *Percina* sp. | Percidae | Halloween darter | AL, GA |
| 2 | U | R3 | *Percina cymatotaenia* | Percidae | Bluestripe darter | MO. |
| 3C | N | R4 | *Percina lenticula* | Percidae | Freckled darter | AL, GA, LA, MS. |
| 2 | S | R5 | *Percina macrocephala* | Percidae | Longhead darter | KY, NC, NY, OH, PA, TN, VA, WV. |
| 3C | N | R4 | *Percina nasuta* | Percidae | Longnose darter | AR, MO, OK. |
| 3C | N | R4 | *Percina palmaris* | Percidae | Bronze darter | AL, GA, TN. |
| 2 | U | R4 | *Percina squamata* | Percidae | Olive darter | GA, KY, TN. |
| 2 | U | R4 | *Percina uranidea* | Percidae | Stargazing darter | AR, IL, IN, LA, MO. |
| 2 | D | R5 | *Phenacobius teretulus* | Cyprinidae | Kanawha minnow | NC, VA, WV. |
| 2 | U | R3 | *Platygobio (=Hybopsis) gracilis* | Cyprinidae | Flathead chub | AL, AR, CO, IA, IL, KS, KY, LA, MN, MO, MT, ND, NE, NM, OK, SD, TN, WY, Canada |
| PT | D | R1 | *Pogonichthys macrolepidotus* | Cyprinidae | Sacramento splittail | CA. |
| 2 | S | R6 | *Polyodon spathula* | Polyodontidae | Paddlefish | AL, AR, IA, IL, IN, KS, KY, LA, MN, MO, MS, MT, ND, NE, OH, OK, PA, SD, TN, TX, WI. |
| 2 | U | R4 | *Pteronotropis euryzonus* | Cyprinidae | Broadstripe shiner | AL, GA |
| 2 | S | R1 | *Relictus solitarius* | Cyprinidae | Relict dace | NV. |
| 2 | S | R5 | *Rhinichthys bowersi* | Cyprinidae | Cheat minnow | MD, PA, WV. |
| 2 | U | R1 | *Rhinichthys cataractae* ssp. | Cyprinidae | Millicoma dace | OR |
| 2 | D | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Benton Valley speckled dace | CA |
| 3A | N | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Little Lake speckled dace | CA |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | D | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Long Valley speckled dace | CA |
| 2 | D | R2 | *Rhinichthys osculus* | Cyprinidae | Speckled dace (Gila & Bill Williams basins pop.). | AZ |
| 2 | U | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Amargosa Canyon speckled dace | CA. |
| 2 | U | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Diamond Valley speckled dace | NV. |
| 2 | S | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Meadow Valley Wash speckled dace | NV. |
| 2 | S | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Monitor Valley speckled dace | NV. |
| 2 | S | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Oasis Valley speckled dace | NV. |
| 2 | D | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Owens speckled dace | CA. |
| 2 | D | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | Santa Ana speckled dace | CA. |
| 2 | S | R1 | *Rhinichthys osculus* ssp. | Cyprinidae | White River speckled dace | NV. |
| 2 | D | R1 | *Rhinichthys osculus moapae* | Cyprinidae | Moapa speckled dace | NV. |
| 2 | D | R1 | *Rhinichthys osculus velifer* | Cyprinidae | Pahranagat speckled dace | NV. |
| 2 | D | R5 | *Salmo salar* | Salmonidae | Atlantic salmon (Dennys, Machias, East Machias, Narraguagus, Sheepscot, Ducktrap pops.). | ME |
| 1 | D | R1 | *Salvelinus confluentus* | Salmonidae | Bull trout | CA, ID, MT, NV, OR, WA. |
| 2 | U | R2 | *Satan eurystomus* | Ictaluridae | Widemouth blindcat | TX. |
| 2 | D | R1 | *Spirinchus thaleichthys* | Osmeridae | Longfin smelt (Delta population) | CA. |
| 1 | D | R6 | *Thymallus arcticus montanus* | Salmonidae | Montana Arctic grayling | MT. |
| 2 | U | R2 | *Trogloglanis pattersoni* | Ictaluridae | Toothless blindcat | TX. |
| | | | **INVERTEBRATES** | | | |
| | | | SNAILS (Mollusks, Class Gastropoda). | | | |
| 2 | D | R6 | *Acroloxus coloradensis* (J. Henderson, 1930). | Acroloxidae | Rocky Mountain capshell (snail) | MT, CO. |
| 2 | U | R1 | *Algamorda newcombiana (=Littorina subrotunda)* (Carpenter, 1865). | Littorinidae | Newcomb's littorine snail | CA, WA, OR. |
| 2 | U | R1 | *Ammonitella yatesi* Cooper, 1868 | Ammonitellidae | Tight coin (=Yate's snail) | CA. |
| 2 | U | R4 | *Amphigyra alabamensis* Pilsbry, 1906. | Planorbidae | Shoal sprite (snail) | AL. |
| 1 | D | R3 | *Antrobia culveri* (Hubricht, 1971) | Hydrobiidae | Tumbling Creek cavesnail | MO. |
| 2 | U | R4 | *Antrorbis breweri* Herschler & Thompson, 1990. | Hydrobiidae | (Snail, no common name) | AL. |
| 2 | U | R2 | *Apachecoccus arizonae* Taylor, 1987 | Hydrobiidae | Bylas springsnail | AZ |
| 2 | U | R4 | *Aphaostracon asthenes* F.G. Thompson, 1968. | Hydrobiidae | Blue Spring hydrobe (snail) | FL. |
| 2 | U | R4 | *Aphaostracon monas* (Pilsbry, 1899) | Hydrobiidae | Wekiwa hydrobe (snail) | FL. |
| 2 | U | R4 | *Aphaostracon pycnus* F.G. Thompson, 1968. | Hydrobiidae | Dense hydrobe (snail) | FL. |
| 2 | U | R4 | *Aphaostracon xynoelictus* F.G. Thompson, 1968. | Hydrobiidae | Fenney Spring hydrobe (snail) | FL. |
| 2 | U | R2 | *Ashmunella hebardi* Pilsbry & Manatta, 1923. | Polygyridae | Hacheta Grande woodlandsnail | NM. |
| 2 | U | R2 | *Ashmunella macromphala* Vagvolgyi, 1974. | Polygyridae | Cooke's Peak woodlandsnail | NM. |
| 2 | U | R2 | *Ashmunella pasonis* (Drake, 1951) | Polygyridae | Franklin Mountain wood snail | TX. |
| 2 | U | R1 | *Assiminea infima* Berry, 1947 | Assimineidae | Badwater snail | CA. |
| 1 | U | R2 | *Assiminea pecos* Taylor, 1987 | Assimineidae | Pecos assiminea snail | NM, TX, Mexico. |
| PE | | R4 | *Athearnia anthonyi* (Redfield, 1854) | Pleuroceridae | Anthony's river snail | AL, GA, TN. |
| 2 | U | R1 | *Binneya notabilis* Cooper, 1863 | Arionidae | Santa Barbara shelled slug (=Slug snail). | CA. |
| 2 | U | R4 | *Campeloma decampi* ("Currier" Binney, 1865). | Viviparidae | Slender campeloma (snail) | AL |
| 2 | U | R1 | *Carelia* ca 12 spp. | Amastridae | Genus (Snails, no common names) | HI. |
| 2 | U | R3 | *Catinella gelida* (Baker, 1927) | Succineidae | (Snail, no common name) | IA. |
| 2 | U | R4 | *Cincinnatia helicogyra* F.G. Thompson, 1968. | Hydrobiidae | Crystal siltsnail (=helicoid spring snail). | FL. |
| 2 | U | R4 | *Cincinnatia mica* F.G. Thompson, 1968. | Hydrobiidae | Ichetucknee siltsnail | FL. |
| 2 | U | R4 | *Cincinnatia monroensis* (Dall, 1885) | Hydrobiidae | Enterprise siltsnail | FL. |
| 2 | U | R4 | *Cincinnatia parva* F.G. Thompson, 1968. | Hydrobiidae | Pygmy siltsnail | FL. |
| 2 | U | R4 | *Cincinnatia ponderosa* F.G. Thompson, 1968. | Hydrobiidae | Ponderous siltsnail (=Ponderous spring snail). | FL. |
| 2 | U | R4 | *Cincinnatia vanhyningi* (Vanatta, 1934). | Hydrobiidae | Seminole siltsnail (=Seminole Spring snail). | FL |
| 2 | U | R4 | *Cincinnatia wekiwae* F.G. Thompson, 1968. | Hydrobiidae | Wekiwa siltsnail (=Wekiwa Spring snail). | FL. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 3A | N | R4 | *Clappia cahabensis* Clench, 1965 | Hydrobiidae | Cahaba pebblesnail | AL. |
| 3A | N | R4 | *Clappia umbilicata* (Walker, 1904) | Hydrobiidae | Umbilicate pebblesnail | AL. |
| 2 | U | R2 | *Cochliopa texana* Pilsbry, 1935 | Hydrobiidae | Phantom Lake cave snail | TX. |
| 2 | U | R1 | *Cryptomastix magnidentata (=Tridopsis mullani m.)* (Pilsbry, 1940). | Polygyridae | Mission Creek oregonian (snail) | ID. |
| 2 | U | R1 | *Diastole matafaoi* H.B. Baker, 1938 | Helicarionidae | Mt. Matafao different snail | AS. |
| 2 | D | R1 | *Diastole schmeltziana* | Helicarionidae | (Snail, no common name) | AS. |
| 2 | U | R1 | *Discus marmorensis* H.B. Baker, 1932. | Discidae | Marbled disc (snail) | ID. |
| 2 | U | R6 | *Discus shemeki cockerelli* | Discidae | Cockerell's striate disc (snail) | AZ, CA, CO, MT, NM, OR, SD, UT, WY, Canada. |
| 2 | U | R4 | *Elimia acuta* (I. Lea, 1831) | Pleuroceridae | Acute elimia (snail) | AL, TN |
| 2 | U | R4 | *Elimia alabamensis* (I. Lea, 1861) | Pleuroceridae | Mud elimia (snail) | AL. |
| 2 | U | R4 | *Elimia albanyensis (=Goniobasis a.)* (I. Lea, 1864). | Pleuroceridae | Black-crest elima (=Albany snail) | AL, GA. |
| 3A | N | R4 | *Elimia ampla* (Anthony, 1854) | Pleuroceridae | Ample elimia (snail) | AL. |
| 3A | N | R4 | *Elimia annettae* (Goodrich, 1941) | Pleuroceridae | Lily Shoals elimia (snail) | AL. |
| 2 | U | R4 | *Elimia aterina* (I. Lea, 1863) | Pleuroceridae | Coal elimia (snail) | TN |
| 2 | U | R4 | *Elimia bellula* (I. Lea, 1861) | Pleuroceridae | Walnut elimia (snail) | AL. |
| 2 | U | R4 | *Elimia boykiniana* (I. Lea, 1840) | Pleuroceridae | Flaxen elimia (snail) | AL, GA. |
| 3A | N | R4 | *Elimia brevis* (Reeve, 1860) | Pleuroceridae | Short-spire elimia (snail) | AL. |
| 3C | N | R4 | *Elimia cahawbensis* (I. Lea, 1841) | Pleuroceridae | Cahaba elimia (snail) | AL. |
| 2 | U | R4 | *Elimia capillaris* (I. Lea, 1861) | Pleuroceridae | Spindle elimia (snail) | AL, GA. |
| 2 | D | R4 | *Elimia crenatella* (I. Lea, 1860) | Pleuroceridae | Lacy elimia (snail) | AL. |
| 2 | U | R4 | *Elimia fascinans* (I. Lea, 1861) | Pleuroceridae | Banded elimia (snail) | AL. |
| 3A | N | R4 | *Elimia fusiformis* (I. Lea, 1861) | Pleuroceridae | Fusiform elimia (snail) | AL. |
| 3C | N | R4 | *Elimia gerhardti* (I. Lea, 1862) | Pleuroceridae | Coldwater elimia (snail) | AL, GA. |
| 3A | N | R4 | *Elimia hartmaniana* (I. Lea, 1861) | Pleuroceridae | High-spired elimia (snail) | AL. |
| 2 | U | R4 | *Elimia haysiana* (I. Lea, 1843) | Pleuroceridae | Silt elimia (snail) | AL. |
| 2 | U | R4 | *Elimia hydei* (Conrad, 1834) | Pleuroceridae | Gladiator elimia (snail) | AL. |
| 3A | N | R4 | *Elimia impressa* (I. Lea, 1841) | Pleuroceridae | Constricted elimia (snail) | AL. |
| 2 | D | R4 | *Elimia interrupta (=Goniobasis i.)* (Haldeman, 1840). | Pleuroceridae | Knotty elimia (snail) | NC, TN. |
| 2 | U | R4 | *Elimia interveniens* (I. Lea, 1862) | Pleuroceridae | Slowwater elimia (snail) | AL. |
| 3A | N | R4 | *Elimia jonesi* (Goodrich, 1936) | Pleuroceridae | Hearty elimia (snail) | AL. |
| 3A | N | R4 | *Elimia laeta* (Jay, 1839) | Pleuroceridae | Ribbed elimia (snail) | AL. |
| 2 | U | R4 | *Elimia nassula* (Conrad, 1834) | Pleuroceridae | Round-rib elimia (snail) | AL. |
| 2 | U | R4 | *Elimia olivula* (Conrad, 1834) | Pleuroceridae | Caper elimia (snail) | AL. |
| 3A | N | R4 | *Elimia pilsbryi* (Goodrich, 1927) | Pleuroceridae | Rough-lined elimia (snail) | AL. |
| 2 | U | R4 | *Elimia porreta* (I. Lea, 1863) | Pleuroceridae | Nymph elimia (snail) | AL |
| 2 | U | R4 | *Elimia prestriata* (I. Lea, 1852) | Pleuroceridae | Engraved elimia (snail) | AL |
| 3A | N | R4 | *Elimia pupaeformis* (I. Lea, 1864) | Pleuroceridae | Pupa elimia (snail) | AL. |
| 2 | U | R4 | *Elimia pybasi* (I. Lea, 1862) | Pleuroceridae | Spring elimia (snail) | AL |
| 3A | N | R4 | *Elimia pygmaea* (H. H. Smith, 1936) | Pleuroceridae | Pygmy elimia (snail) | AL. |
| 3C | N | R4 | *Elimia showalteri* (I. Lea, 1860) | Pleuroceridae | Compact elimia (snail) | AL. |
| 2 | U | R4 | *Elimia strigosa* (I. Lea, 1841) | Pleuroceridae | Brook elimia (snail) | TN |
| 2 | U | R4 | *Elimia teres* (I. Lea, 1841) | Pleuroceridae | Elegant elimia (snail) | TN |
| 2 | U | R4 | *Elimia troostiana* (I. Lea, 1838) | Pleuroceridae | Mossy elimia (snail) | TN |
| 3A | N | R4 | *Elimia vanuxemiana* (I. Lea, 1843) | Pleuroceridae | Cobble elimia (snail) | AL. |
| 2 | U | R4 | *Elimia varians* (I. Lea, 1861) | Pleuroceridae | Puzzle elimia (snail) | AL. |
| 3C | N | R4 | *Elimia variata* (I. Lea, 1861) | Pleuroceridae | Squat elimia (snail) | AL. |
| 2 | U | R1 | *Eremarionta immaculata (=Micrarionta i.)* (Willet, 1937). | Helminthoglyptidae | White desertsnail | CA. |
| 2 | U | R1 | *Eremarionta millepalmarum (=Micranrionta m.)* (Berry, 1930). | Helminthoglyptidae | Thousand Palms desertsnail | CA. |
| 2 | U | R1 | *Eremarionta morogoana (=Micrarionta m.)* (Berry, 1929). | Helminthoglyptidae | Morongo (=Colorado) desertsnail | CA. |
| 1 | D | R1 | *Eua zebrina* | Partulidae | Tutuila tree snail | AS. |
| 2 | U | R2 | *Euchemotrema cheatumi (=Stenotrema leai cheatumi)* (Fullington, 1974). | Polygyridae | Palmetto pillsnail | TX. |
| 2 | U | R3 | *Euchemotrema hubrichti (=Stenotrema h.)* (Pilsbry, 1940). | Polygyridae | Carinate pillsnail | IL. |
| 2 | U | R4 | *Ferrissia mcneili* Walker, 1925 | Ancylidae | Hood ancylid (snail) | AL, FL. |
| 2 | U | R1 | *Fluminicola avernalis* (Pilsbry, 1935) | Hydrobiidae | Moapa pebblesnail (=Muddy Valley turban snail). | NV. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R1 | *Fluminicola columbianus (=Lithoglyphus c.)* (Hemphill in Pilsbry, 1899). | Hydrobiidae | Columbia pebblesnail (=Great Columbia River spire snail). | ID, OR, WA. |
| 2 | U | R1 | *Fluminicola merriami* (Pilsbry & Belcher, 1892). | Hydrobiidae | Pahranagat pebblesnail (=Pahranagat Valley turban snail). | NV |
| 1 | S | R2 | *"Fontelicella" chupaderae* Taylor, 1987. | Hydrobiidae | Chupadera springsnail | NM. |
| 2 | U | R2 | *"Fontelicella" davisi* Taylor, 1987 | Hydrobiidae | Davis County springsnail | TX |
| 1 | S | R2 | *"Fontelicella" gilae* Taylor, 1987 | Hydrobiidae | Gila springsnail | NM |
| 2 | U | R2 | *"Fontelicella" metcalfi* Taylor, 1987 | Hydrobiidae | Presidio County springsnail | TX |
| 1 | S | R2 | *"Fontelicella" pecosensis* Taylor, 1987. | Hydrobiidae | Pecos springsnail | NM. |
| 1 | S | R2 | *"Fontelicella" roswellensis* Taylor, 1987. | Hydrobiidae | Roswell springsnail | NM. |
| 1 | S | R2 | *"Fontelicella" thermalis* Taylor, 1987 | Hydrobiidae | New Mexico hotspring snail | NM. |
| 2 | U | R2 | *"Fontelicella" trivialis* (Taylor, 1987) | Hydrobiidae | Three Forks springsnail | AZ. |
| 2 | U | R5 | *Fontigens holsingeri* (Hubricht, 1976) | Hydrobiidae | Tapered cavesnail | WV. |
| 2 | U | R5 | *Fontigens turritella* (Hubricht, 1976) | Hydrobiidae | Greenbrier cavesnail | WV. |
| 2 | U | R2 | *Gastrocopta dalliana dalliana* Sterki, 1898. | Pupillidae | Shortneck snaggletooth (snail) | NM. |
| 2 | U | R4 | *Glyphyalinia clingmani* (Dall, 1890) | Zonitidae | Fragile supercoil (snail) | NC |
| 2 | U | R4 | *Glyphyalinia pecki* Hubricht, 1966 | Zonitidae | Blind glyph (snail) | AL. |
| 2 | D | R5 | *Glyphyalinia raderi* (Dall, 1898) | Zonitidae | Maryland glyph (snail) | KY, MD, VA, WV. |
| 3A | N | R4 | *Gyrotoma excisa* (I. Lea, 1843) | Pleuroceridae | Excised slitshell | AL. |
| 3A | N | R4 | *Gyrotoma lewisi* (I. Lea, 1869) | Pleuroceridae | Striate slitshell | AL. |
| 3A | N | R4 | *Gyrotoma pagoda* (I. Lea, 1845) | Pleuroceridae | Pagoda slitshell | AL. |
| 3A | N | R4 | *Gyrotoma pumila* (I. Lea, 1860) | Pleuroceridae | Ribbed slitshell | AL. |
| 3A | N | R4 | *Gyrotoma pyramidata* (Shuttleworth, 1845). | Pleuroceridae | Pyramid slitshell | AL. |
| 3A | N | R4 | *Gyrotoma walkeri* (H. H. Smith, 1924). | Pleuroceridae | Round slitshell | AL. |
| 2 | U | R5 | *Helicodiscus diadema* Grimm, 1967 | Helicodiscidae | Shaggy coil (snail) | VA. |
| 2 | U | R4 | *Helicodiscus hexodon* Hubricht, 1966. | Helicodiscidae | Toothy coil (snail) | TN. |
| 2 | U | R6 | *Helisoma jacksonense (subgen. Carinifex)* (Henderson, 1932). | Planorbidae | Jackson Lake snail | WY. |
| 2 | U | R1 | *Helminthoglypta allynsmithi* (Pilsbry, 1939). | Helminthoglyptidae | Merced Canyon shoulderband (=Allyn Smith's banded snail). | CA. |
| 2 | U | R1 | *Helminthoglypta arrosa pomoensis* (A. G. Smith, 1938). | Helminthoglyptidae | Pomo bronze shoulderband (snail) | CA. |
| 2 | U | R1 | *Helminthoglypta arrosa williamsi* (A. G. Smith, 1938). | Helminthoglyptidae | Williams' bronze shoulderband (snail). | CA. |
| 2 | U | R1 | *Helminthoglypta callistoderma* (Pilsbry & Ferris, 1918). | Helminthoglyptidae | Kern shoulderband (snail) | CA. |
| 2 | U | R1 | *Helminthoglypta mohaveena* (Berry, 1927). | Helminthoglyptidae | Victorville shoulderband (snail) | CA. |
| 2 | U | R1 | *Helminthoglypta nickliniana awania* (Bartsch, 1919). | Helminthoglyptidae | (Nicklin's) Peninsula Coast Range shoulderband (snail). | CA. |
| 2 | U | R1 | *Helminthoglypta nickliniana bridgesi* (Newcomb, 1861). | Helminthoglyptidae | Bridges' Coast Range shoulderband (snail). | CA. |
| 2 | U | R1 | *Helminthoglypta sequoicola consors* (Berry, 1938). | Helminthoglyptidae | Redwood shoulderband (snail, no subspcific name). | CA. |
| 2 | U | R1 | *Helminthoglypta traski coelata* (Bartsch, 1916). | Helminthoglyptidae | Peninsular Range shoulderband (snail, no subspecific name). | CA. |
| PE | D | R1 | *Helminthoglypta walkeriana* (Hemphill, 1911). | Helminthoglyptidae | Morro shoulderband (=Banded dune snail). | CA. |
| 2 | I | R5 | *Io fluvialis* (Say, 1834) | Pleuroceridae | Spiny riversnail | TN, VA. |
| 2 | D | R1 | *Laminella sanguinea* | Amastridae | No common name | HI |
| 2 | D | R1 | *Leptachatina lepida* | Amastridae | No common name | HI |
| 2 | U | R4 | *Leptoxis ampla* (Anthony, 1855) | Pleuroceridae | Round rocksnail | AL. |
| 3A | N | R4 | *Leptoxis clipeata* (H. H. Smith, 1922) | Pleuroceridae | Agate rocksnail | AL. |
| 2 | U | R4 | *Leptoxis compacta* (Anthony, 1854) | Pleuroceridae | Oblong rocksnail | AL. |
| 2 | U | R4 | *Leptoxis crassa (=Athearnia c.)* (Haldeman, 1841). | Pleuroceridae | Boulder (=crass river) snail | AL, GA, TN. |
| 3A | N | R4 | *Leptoxis formanii* (I. Lea, 1843) | Pleuroceridae | Interrupted rocksnail | AL. |
| 3A | N | R4 | *Leptoxis formosa* (I. Lea, 1860) | Pleuroceridae | Maiden rocksnail | AL. |
| 3A | N | R4 | *Leptoxis ligata* (Anthony, 1860) | Pleuroceridae | Rotund rocksnail | AL. |
| 3A | N | R4 | *Leptoxis lirata* (H. H. Smith, 1922) | Pleuroceridae | Lyrate rocksnail | AL. |
| 2 | U | R4 | *Leptoxis melanoidus* (Conrad, 1834) | Pleuroceridae | Black mudalia (snail) | AL. |
| 2 | U | R4 | *Leptoxis minor* (Hinckley, 1912) | Pleuroceridae | Knob mudalia (snail) | AL. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 3A | N | R4 | *Leptoxis occulata* (H. H. Smith, 1922). | Pleuroceridae | Bigmouth rocksnail | AL. |
| 2 | U | R4 | *Leptoxis picta* (Conrad, 1834) | Pleuroceridae | Spotted rocksnail | AL. |
| 2 | U | R4 | *Leptoxis plicata* (Conrad, 1834) | Pleuroceridae | Plicate rocksnail | AL. |
| 2 | U | R4 | *Leptoxis praerosa* (Say, 1821) | Pleuroceridae | Onyx rocksnail (=mainstream river snail). | KY, TN. |
| 3A | N | R4 | *Leptoxis showalteri* (I. Lea, 1860) | Pleuroceridae | Coosa rocksnail | AL. |
| 2 | U | R4 | *Leptoxis taeniata* (Conrad, 1834) | Pleuroceridae | Painted rocksnail | AL. |
| 2 | U | R4 | *Leptoxis virgata* (I. Lea, 1841) | Pleuroceridae | Smooth rocksnail | AL, TN, NC. |
| 3A | N | R4 | *Leptoxis vittata* (I. Lea, 1860) | Pleuroceridae | Striped rocksnail | AL. |
| 2 | U | R4 | *Lepyrium showalteri* (I. Lea, 1861) | Hydrobiidae | Flat pebblesnail | AL. |
| 2 | U | R4 | *Lioplax cyclostomaformis* (I. Lea, 1841). | Viviparidae | Cylindrical lioplax (snail) | AL, GA, LA. |
| 2 | U | R4 | *Lithasia armigera* (Say, 1821) | Pleuroceridae | Armored rocksnail (=armigerous river snail). | AL, IN, KY, TN. |
| 2 | U | R4 | *Lithasia armigera* (Say, 1821) | Pleuroceridae | Armored rocksnail | AL, IN, KY, TN. |
| 2 | U | R4 | *Lithasia curta* (I. Lea, 1868) | Pleuroceridae | Knobby rocksnail | AL. |
| 2 | U | R4 | *Lithasia duttoniana* (Lea, 1841) | Pleuroceridae | Helmet rocksnail (=Dutton's river snail). | TN. |
| 2 | U | R4 | *Lithasia geniculata* (Haldeman, 1840). | Pleuroceridae | Ornate rocksnail (=geniculate river snail). | AL, KY, TN. |
| 2 | U | R4 | *Lithasia jayana* (Lea, 1841) | Pleuroceridae | Rugose rocksnail (=Jay's river snail) | TN. |
| 2 | U | R4 | *Lithasia lima* (Conrad, 1834) | Pleuroceridae | Warty rocksnail (=Elk River file snail) | AL, TN. |
| 2 | U | R4 | *Lithasia salebrosa* (Conrad, 1834) | Pleuroceridae | Muddy rocksnail (=rugged river snail). | AL, TN. |
| 2 | U | R4 | *Lithasia verrucosa* (Rafinesque, 1820). | Pleuroceridae | Varicose rocksnail (=verrucose file snail). | AL, KY, OH, TN. |
| 2 | U | R4 | *Mesodon clausus trossulus* Hubricht, 1966. | Polygyridae | (Snail, no common name) | AL. |
| 2 | U | R4 | *Mesodon clenchi* (Rehder, 1932) | Polygyridae | Calico Rock oval (=Clench's middle-toothed land snail). | AR. |
| 2 | U | R4 | *Mesodon clingmanicus* (Pilsbry, 1904). | Polygyridae | Clingman covert (snail) | NC, TN. |
| 3C | N | R4 | *Mesodon orestes* Hubricht, 1975 | Polygyridae | Engraved covert (snail) | NC. |
| 2 | U | R1 | *Micrarionta facta* (Newcomb, 1864) | Helminthoglyptidae | Santa Barbara islandsnail (=concentrated snail). | CA. |
| 2 | U | R1 | *Micrarionta feralis* (Hemphill, 1901) | Helminthoglyptidae | San Nicolas islandsnail (=fraternal snail). | CA. |
| 2 | U | R1 | *Micrarionta gabbi* (Newcomb, 1864) | Helminthoglyptidae | San Clemente islandsnail (=Gabb's snail). | CA. |
| 2 | U | R1 | *Micrarionta opuntia* Roth, 1975 | Helminthoglyptidae | Pricklypear islandsnail (=prickly pear snail). | CA. |
| 2 | U | R1 | *Micrarionta rowelli bakerensis* (Pilsbry & Lowe, 1934). | Helminthoglyptidae | (Snail, no common name) | CA. |
| 2 | U | R1 | *Micrarionta rowelli mccoiana* (Willet, 1935). | Helminthoglyptidae | California McCoy snail | CA. |
| 2 | U | R1 | *Monadenia circumcarinata* (Stearns, 1879). | Helminthoglyptidae | Keeled sideband (snail) | CA. |
| 2 | U | R1 | *Monadenia fidelis minor* (W. G. Binney, 1885). | Helminthoglyptidae | Dalles (=Minor Pacific) sideband (snail). | OR. |
| 2 | U | R1 | *Monadenia fidelis pronotis* (Berry, 1931). | Helminthoglyptidae | Rocky coast Pacific sideband (snail) | CA. |
| 2 | U | R1 | *Monadenia hillebrandi yosemitensis* (Lowe, 1916). | Helminthoglyptidae | Yosemite mariposa sideband (=Indian Yosemite snail). | CA. |
| 2 | U | R1 | *Monadenia mormonum buttoni* (Pilsbry, 1900). | Helminthoglyptidae | Button's Sierra sideband (snail) | CA. |
| 2 | U | R1 | *Monadenia mormonum hirsuta* (Pilsbry, 1927). | Helminthoglyptidae | Hirsute Sierra sideband (snail) | CA. |
| 2 | U | R1 | *Monadenia setosa* (Talmadge, 1952) | Helminthoglyptidae | Trinity bristlesnail (=California northern river snail). | CA. |
| 2 | U | R1 | *Monadenia troglodytes* (Hanna & Smith, 1933). | Helminthoglyptidae | Shasta sideband (snail) | CA. |
| 2 | U | R4 | *Neoplanorbis carinatus* Walker, 1908 | Planorbidae | (Snail, no common name) | AL. |
| 2 | U | R4 | *Neoplanorbis smithi* Walker, 1908 | Planorbidae | (Snail, no common name) | AL. |
| 2 | U | R4 | *Neoplanorbis tantillus* Pilsbry, 1906 | Planorbidae | (Snail, no common name) | AL. |
| 2 | U | R4 | *Neoplanorbis umbilicatus* Walker, 1908. | Planorbidae | (Snail, no common name) | AL. |
| 2 | U | R1 | *Neritilia hawaiiensis* (Kay, 1979) | Neritidae | (Snail, no common name) | HI. |
| 2 | D | R1 | *Nucombia canaliculata* (Baldwin, 1905). | Achatinellidae | Newcomb's tree snail | HI |
| 2 | D | R1 | *Nucombia cumingi* (Newcomb, 1853) | Achatinellidae | Newcomb's tree snail | HI |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | D | R1 | *Nucombia perkinsi* Skyes, 1896 | Achatinellidae | Newcomb's tree snail | HI |
| 2 | D | R1 | *Nucombia pfeifferi* (Newcomb, 1853) | Achatinellidae | Newcomb's tree snail | HI |
| 2 | D | R1 | *Nucombia plicata* (Mighels, 1912–1914). | Achatinellidae | Newcomb's tree snail | HI |
| 2 | D | R1 | *Nucombia sulcata* (Pfeiffer, 1857) | Achatinellidae | Newcomb's tree snail | HI |
| 2 | U | R2 | *Oreohelix florida* Pilsbry, 1939 | Oreohelicidae | Florida mountainsnail | NM |
| 2 | U | R1 | *Oreohelix idahoensis idahoensis* Newcomb, 1866. | Oreohelicidae | Idaho banded mountainsnail | ID. |
| 2 | U | R1 | *Oreohelix jugalis (=Oreohelox jugalis jugalis)* (Hemphill, 1890). | Oreohelicidae | Boulder pile mountainsnail | ID. |
| 2 | U | R1 | *Oreohelix nevadensis* S. S. Berry, 1932. | Oreohelicidae | Schell Creek (=Nevada) mountainsnail. | NV. |
| 3B | N | R6 | *Oreohelix peripherica weberiana* (Pilsbry, 1939). | Oreohelicidae | Coalville mountainsnail | UT. |
| 2 | U | R2 | *Oreohelix pilsbryi* Ferriss, 1917 | Oreohelicidae | Mineral Creek mountainsnail | NM. |
| 2 | U | R6 | *Oreohelix strigosa cooperi* | Oreohelicidae | Cooper's rocky mountainsnail | SD, WY. |
| 2 | U | R1 | *Oreohelix strigosa goniogyra* Pilsbry, 1933. | Oreohelicidae | Carinated rocky (=striate banded) mountainsnail. | ID. |
| 2 | U | R1 | *Oreohelix vortex (=Oreohelix jugalis vortex)* (Berry, 1932). | Oreohelicidae | Whorled (=vortex banded) mountainsnail. | ID. |
| 2 | U | R1 | *Oreohelix waltoni* (Solem, 1975) | Oreohelicidae | Lava rock (=Walton's banded) mountainsnail. | ID. |
| 1 | D | R1 | *Ostodes strigatus* | Potaridae | (Snail, no common name) | AS. |
| 2 | U | R4 | *Paravitrea aulacogyra* (Pilsbry & Ferris, 1906). | Zonitidae | (Snail, no common name) | AR. |
| 2 | U | R5 | *Paravitrea ceres* Hubricht, 1978 | Zonitidae | Sidelong supercoil (snail) | WV. |
| 2 | U | R4 | *Paravitrea ternaria* Hubricht, 1978 | Zonitidae | Sculpted supercoil (snail) | NC, TN. |
| 2 | U | R4 | *Paravitrea varidens* Hubricht, 1978 | Zonitidae | Roan supercoil (snail) | NC, TN. |
| 1 | D | R1 | *Partula gibba* | Partulidae | Humped tree snail | GU. |
| 1 | D | R1 | *Partula langfordi* | Partulidae | Langford's tree snail | GU. |
| 1 | D | R1 | *Partula radiolata* | Partulidae | Guam tree snail | GU. |
| 2* | D | R1 | *Partula salifana* | Partulidae | Alifan tree snail | GU. |
| 2 | D | R1 | *Partulina anceyana* Baldwin, 1895 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina carnicolor* Baldwin, 1906 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina confusa* (Skyes, 1900) | Achatinellidae | Hawai'i tree snail | HI |
| 2 | D | R1 | *Partulina crassa* (Newcomb, 1853) | Achatinellidae | Lanai tree snail | HI |
| 2 | D | R1 | *Partulina crocea* (Gulick, 1856) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina dolei* Baldwin, 1895 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina dubia* (Newcomb, 1853) | Achatinellidae | Waianae tree snail | HI |
| 2 | D | R1 | *Partulina dwightii* (Newcomb, 1855) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina fusoidea* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina germana* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina gouldii* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina grisea* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina horneri* (Baldwin, 1895) | Achatinellidae | Hawai'i tree snail | HI |
| 2 | D | R1 | *Partulina induta* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina kaaeana* Baldwin, 1906 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina lemmoni* Baldwin, 1906 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina marmorata* (Gould, 1847) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina mighelsiana* (Pfeiffer, 1847) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina mucida* (Baldwin, 1895) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina mutabilis* Baldwin, 1908 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina natti* (Baldwin and Hartman, 1888). | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina nivea* (Baldwin, 1895) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina perdix* (Reeve, 1850) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina physa* (Newcomb, 1853) | Achatinellidae | Hawai'i tree snail | HI |
| 2 | D | R1 | *Partulina plumbea* (Gulick, 1856) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina porcellana* (Newcomb, 1853). | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina proxima* (Pease, 1862) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina radiata* (Gould, 1845) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina redfieldii* (Newcomb, 1853) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina rufa* (Newcomb, 1853) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina semicarinata* (Newcomb, 1853). | Achatinellidae | Lanai tree snail | HI |
| 2 | D | R1 | *Partulina splendida* (Newcomb, 1853). | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina subpolita* Hyatt and Pilsbry, 1912-1914. | Achatinellidae | Moloka'i tree snail | HI |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | D | R1 | *Partulina tapaniana* (C.B. Adams, 1851). | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina terebra* (Newcomb, 1853) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina tessellata* (Newcomb, 1853). | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina thaanumiana* Pilsbry, 1912-1914. | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina theodorei* (Baldwin, 1895) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina ustulata* (Gulick, 1856) | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Partulina variabilis* (Newcomb, 1853) | Achatinellidae | Lanai tree snail | HI |
| 2 | D | R1 | *Partulina virgulata* (Mighels, 1845) | Achatinellidae | Moloka'i tree snail | HI |
| 2 | D | R1 | *Partulina winniei* Baldwin, 1908 | Achatinellidae | Maui tree snail | HI |
| 2 | D | R1 | *Perdicella carinella* Baldwin, 1906 | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella fulgurans* (Skyes, 1912-1914). | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella helena* (Newcomb, 1855) | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella kuhnsi* (Pilsbry, 1912-1914). | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella mauiensis* (Pfeiffer, 1855) | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella ornata* (Newcomb, 1853) | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella thwingii* (Pilsbry and Cooke, 1912-1914). | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella zebra* (Newcomb, 1855) | Achatinellidae | (Snail, no common name) | HI |
| 2 | D | R1 | *Perdicella zebrina* (Pfeiffer, 1855) | Achatinellidae | (Snail, no common name) | HI |
| 2 | U | R2 | *Phreatodrobia imitata* (Herschler & Longley, 1986). | Hydrobiidae | Mimic cavesnail | TX. |
| 2* | D | R6 | *Physella microstriata (=Stenophysa m.)* (Chamberlain & Berry, 1930). | Physidae | Fish Lake physa (=Fish Lake snail) | UT. |
| 2 | U | R6 | *Physella spelunca (=Physa s.)* (Turner & Clench, 1925). | Physidae | Cave physa (=Wyoming cave snail) | WY. |
| 2 | D | R6 | *Physella utahensis (=Physa u.)* (Clench, 1925). | Physidae | Utah physa (=Utah bubble snail) | UT. |
| 2 | S | R6 | *Physella zionis (=Physa z.)* (Pilsbry, 1905). | Physidae | Wet-rock physa (=Zion Canyon snail). | UT. |
| 2 | D | R4 | *Planorbella magnifica (=Helisoma m.)* (Pilsbry, 1903). | Planorbidae | Magnificent (=Cape Fear) rams-horn (snail). | NC. |
| 2 | U | R3 | *Planorbella multivolvis* (Case, 1847) | Planorbidae | Acorn rams-horn (snail) | MI. |
| 2 | U | R4 | *Pleurocera (=Elimia) annulifera* (Conrad, 1834). | Pleuroceridae | Ringed hornsnail | AL. |
| 2 | U | R4 | *Pleurocera alveare* (Conrad, 1834) | Pleuroceridae | Rugged hornsnail | AL, AR, KY, MO, TN. |
| 2 | U | R4 | *Pleurocera brumbyi* (I. Lea, 1852) | Pleuroceridae | Spiral hornsnail | AL. |
| 2 | U | R4 | *Pleurocera corpulenta* (Anthony, 1854). | Pleuroceridae | Corpulent hornsnail | AL, TN. |
| 2 | U | R4 | *Pleurocera curta* (Haldeman, 1841) | Pleuroceridae | Shortspire hornsnail | AL, TN. |
| 2 | U | R4 | *Pleurocera foremani* (I. Lea, 1843) | Pleuroceridae | Rough hornsnail | AL, GA. |
| 2 | U | R4 | *Pleurocera postelli* (I. Lea, 1862) | Pleuroceridae | Broken hornsnail | AL. |
| 2 | U | R4 | *Pleurocera pyrenella* (Conrad, 1834) | Pleuroceridae | Skirted hornsnail | AL, GA. |
| 2 | U | R4 | *Pleurocera showalteri* (I. Lea, 1862) | Pleuroceridae | Upland hornsnail | AL, GA. |
| 2 | U | R4 | *Pleurocera viridulum* (Anthony, 1854). | Pleuroceridae | (Snail, no common name) | GA |
| 2 | U | R4 | *Pleurocera walkeri* Goodrich, 1928 | Pleuroceridae | Telescope hornsnail | AL, TN. |
| 2 | U | R2 | *Polygyra hippocrepis* (Pheiffer, 1848) | Polygyridae | Horseshoe liptooth (snail) | TX. |
| 2 | U | R4 | *Polygyra peregrina* Rehder, 1932 | Polygyridae | White liptooth (=strange many-whorled land snail). | AR. |
| 2 | U | R4 | *Pyrgulopsis (=Marstonia)* sp. | Hydrobiidae | Briley Creek pyrg (snail) | AL |
| 2 | U | R4 | *Pyrgulopsis (=Marstonia)* sp. | Hydrobiidae | Spring Creek pyrg (snail) | AL |
| 2 | U | R4 | *Pyrgulopsis (=Marstonia)* sp. | Hydrobiidae | Flint River pyrg (snail) | AL |
| 2 | D | R1 | *Pyrgulopsis aardhali* | Hydrobiidae | Aardhals springsnail | CA |
| 2 | U | R4 | *Pyrgulopsis agarhecta (=Marstonia a.)* (Thompson, 1969). | Hydrobiidae | Ocmulgee marstonia (snail) | GA. |
| 2 | U | R2 | *Pyrgulopsis bacchus* Hershler, 1988 | Hydrobiidae | Grand Wash springsnail | AZ. |
| 2 | U | R4 | *Pyrgulopsis castor (=Marstonia c.)* (Thompson, 1977). | Hydrobiidae | Beaver pond marstonia (snail) | GA. |
| 2 | U | R2 | *Pyrgulopsis conicus* Hershler, 1988 | Hydrobiidae | Kingman springsnail | AZ. |
| 2 | U | R1 | *Pyrgulopsis cristalis* Hershler & Sada, 1987. | Hydrobiidae | Crystal Spring springsnail | NV. |
| 2 | U | R1 | *Pyrgulopsis erythropoma (=Fluminicola e.)* (Pilsbry, 1899). | Hydrobiidae | Ash Meadows pebblesnail (=Point of Rocks Spring snail). | NV. |
| 2 | U | R1 | *Pyrgulopsis fairbanksensis* Hershler & Sada, 1987. | Hydrobiidae | Fairbanks springsnail | NV. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R2 | *Pyrgulopsis glandulosus* Hershler, 1988. | Hydrobiidae | Verde Rim springsnail | AZ. |
| 2 | U | R1 | *Pyrgulopsis isolatus* Hershler & Sada, 1987. | Hydrobiidae | Elongate-gland springsnail | NV. |
| 2 | U | R1 | *Pyrgulopsis micrococcus (=Fontelicella m.)* (Pilsbry, 1893). | Hydrobiidae | Oasis Valley springsnail | NV. |
| 2 | U | R2 | *Pyrgulopsis montezumensis* Hershler, 1988. | Hydrobiidae | Montezuma Well springsnail | AZ. |
| 2 | U | R2 | *Pyrgulopsis morrisoni* Hershler, 1988 | Hydrobiidae | Page springsnail | AZ. |
| 2 | U | R1 | *Pyrgulopsis nanus* Hershler & Sada, 1987. | Hydrobiidae | Distal-gland springsnail (=Large-gland Nevada spring snail). | NV. |
| PE | S | R4 | *Pyrgulopsis ogmoraphe (=Marstonia o.)* (Thompson, 1977). | Hydrobiidae | Royal (=obese) marstonia (snail) | TN. |
| 2 | U | R4 | *Pyrgulopsis olivacea (=Marstonia o.)* (Pilsbry, 1895). | Hydrobiidae | Olive marstonia (snail) | AL. |
| 2 | D | R1 | *Pyrgulopsis owensensis* | Hydrobiidae | Owens springsnail | CA |
| 2 | U | R4 | *Pyrgulopsis ozarkensis* Hinkley, 1915. | Hydrobiidae | Ozark pyrg (snail) | AR. |
| 2 | S | R4 | *Pyrgulopsis pachyta (=Marstonia p.)* (F. G. Thompson, 1977). | Hydrobiidae | Armored (=thick-shelled) marstonia (snail). | AL. |
| 2 | S | R1 | *Pyrgulopsis perturbata* | Hydrobiidae | Fish Slough springsnail | CA |
| 2 | U | R1 | *Pyrgulopsis pisteri* Hershler & Sada, 1987. | Hydrobiidae | Median-gland Nevada springsnail | NV. |
| 2 | D | R6 | *Pyrgulopsis robusta (=Fontelicella r.)* (Walker, 1908). | Hydrobiidae | Jackson Lake springsnail (=Elk Island snail). | WY. |
| 2 | U | R2 | *Pyrgulopsis simplex* Hershler, 1988 | Hydrobiidae | Fossil springsnail | AZ. |
| 2 | U | R2 | *Pyrgulopsis solus* Hershler, 1988 | Hydrobiidae | Brown springsnail | AZ. |
| 2 | U | R2 | *Pyrgulopsis thompsoni* Hershler, 1988. | Hydrobiidae | Huachuca springsnail | AZ, Mexico. |
| 2 | D | R1 | *Pyrgulopsis wongi* | Hydrobiidae | Wongs springsnail | CA |
| 2 | U | R1 | *Radiocentrum avalonensis (=Oreohelix a.)* (Hemphill in Pilsbry, 1905. | Oreohelicidae | Catalina mountainsnail | CA. |
| 2 | U | R4 | *Rhodacmea elatior* (Anthony, 1855) | Ancylidae | Domed ancylid (snail) | AL. |
| 2 | U | R4 | *Rhodacmea filosa* (Conrad, 1834) | Ancylidae | Wicker ancylid (snail) | AL. |
| 2 | D | R1 | *Samoana conica* | Partulidae | Samoana tree snail | AS. |
| 1 | D | R1 | *Samoana fragilis* | Partulidae | Fragile tree snail | GU. |
| 2 | D | R1 | *Samoana thurstoni* | Partulidae | Ofu tree snail | AS. |
| 2 | U | R4 | *Somatogyrus amnicoloides* Walker, 1915. | Hydrobiidae | Oachita pebblesnail | AR. |
| 2 | U | R4 | *Somatogyrus aureus* Tryon, 1865 | Hydrobiidae | Golden pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus biangulatus* Walker, 1906. | Hydrobiidae | Angular pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus constrictus* Walker, 1904. | Hydrobiidae | Knotty pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus coosaensis* Walker, 1904. | Hydrobiidae | Coosa pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus crassilabris* | Hydrobiidae | Thick-lipped pebblesnail | AR. |
| 2 | U | R4 | *Somatogyrus crassus* Walker, 1904 | Hydrobiidae | Stocky pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus currierianus* (I. Lea, 1863). | Hydrobiidae | Tennessee pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus deciphens* Walker, 1909. | Hydrobiidae | Hidden pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus excavatus* Walker, 1906. | Hydrobiidae | Ovate pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus hendersoni* Walker, 1909. | Hydrobiidae | Fluted pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus hinkleyi* Walker, 1904 | Hydrobiidae | Granite pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus humerosus* Walker, 1906. | Hydrobiidae | Atlas pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus nanus* Walker, 1904 | Hydrobiidae | Dwarf pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus obtusus* Walker, 1904 | Hydrobiidae | Moon pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus parvulus* (Tryon, 1865) | Hydrobiidae | Sparrow pebblesnail | TN. |
| 2 | U | R4 | *Somatogyrus pilsbryanus* Walker, 1904. | Hydrobiidae | Tallapoosa pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus pygmaeus* Walker, 1909. | Hydrobiidae | Pygmy pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus quadratus* Walker, 1906. | Hydrobiidae | Quadrate pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus sargenti* Pilsbryi, 1895 | Hydrobiidae | Mud pebblesnail | AL. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R4 | *Somatogyrus strengi* Pilsbry & Walker, 1906. | Hydrobiidae | Rolling pebblesnail | AL. |
| 2 | U | R4 | *Somatogyrus tenax* (Thompson, 1969). | Hydrobiidae | Savannah pebblesnail | GA. |
| 2 | U | R4 | *Somatogyrus tennesseensis* Walker, 1906. | Hydrobiidae | Opaque pebblesnail | AL, TN. |
| 2 | U | R4 | *Somatogyrus virginicus* (Walker, 1904). | Hydrobiidae | Panhandle pebblesnail | NC, VA |
| 2 | U | R4 | *Somatogyrus wheeleri* Walker, 1915 | Hydrobiidae | Channeled pebblesnail | AR. |
| 2* | E | R1 | *Somoana abbreviata* (Mousson, 1869). | Partulidae | Short Samoan tree snail | AS. |
| 2 | U | R2 | *Sonorella* sp. | Helminthoglyptidae | Ladybug Saddle talussnail | AZ. |
| 2 | U | R2 | *Sonorella allynsmithi* Gregg & Miller, 1969. | Helminthoglyptidae | Squaw Park talussnail | AZ. |
| 2 | S | R2 | *Sonorella christenseni* Fairbanks & Reeder, 1980. | Helminthoglyptidae | Clark Peak talussnail | AZ. |
| PE | S | R2 | *Sonorella eremita* (Pilsbry & Ferris, 1915). | Helminthoglyptidae | San Xavier talussnail | AZ. |
| 2 | D | R2 | *Sonorella grahamensis* Pilsbry & Ferris, 1919. | Helminthoglyptidae | Pinaleno talussnail | AZ. |
| 1 | S | R2 | *Sonorella macrophallus* Fairbanks & Reeder, 1980. | Helminthoglyptidae | Wet Canyon talussnail | AZ. |
| 2 | U | R2 | *Sonorella metcalfi* (Miller, 1976) | Helminthoglyptidae | Franklin Mountain talussnail | TX. |
| 2 | U | R2 | *Sonorella todseni* W. B. Miller, 1976 | Helminthoglyptidae | Doña Ana talussnail | NM. |
| 3A | N | R6 | *Stagnicola utahensis (=Lymnaea kingii)* (Call, 1844. | Lymnaeidae | Thickshell pondsnail (=Utah band snail). | UT. |
| 2 | U | R4 | *Stenotrema pilsbryi* (Ferris, 1900) | Polygyridae | Rich Mt. slitmouth (=Pilsbry's narrow-apertured land snail). | AR, OK. |
| 3C | N | R1 | *Sterkia clementina* (Sterki, 1890) | Pupillidae | San Clemente Island blunt-top snail (=Insular birddrop). | CA. |
| 2 | S | R4 | *Stiobia nana* (Thompson, 1978) | Hydrobiidae | Sculpin snail | AL. |
| 2 | U | R3 | *Succinea* sp. | Succineidae | Minnesota Pleistocene succineid (snail). | MN, IA. |
| 2 | U | R3 | *Succinea* sp. | Succineidae | Iowa Pleistocene succineid (snail) | IA, MN. |
| 2* | D | R1 | *Succinea guamensis* | Succineidae | (Snail, no common name) | GU. |
| 2 | D | R1 | *Succinea piratarum* | Succineidae | (Snail, no common name) | GU. |
| 2 | D | R1 | *Succinea quadrasi* | Succineidae | (Snail, no common name) | GU. |
| 2 | U | R4 | *Triodopsis occidentalis* (Pilsbry & FerrisS, 1894). | Polygyridae | Arkansas wedge (=western three-toothed land snail). | AR. |
| 2 | U | R4 | *Triodopsis soelneri* (J. B. Henderson, 1907). | Polygyridae | Cape Fear threetooth (snail) | NC. |
| 2 | D | R1 | *Trochomorpha apia* | Trochomorphidae | (Snail, no common name) | AS. |
| 1 | S | R2 | *Tryonia adamantina* Taylor, 1987 | Hydrobiidae | Diamond Y Spring snail | TX. |
| 2 | U | R1 | *Tryonia angulata* Hershler & Sada, 1987. | Hydrobiidae | Sportinggoods tryonia (snail) | NV. |
| 2 | U | R2 | *Tryonia brunei* Taylor, 1987 | Hydrobiidae | Brune's tryonia (snail) | TX. |
| 2 | U | R2 | *Tryonia cheatumi* (Pilsbry, 1935) | Hydrobiidae | Phantom tryonia (=Cheatum's snail) | TX. |
| 2 | U | R1 | *Tryonia clathrata* Stimpson, 1865 | Hydrobiidae | Grated tryonia (=White River snail) | NV. |
| 2 | U | R1 | *Tryonia elata* Hershler & Sada, 1987 | Hydrobiidae | Point of Rocks tryonia (snail) | NV. |
| 2 | U | R1 | *Tryonia ericae* Hershler & Sada, 1987. | Hydrobiidae | Minute tryonia (=minute slender tryonia snail). | NV. |
| 2 | U | R2 | *Tryonia gilae* Taylor, 1987 | Hydrobiidae | Gila tryonia (snail) | AZ. |
| 2 | U | R1 | *Tryonia imitator* (Pilsbry, 1899) | Hydrobiidae | Mimic tryonia (=California brackish water snail). | CA. |
| 1 | S | R2 | *Tryonia kosteri* Taylor, 1987 | Hydrobiidae | Koster's tryonia (springsnail) | NM. |
| 2 | D | R1 | *Tryonia margae* | Hydrobiidae | Grapevine Springs elongate tryonia | CA |
| 2 | U | R2 | *Tryonia quitobaquitae* Hershler, 1988 | Hydrobiidae | Quitobaquito tryonia (snail) | AZ. |
| 2 | D | R1 | *Tryonia robusta* | Hydrobiidae | Robust tryonia | CA |
| 2 | D | R1 | *Tryonia rowlandsi* | Hydrobiidae | Grapevine Springs squat tryonia | CA |
| 1 | S | R2 | *Tryonia stocktonensis* Taylor, 1987 | Hydrobiidae | Gonzales Spring tryonia (snail) | TX. |
| 2 | U | R1 | *Tryonia variegata* Hershler & Sada, 1987. | Hydrobiidae | Amargosa tryonia (=Amargosa & small solid tryonia snail). | NV. |
| 2 | U | R1 | *Valvata virens* | Valvatudae | (Snail, no common name) | CA |
| 2 | U | R3 | *Vertigo* sp. | Pupillidae | Iowa Pleistocene vertigo (snail) | IA. |
| 2 | U | R4 | *Vertigo alabamensis* Clapp, 1915 | Pupillidae | Alabama vertigo (snail) | AL. |
| 2 | U | R3 | *Vertigo briarensis* (Leonard, 1972) | Pupillidae | Briarton Pleistocene snail | MN, IA, WI. |
| 2 | U | R4 | *Vertigo hebardi* Vannatta, 1912 | Pupillidae | Keys vertigo (snail) | FL. |
| 2 | U | R3 | *Vertigo hubrichti* (Pilsbry, 1934) | Pupillidae | Hubricht's vertigo (snail) | MN, IA, WI. |
| 2 | U | R3 | *Vertigo meramacensis* (Van DaVender, 1977). | Pupillidae | Meramac River vertigo (snail) | IA, MO. |
| 2 | U | R3 | *Vertigo occulta* (Leonard, 1972) | Pupillidae | Occult vertigo (snail) | IA, MN. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R2 | *Vertigo ovata* Say, 1822 | Pupillidae | Ovate vertigo (snail) | NM. |
| 2 | U | R1 | *Vespericola karokorum* Talmage, 1962. | Polygyridae | Karok hesperian (=Karok Indian snail). | CA. |
| 2 | U | R2 | *Yaquicoccus bernardinus* Taylor, 1987. | Hydrobiidae | San Bernadino springsnail | AZ. |
| 3B | N | R1 | Genus and species undescribed | Hydrobiidae | Virile Amargosa snail | NV. |
| 2 | U | R6 | *Oreohelix eurekensis eurekensis* J. Henderson and Daniels, 1916. | Oreohelicidae | Eureka mountainsnail | UT. |
| 2 | U | R6 | *Oreohelix eurekensis uinta* | Oreohelicidae | Uinta mountainsnail | UT. |
| 2 | U | R6 | *Oreohelix haydeni corugata* | Oreohelicidae | | UT. |
| 2 | U | R6 | *Oreohelix haydeni haydeni* Gabb, 1869. | Oreohelicidae | Lyrate mountainsnail | UT. |
| 2 | D | R6 | *Oreohelix parowanensis* | Oreohelicidae | (Mountainsnail, no common name) | UT. |
| 1 | U | R6 | *Oreohelix peripherica wasatchensis* (Binney, 1886). | Oreohelicidae | Ogden Rocky mountainsnail | UT. |
| 2 | U | R6 | *Oreohelix strigosas p.* | Oreohelicidae | Pahasapa mountainsnail | SD, WY. |
| 2 | U | R6 | *Oreohelix strigosa berryi* | Oreohelicidae | Berry's mountainsnail | MT, WY. |
| 2 | U | R6 | *Oreohelix yavapai* Pilsbry, 1905 | Oreohelicidae | Yavapai mountainsnail | AZ, UT. |
| 1 | D | R6 | *Stagnicola bonnevillensis* (Call, 1884). | Lymnaeidae | Fat-whorled pondsnail | UT. |
| 2 | U | R6 | *Vertigo arthuri* Von Martens, 1882 | Pupillidae | Callused vertigo | MN, ND, SD, WY. |
| 2 | U | R6 | *Vertigo arthuri* Sterki, 1900 | Pupillidae | Mystery vertigo | ME, MI, SD, WY, Canada. |
| | | | CLAMS & MUSSELS (Mollusks, Class Bivalvia). | | | |
| 2 | D | R6 | *Alasmidonta marginata* | Unionidae | Elktoe | AL, IN, KS, MD, OK, MI, MO, MN, ND, NY, OH, OK, PA, SD, TN, VA, WI, WV, Canada. |
| 2 | U | R4 | *Alasmidonta arcula* (I. Lea, 1838) | Unionidae | Altamaha arc-mussel | GA. |
| PE | D | R4 | *Alasmidonta atropurpurea* (Rafinesque, 1831). | Unionidae | Cumberland elktoe (mussel) | KY, TN. |
| PE | D | R4 | *Alasmidonta raveneliana* (I. Lea, 1834). | Unionidae | Appalachian elktoe (mussel) | NC. |
| 2 | U | R5 | *Alasmidonta varicosa* (Lamarck, 1819). | Unionidae | Brook floater (mussel) | CT, GA, MA, MD, ME, NC, NH, NJ, NY, PA, SC, VA, VT, WV, Canada. |
| 2 | U | R4 | *Alasmidonta wrightiana* (Walker, 1901). | Unionidae | Florida arc-mussel | FL. |
| PE | D | R4 | *Amblema neislerii* (I.Lea, 1858) | Unionidae | Fat three-ridge (mussel) | FL, GA. |
| 2 | D | R2 | *Anodonta californiensis* Lea, 1852 | Unionidae | California floater (mussel) | AZ, CA, ID, NV, OR, UT, WA, Canada, Mexico |
| 2 | D | R4 | *Anodontoides denigrata* (I. Lea, 1852). | Unionidae | Cumberland papershell | KY, TN |
| 2 | D | R4 | *Cumberlandia monodonta* (Say, 1829). | Margaritiferidae | Spectacle case (pearly mussel) | AL, AR, IA, IN, IL, KY, MO, NE?, OH, TN, VA, WI. |
| 2 | U | R4 | *Cyprogenia aberti* (Conrad, 1850) | Unionidae | Western fanshell (=western fan-shell pearly mussel). | AR, KS, MO, OK. |
| 2 | U | R2 | *Disconaias salinasensis* (Simpson, 1908). | Unionidae | Salina mucket (mussel) | TX, Mexico. |
| 2 | U | R4 | *Elliptio* sp. | Unionidae | Waccamaw lance pearlymussel | NC. |
| PE | D | R4 | *Elliptio chipolaensis* | Unionidae | Chipola slabshell | AL, FL |
| 2 | D | R4 | *Elliptio judithae* Clark, 1986 | Unionidae | Neuse slabshell (mussel) | NC. |
| 2 | D | R4 | *Elliptio lanceolata* (I. Lea, 1828) | Unionidae | Yellow lance (mussel) | NC, VA. |
| 3B | N | R4 | *Elliptio marsupiobesa* Fuller, 1972 | Unionidae | Cape Fear spike (mussel) | NC. |
| 2 | U | R4 | *Elliptio monroensis* (I. Lea, 1843 | Unionidae | St. Johns elephantear | FL |
| 2 | U | R4 | *Elliptio nigella* (I. Lea, 1852) | Unionidae | Winged spike (=recovery pearly mussel). | AL, GA. |
| 2 | U | R4 | *Elliptio shepardiana* (I.Lea, 1834) | Unionidae | Altamaha lance (mussel) | GA. |
| 2 | U | R4 | *Elliptio spinosa* (I. Lea, 1836) | Unionidae | Altamaha spinymussel (=Georgia spiny mussel). | GA. |
| 2 | U | R4 | *Elliptio waccamawensis* (I. Lea, 1863). | Unionidae | Waccamaw spike (mussel) | NC. |
| 2 | U | R4 | *Elliptio waltoni* (B.H. Wright, 1888) | Unionidae | Florida lance | FL |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| PE | D | R4 | *Elliptoideus sloatianus* (I. Lea, 1840) | Unionidae | Purple bankclimber (mussel) | AL, GA, FL. |
| PE | D | R4 | *Epioblasma brevidens* (I. Lea, 1831) | Unionidae | Cumberlandian combshell | AL, KY, TN, VA. |
| PE | D | R4 | *Epioblasma capsaeformis* (I. Lea, 1834). | Unionidae | Oyster mussel | AL, KY, TN, VA. |
| 2 | D | R4 | *Epioblasma triquetra* (Rafinesque, 1820). | Unionidae | Snuffbox mussel | AL, IA, IL, IN, KS, KY, MS, MI, MO, OH, PA, TN, VA, WI, WV, Canada. |
| 2 | U | R4 | *Fusconaia escambia* Clench and Turner, 1956. | Unionidae | Narrow pigtoe (mussel) | AL, FL. |
| 2 | D | R4 | *Fusconaia masoni* (Conrad, 1834) | Unionidae | Atlantic pigtoe (mussel) | GA, NC, SC, VA. |
| 2 | D | R4 | *Lampsilis australis* Simpson, 1900 | Unionidae | Southern sandshell (mussel) | AL, FL. |
| 2 | D | R4 | *Lampsilis binominata* Simpson, 1900 | Unionidae | Lined pocketbook (mussel) | AL, GA. |
| 2 | U | R5 | *Lampsilis cariosa* (Say, 1817) | Unionidae | Yellow lampmussel | CT, GA, MA, MD, ME, NC, NH, NJ, NY, PA, SC, VA, VT, WV, Canada. |
| 2 | U | R4 | *Lampsilis fullerkati* R. I. Johnson, 1984. | Unionidae | Waccamaw fatmucket (mussel) | NC. |
| 2 | D | R4 | *Lampsilis haddletoni* Athearn, 1964 | Unionidae | Haddleton lampmussel | AL, FL |
| 2 | U | R4 | *Lampsilis rafinesqueana* Frierson, 1927. | Unionidae | Neosho mucket (=Neosho pearly mussel). | AR, KS, MO, OK. |
| PE | D | R4 | *Lampsilis subangulata* (I.Lea, 1840) | Unionidae | Shiny-rayed pocketbook (mussel) | AL, FL, GA. |
| 2 | D | R4 | *Lasmigona* sp. | Unionidae | Barrens heelsplitter (mussel) | TN. |
| 2 | D | R4 | *Lasmigona holstonia* (I. Lea, 1838) | Unionidae | Tennessee heelsplitter (mussel) | AL, GA, IL, IN, KY, TN, VA. |
| 2 | D | R5 | *Lasmigona subviridis* (Conrad, 1835) | Unionidae | Green floater (mussel) | KY, MD, NC, NJ, NY, PA, SC, TN, VA, WV. |
| 2 | U | R3 | *Leptodea leptodon* (Rafinesque, 1820). | Unionidae | Scaleshell (mussel) | AR, IA, IL, IN, KY, MO, OH, OK, SD. |
| 2 | D | R4 | *Lexingtonia dolabelloides* (I. Lea, 1840). | Unionidae | Slabside pearlymussel | AL, TN, VA. |
| 2 | D | R4 | *Margaritifera marrianae* Johnson, 1983. | Margaritiferidae | Alabama pearlshell | AL. |
| PE | D | R4 | *Medionidus penicillatus* | Unionidae | Gulf moccasinshell | AL, FL, GA |
| PE | D | R4 | *Medionidus simpsonianus* | Unionidae | Ochlockonee moccasinshell | FL, GA |
| 2 | D | R4 | *Medionidus walkeri* (B.H. Wright 1897). | Unionidae | Suwanee moccasinshell | FL |
| 2 | U | R4 | *Obovaria rotulata* (B.H. Wright, 1899). | Unionidae | Round ebonyshell (mussel) | AL, FL. |
| 2 | U | R2 | *Pisidium sanguinichristi* Taylor, 1987 | Sphaeriidae | Sangre de Cristo peaclam | NM. |
| 2 | U | R1 | *Pisidium ultramontanum* Prime, 1865 | Sphaeriidae | (Peaclam, no common name) | CA, OR. |
| 2 | D | R4 | *Pleurobema oviforme* (Conrad, 1834). | Unionidae | Tennessee clubshell (mussel) | KY, TN, VA. |
| 2 | D | R4 | *Pleurobema pyramidatum (=rubrum)* (Rafinesque, 1820). | Unionidae | Pink pigtoe (mussel) | AL, KY, MS, TN. |
| PE | D | R4 | *Pleurobema pyriforme* (I.Lea, 1857) | Unionidae | Oval pigtoe (mussel) | AL, FL, GA. |
| 2 | D | R4 | *Pleurobema rubellum* (Conrad, 1834). | Unionidae | Warrior pigtoe (mussel) | AL. |
| 2 | D | R4 | *Pleurobema strodeanum* (B.H. Wright 1898). | Unionidae | Fuzzy pigtoe (mussel) | AL, FL |
| 2 | D | R4 | *Pleurobema verum* (I.Lea, 1860) | Unionidae | True pigtoe (mussel) | AL. |
| 2 | U | R2 | *Popenaias popei* (I.Lea, 1857) | Unionidae | Texas hornshell (mussel) | NM, TX, Mexico. |
| 2 | U | R2 | *Potamilus amphichaenus* (Frierson, 1898). | Unionidae | Texas heelsplitter (mussel) | LA, TX. |
| 2 | D | R4 | *Ptychobranchus jonesi* (van der Schalie, 1934). | Unionidae | Southern kidneyshell (mussell) | AL, FL. |
| 2 | D | R6 | *Ptychobranchus occidentalis* (Conrad, 1836). | Unionidae | Ouachita kidneyshell | AR, KS, MO, OK. |
| 2 | D | R4 | *Quadrula cylindrica cylindrica* (Say, 1817). | Unionidae | Rabbitsfoot (mussel) | AL, AR, IL, IN, KY, MO, OH, OK, PA, TN, WV |
| PE | D | R4 | *Quadrula cylindrica strigillata* (B.H.Wright, 1898). | Unionidae | Rough rabbitsfoot (mussel) | KY, TN, VA. |
| 2 | D | R4 | *Quincuncina burkei* Walker, 1922 | Unionidae | Tapered pigtoe (mussel) | AL, FL |
| 2 | U | R2 | *Quincuncina mitchelli* (Simpson, 1896). | Unionidae | False spike (mussel) | TX. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | D | R5 | *Simpsonaias ambigua* (Say, 1825) | Unionidae | Salamander mussel | AR, IA, IL, IN, KY, MI, MO, NY, OH, TN, PA, WI, WV, Canada. |
| 2 | D | R4 | *Toxolasma lividus* (Rafinesque, 1831). | Unionidae | Purple lilliput (mussel) | IL, IN, KY, MI, MO, OH, TN. |
| 2 | S | R4 | *Toxolasma pullus* (Conrad, 1838) | Unionidae | Savannah lilliput (mussel) | GA, NC, SC. |
| 2 | U | R2 | *Truncilla cognata* (I.Lea, 1860) | Unionidae | Mexican fawnsfoot (mussel) | TX, Mexico. |
| 2 | U | R4 | *Villosa choctawensis* Athearn, 1964 | Unionidae | Choctaw bean (=Choctaw pearly mussel). | AL, FL. |
| 2 | U | R5 | *Villosa fabalis* (Lea, 1831) | Unionidae | Rayed bean (mussel) | AL, IL, IN, KY, MI, NY, OH, TN, PA, VA, WV, Canada. |
| 2 | D | R4 | *Villosa ortmanni* (Walker, 1925) | Unionidae | Kentucky creekshell (=Ortman's pearly mussel). | KY. |
| PE | D | R4 | *Villosa perpurpurea* (I. Lea, 1861) | Unionidae | Purple bean (=Fine-rayed purple pearly mussel). | TN, VA. |
| | | | MILLIPEDES (Class Diplopoda). | | | |
| 2 | U | R2 | *Toltecus chihuanus* | Atopetholidae | (Millipede, no common name) | NM, Mexico. |
| | | | INSECTS (Class Insecta). | | | |
| | | | ROCKHOPPERS & BRISTLETAILS (Insects, Order Archeognatha). | | | |
| 2 | U | R1 | *Machiloides (=Machiloides) perkinsi* | Machilidae | Perkin's club-palp bristletail | HI. |
| 2 | U | R1 | *Neomachiloides (=Machiloides) heteropus.* | Machilidae | Hawaiian long-palp bristletail | HI. |
| | | | SPRINGTAILS (Insects, Order Collembola). | | | |
| 2 | U | R5 | *Pseudosinella certa* | Entomobryidae | Gandy Creek cave springtail | WV. |
| 2 | U | R5 | *Pseudosinella testa* | Entomobryidae | Shelled cave springtail | WV. |
| | | | MAYFLIES (Insects, Order Ephemeroptera). | | | |
| 2 | U | R3 | *Acanthometropus pecatonica* | Siphlonuridae | Pecatonica River mayfly | WI, IL*. |
| 2 | U | R2 | *Ameletus falsus* | Siphlonuridae | False ameletus mayfly | AZ. |
| 2* | U | R4 | *Brachycercus flavus* | Caenidae | Yellow brachycercus mayfly | LA. |
| 2 | S | R4 | *Dolania americana* | Behningiidae | American sandburrowing mayfly | AL, FL, GA, LA, SC, NC, WI. |
| 2* | U | R5 | *Ephemera triplex* | Ephemeridae | West Virginia burrowing mayfly | WV. |
| 2 | U | R3 | *Ephemerella argo* | Ephemerellidae | Argo ephemerellan mayfly | GA, IL, IN, SC. |
| 2 | U | R4 | *Heterocleon berneri* | Baetidae | Berner's two-winged mayfly | GA. |
| 2 | U | R4 | *Homoeoneuria cahabensis* | Oligoneuridae | Cahaba sandfiltering mayfly | AL, MS. |
| 2 | U | R4 | *Homoeoneuria dolani* | Oligoneuridae | Blackwater sandfiltering mayfly | FL, GA, SC. |
| 2 | U | R4 | *Paraleptophlebia calcarica* | Leptophlebiidae | (Mayfly, no common name) | AR. |
| 2* | U | R3 | *Seratella frisoni* | Ephemerellidae | Frison's seratellan mayfly | AL, IL, MO. |
| 2* | U | R4 | *Seratella spiculosa* | Ephemerellidae | Spiculose seratellan mayfly | TN, NC. |
| 2 | S | R5 | *Siphlonisca aerodromia* | Siphlonuridae | Tomah mayfly | ME, NY, Canada*. |
| 2 | U | R3 | *Spinadis wallacei* | Heptageniidae | Wallace's deepwater mayfly | GA, IN, MS, WI. |
| | | | DRAGONFLIES & DAMSELFLIES (Insects, Order Odonata). | | | |
| 2 | U | R2 | *Argia* sp. | Coenagrionidae | Balmorhea damselfly | TX. |
| 2 | U | R2 | *Argia* sp. | Coenagrionidae | Sabino Canyon damselfly | AZ. |
| 2 | U | R4 | *Cordulegaster sayi* | Cordulegastridae | Say's spiketail (dragonfly) | FL, GA. |
| 2 | U | R5 | *Enallagma laterale* | Coenagrionidae | Lateral bluet (damselfly) | IN, MA, ME, NG, NJ, NY, PA. |
| 2 | U | R4 | *Gomphus consanguis (subgen. Gomphurus).* | Gomphidae | Cherokee clubtail (dragonfly) | AL, GA, NC, SC, TN, VA. |
| 2 | U | R1 | *Gomphus lynnae* | Gomphidae | Lynn's clubtail (dragonfly) | WA. |
| 2 | U | R3 | *Gomphus notatus (subgen. Stylurus)* | Gomphidae | Elusive clubtail (dragonfly) | MD, WI, Canada, IA*, IL*, IN*, KY*, MI*, MN*, NY*, OH*, PA*, TN*, WV*, AL?*, GA?*. |
| 2 | D | R4 | *Gomphus parvidens carolinus (subgen. Hylogomphus).* | Gomphidae | Sandhills clubtail (dragonfly) | NC, SC. |
| 2 | U | R4 | *Gomphus sandrius (subgen. Gomphurus).* | Gomphidae | Tennessee clubtail (dragonfly) | TN. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R4 | *Gomphus septima (subgen. Gomphurus).* | Gomphidae | Septima's clubtail (dragonfly) | AL, NC. |
| 2 | U | R4 | *Gomphus westfalli* | Gomphidae | Westfall's clubtail (dragonfly) | FL. |
| 2 | U | R5 | *Macromia margarita* | Macromiidae | Margarita River skimmer (dragonfly) | VA, NC, GA*, SC, TN. |
| 2* | U | R3 | *Macromia wabashensis* | Macromiidae | Wabash belted skimmer (dragonfly) | OH*, IN*, TX*. |
| 2 | U | R1 | *Megalagrion adytum* | Coenagrionidae | Adytum megalagrion damselfly | HI. |
| 3B | N | R1 | *Megalagrion amaurodytum fallax* | Coenagrionidae | Fallax megalagrion damselfly | HI. |
| 2* | U | R1 | *Megalagrion amaurodytum peles* | Coenagrionidae | Pele megalagrion damselfly | HI. |
| 2* | U | R1 | *Megalagrion amaurodytum waianaeanum.* | Coenagrionidae | Waianae megalagrion damselfly | HI. |
| 1 | D | R1 | *Megalagrion leptodemus* | Coenagrionidae | Leptodemas megalagrion damselfly | HI. |
| 2 | U | R1 | *Megalagrion molokaiense* | Coenagrionidae | Molokai megalagrion damselfly | HI. |
| 2 | D | R1 | *Megalagrion nesiotes* | Coenagrionidae | Nesiotes megalagrion damselfly | HI. |
| 2 | U | R1 | *Megalagrion nigrohamatum* | Coenagrionidae | Nigrohamatum megalagrion damselfly. | HI. |
| 1 | D | R1 | *Megalagrion nigrolineatum* | Coenagrionidae | Blackline megalagrion damselfly | HI. |
| 2 | U | R1 | *Megalagrion oahuenses* | Coenagrionidae | Oahu megalagrion damselfly | HI. |
| 1 | D | R1 | *Megalagrion oceanicum* | Coenagrionidae | Oceanic megalagrion damselfly | HI. |
| 1 | D | R1 | *Megalagrion pacificum* | Coenagrionidae | Pacific megalagrion damselfly | HI. |
| 1 | D | R1 | *Megalagrion xanthomelas* | Coenagrionidae | Orangeblack megalagrion damselfly | HI. |
| 2 | U | R4 | *Neurocordulia clara* | Corduliidae | Apalachicola twilight skimmer (dragonfly). | AL, FL. |
| 2 | U | R3 | *Ophiogomphus* sp. | Gomphidae | St. Croix snaketail (dragonfly) | MN, WI. |
| 2 | U | R3 | *Ophiogomphus anomalus* | Gomphidae | Extra-striped snaketail (dragonfly) | ME, WI, Canada, NJ*, NY?*, PA*. |
| 2* | U | R4 | *Ophiogomphus edmundo* | Gomphidae | Edmund's snaketail (dragonfly) | NC. |
| 2 | U | R4 | *Ophiogomphus howei* | Gomphidae | Midget snaketail (dragonfly) | KY, ME, NC, PA, TN, VA, WI, MA*, NY*. |
| 2 | U | R4 | *Ophiogomphus incurvatus alleghaniensis.* | Gomphidae | Alleghany snaketail (dragonfly) | AL, GA, TN, VA, WV. |
| 2 | U | R4 | *Ophiogomphus westfalli* | Gomphiidae | Ozark snaketail (dragonfly) | AR, KS, MO. |
| 2 | U | R4 | *Progomphus bellei* | Gomphidae | Variegated clubtail (dragonfly) | AL, FL, NC. |
| PE | S | R3 | *Somatochlora hineana* | Corduliidae | Hine's (=Ohio) emerald dragonfly | IL, WI, OH*, IN*. |
| 2 | U | R2 | *Somatochlora margarita* | Corduliidae | Big Thicket emerald dragonfly | TX. |
| 2 | U | R4 | *Stylurus (=Gomphus) townesi* | Gomphidae | Bronze clubtail (dragonfly) | AL, FL, SC, NC, TN. |
| 2 | U | R5 | *Williamsonia lintneri* | Corduliidae | Banded bog skimmer (dragonfly) | CT, NY*, NJ*, MA, RI, NH. |
| | | | STONEFLIES (Insects, Order Plecoptera). | | | |
| 2 | D | R4 | *Alloperla natchez* | Chloroperlidae | Natchez stonefly | MS. |
| 2 | 5 | R4 | *Beloneuria jamesae* | Perlidae | Cheaha beloneurian stonefly | AL. |
| 2 | U | R1 | *Capnia lacustra* | Capniidae | Lake Tahoe benthic stonefly | CA, NV. |
| 2 | D | R4 | *Haploperla chukcho* | Chloroperlidae | Chukcho stonefly | MS. |
| 2 | U | R6 | *Lednia tumana* | Nemouridae | Meltwater lednian stonefly | MT. |
| 2 | U | R1 | *Megaleuctra sierra* | Leuctridae | Shirttail Creek stonefly | CA. |
| 2 | U | R1 | *Soliperla fenderi* | Peltoperlidae | Fender's soliperlan stonefly | WA. |
| 2 | U | R2 | *Taeniopteryx starki* | Taeniopterygidae | Leon River winter stonefly | TX. |
| 2 | U | R1 | *Zapada (=Nemoura) wahkeena* | Nemouridae | Wahkeena Falls flightless stonefly | OR. |
| | | | COCKROACHES (Insects, Order Blattodea). | | | |
| 2 | U | R4 | *Aspiduchus cavernicola* | Blaberidae | Tuna Cave roach | PR. |
| | | | GRASSHOPPERS & ALLIES (Insects, Order Orthoptera). | | | |
| 2 | U | R1 | *Acrolophitus pulchellus* | Acrididae | Idaho pointheaded grasshopper | ID. |
| 2 | U | R1 | *Ammopelmatus kelsoensis* | Stenopelmatidae | Kelso Jerusalem cricket | CA. |
| 2 | U | R1 | *Ammopelmatus muwu* | Stenopelmatidae | Point Conception Jerusalem cricket | CA. |
| 2* | U | R3 | *Appalachia arcana* | Acrididae | Michigan bog grasshopper | MI. |
| 2 | U | R1 | *Banza nihoa* | Tettigoniidae | Nihoa banza conehead katydid | HI. |
| 2 | U | R4 | *Belocephalus micanopy* | Tettigoniidae | Big Pine Key conehead katydid | FL. |
| 2 | U | R4 | *Belocephalus sleighti* | Tettigoniidae | Keys shortwinged conehead katydid | FL. |
| 2 | U | R1 | *Caconemobius howarthi* | Gryllidae | Howarth's cave cricket | HI. |
| 2 | U | R1 | *Caconemobius schauinslandi* | Gryllidae | Schauinsland's bush cricket | HI. |
| 2 | U | R1 | *Caconemobius varius* | Gryllidae | Kaumana Cave cricket | HI. |
| 2 | U | R1 | *Chloealtis aspasma* | Acrididae | Siskiyou chloealtis grasshopper | OR. |
| 2 | U | R4 | *Cycloptilum irregularis* | Gryllidae | Keys scaly cricket | FL. |
| 2 | U | R2 | *Daihinibaenetes arizonensis* | Rhaphidophoridae | Arizona giant sand treader cricket | AZ. |
| 2 | U | R2 | *Eumorsea pinaleno* | Eumastacidae | Pinaleno monkey grasshopper | AZ. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2* | U | R2 | *Eximacris phenax* | Acrididae | Big Cedar grasshopper | OK. |
| 2* | U | R2 | *Eximacris superbum (=Spharagemon s.).* | Acrididae | Superb grasshopper | TX. |
| 2 | S | R3 | *Gryllotalpa major* | Gryllidae | Prairie mole cricket | AR, MO, KS, OK, IL*, MS*. |
| 2 | U | R1 | *Idiostatus kathleenae* | Tettigoniidae | Pinnacles shield-back katydid | CA. |
| 2 | U | R1 | *Idiostatus middlekaufi* | Tettigoniidae | Middlekauf's shieldback katydid | CA. |
| 2 | U | R1 | *Leptogryllus deceptor* | Gryllidae | Oahu deceptor bush cricket | HI. |
| 2 | U | R1 | *Macrobaenetes kelsoensis* | Rhaphidophoridae | Kelso giant sand treader cricket | CA. |
| 2 | U | R1 | *Macrobaenetes valgum* | Rhaphidophoridae | Coachella giant sand treader cricket | CA. |
| 2 | U | R1 | *Neduba longipennis* | Tettigoniidae | Santa Monica shieldback katydid | CA. |
| 2 | U | R3 | *Oecanthus laricis* | Gryllidae | Laricis tree cricket | MI, OH*. |
| 2 | U | R1 | *Pristoceuthophilus* sp. | Rhaphidophoridae | Samwell Cave cricket | CA. |
| 2 | U | R1 | *Psychomastix deserticola* | Eumastacidae | Desert monkey grasshopper | CA, NV. |
| 2 | U | R1 | *Stenopelmatus cahuilaensis* | Stenopelmatidae | Coachella Valley Jerusalem cricket | CA. |
| 2 | U | R2 | *Stenopelmatus navajo* | Stenopelmatidae | Navajo Jerusalem cricket | AZ. |
| 2 | U | R1 | *Tetrix sierrana* | Tetrigidae | Sierra pygmy grasshopper | CA. |
| 2 | U | R4 | *Tettigidea empedonepia* | Tetrigidae | Torreya pygmy grasshopper | FL. |
| 2 | U | R1 | *Thaumatogryllus cavicola* | Gryllidae | Volcanoes cave cricket | HI. |
| 2 | U | R1 | *Thaumatogryllus variegatus* | Gryllidae | Kauai thinfooted bush cricket | HI. |
| 2 | U | R3 | *Trimerotropis huroniana* | Acrididae | Lake Huron locust | MI, WI, Canada. |
| PE | U | R1 | *Trimerotropis infantilis* | Acrididae | Zayante band-winged grasshopper | CA. |
| 2 | U | R6 | *Utabaenetes tanneri* | Rhaphidophoridae | Tanner's black camel cricket | UT. |
| | | | ZOROAPTERANS (Insects, Order Zoroaptera). | | | |
| 2 | U | R1 | *Zorotypus swezeyi* | Zorotypidae | Swezey's zoroapteran | HI. |
| | | | TRUE BUGS (Insects, Order Hemiptera). | | | |
| 2 | U | R4 | *Acalyptera susanae* | Tingidae | (Lace bug, no common name) | AR. |
| 2 | D | R1 | *Ambrysus funebris* | Naucoridae | (True bug, no common name) | CA |
| 2 | U | R1 | *Belostoma saratogae* | Belostomatidae | Saratoga Springs belostoman bug | CA. |
| 2 | U | R1 | *Cavaticovelia aaa* | Mesoveliidae | Aaa water treader bug | HI. |
| 2 | D | R3 | *Chlorochroa belfragi* | Pentatomidae | Belfragi's chlorochroan bug | IA, IL, NE, SD. |
| 2* | U | R5 | *Chlorochroa dismalia* | Pentatomidae | Dismal Swamp chlorochroan bug | VA. |
| 2 | U | R2 | *Chlorochroa rita* | Pentatomidae | Santa Rita Mountains chlorochroan bug. | AZ. |
| 2 | D | R1 | *Coleotichus blackburniae* | Scutellaridae | Koa shield bug | HI |
| 2* | U | R1 | *Empicoris pulchrus* | Reduviidae | Pulchrus thread bug | HI. |
| 2 | U | R1 | *Ithamar annectans* | Rhopalidae | Annectans rhopalid bug | HI. |
| 2 | U | R1 | *Ithamar hawaiiense* | Rhopalidae | Hawaiian rhopalid bug | HI. |
| 2 | U | R1 | *Kalania* sp. | Miridae | Oahu kalanian leaf bug | HI. |
| 2 | U | R1 | *Kalania hawaiiensis* | Miridae | Lanai kalanian leaf bug | HI. |
| 2 | U | R1 | *Metrarga obscura* | Lygaeidae | Mauna Loa metrargan seed bug | HI. |
| 2 | U | R1 | *Neseis alternatus* | Lygaeidae | Kauai band-legged seed bug | HI. |
| 2 | U | R1 | *Neseis haleakalae* | Lygaeidae | Mt. Haleakala seed bug | HI. |
| 2 | U | R1 | *Nesidiolestes ana* | Reduviidae | Ana wingless thread bug | HI. |
| 2 | U | R1 | *Nesidiolestes insularis* | Reduviidae | Mt. Tantalus wingless thread bug | HI. |
| 2 | U | R1 | *Nesidiolestes roberti* | Reduviidae | Robert's wingless thread bug | HI. |
| 2 | U | R1 | *Nesidiolestes selium* | Reduviidae | Selium wingless thread bug | HI. |
| 2 | U | R1 | *Nesocryptias villosa* | Lygaeidae | Villosan flightless seed bug | HI. |
| 2 | U | R1 | *Nysius frigatensis* | Lygaeidae | French Frigate Shoal seed bug | HI. |
| 2 | U | R1 | *Nysius fullawayi* | Lygaeidae | Fullaway's seed bug | HI. |
| 2 | U | R1 | *Nysius neckerensis* | Lygaeidae | Necker goosefoot seed bug | HI. |
| 2 | U | R1 | *Nysius nihoae* | Lygaeidae | Nihoa nysius seed bug | HI. |
| 2 | U | R1 | *Nysius suffusus* | Lygaeidae | Necker bunchgrass seed bug | HI. |
| 2 | U | R1 | *Oceanides bryani* | Lygaeidae | Bryan's oceanides seed bug | HI. |
| 2 | U | R1 | *Oceanides perkinsi* | Lygaeidae | Perkins' oceanides seed bug | HI. |
| 2 | U | R1 | *Oceanides rugosiceps* | Lygaeidae | Rough-headed oceanides seed bug | HI. |
| 2 | D | R1 | *Oechalia grisea* | Pentatomidae | Gray oechalia stink bug | HI |
| 2 | D | R1 | *Oechalia patruelis* | Pentatomidae | Patruelis oechalia stink bug | HI |
| 2 | U | R1 | *Oravelia pege* | Macroveliidae | Dry Creek cliff strider bug | CA. |
| 2 | U | R1 | *Pelocoris shoshone* | Naucoridae | Amargosa naucorid (bug) | CA, NV. |
| 2 | U | R1 | *Saicella smithi* | Reduviidae | Smith's siacellan reduviid (bug) | HI. |
| | | | CICADAS AND ALLIES (Insects, Order Homoptera). | | | |
| 2 | U | R3 | *Aflexia rubranura (=Flexamia r.)* | Cicadellidae | Redveined prairie leafhopper | WI, Canada, IL*. |
| 2* | D | R1 | *Clavicoccus erinaceus* | Pseudococcidae | Oahu abutilon clavicoccus mealybug | HI |
| 2 | U | R1 | *Clavicoccus tribulus* | Pseudococcidae | Oahu ke'oke'o clavicoccus mealybug | HI |
| 2 | S | R5 | *Limotettix* sp. | Cicadellidae | Barrens sedge leafhopper | MD. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R1 | *Nesorestias filicicola* | Delphacidae | Mt. Tantalus short-wing fern planthopper. | HI. |
| 2 | U | R1 | *Nesosydne acuta* | Delphacidae | Iao Valley nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne bridwelli* | Delphacidae | Bridewell's nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne cyrtandrae* | Delphacidae | Nahiku nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne cyrtandricola* | Delphacidae | Glenwood nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne kuschei* | Delphacidae | Kusche's nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne leahi* | Delphacidae | Diamond Head nesosydne planthopper. | HI. |
| 2 | U | R1 | *Nesosydne longipes* | Delphacidae | Long-footed nesosydne planthopper | HI. |
| 2 | U | R1 | *Nesosydne sulcata* | Delphacidae | Keanae nesosydne planthopper | HI. |
| 2 | U | R1 | *Oliarus consimilis* | Cixiidae | Kauai parti-colored oliarus planthopper. | HI. |
| 2 | U | R1 | *Oliarus discrepans* | Cixiidae | Oliarus wild cotton planthopper | HI. |
| 3B | N | R1 | *Oliarus lanaiensis* | Cixiidae | Lanai oliarus planthopper | HI. |
| 2 | U | R1 | *Oliarus lihue* | Cixiidae | Lihue oliarus planthopper | HI. |
| 2 | U | R1 | *Oliarus myoporicola* | Cixiidae | Barber's Point oliarus planthopper | HI. |
| 2 | U | R1 | *Oliarus priola* | Cixiidae | Priolan oliarus planthopper | HI. |
| 2 | U | R1 | *Paurotriozana adaptata* | Psyllidae | Oahu holio gall psyllid | HI |
| 2 | U | R1 | *Phyllococcus antricolens* | Pseudococcidae | Oahu iliahi gall mealybug | HI |
| 2 | U | R1 | *Phyllococcus oahuensis* | Pseudococcidae | Opuhe gall mealybug | HI |
| | | | LACEWINGS & ALLIES (Insects, Order Neuroptera). | | | |
| 2 | U | R1 | *Distoleon (=Eidoleon) perjerus* | Myrmeleontidae | Molokai antlion | HI. |
| 2 | U | R1 | *Micromus (=Nesothauma) haleakalae.* | Hemerobiidae | Haleakala micromus brown lacewing | HI. |
| 2 | U | R1 | *Micromus (=Pseudopsectra) cookeorum.* | Hemerobiidae | Cookes' brown lacewing | HI. |
| 2 | U | R1 | *Micromus (=Pseudopsectra) lobipennis.* | Hemerobiidae | Lobe-wing brown lacewing | HI. |
| 2 | U | R1 | *Micromus (=Pseudopsectra) swezeyi* | Hemerobiidae | Swezey's brown lacewing | HI. |
| 2 | U | R1 | *Nothochrysa californica* | Chrysopidae | San Francisco lacewing | CA. |
| 2 | U | R1 | *Oliarces clara* | Ithonidae | Cheese-weed moth lacewing | AZ, CA. |
| 2 | U | R1 | *Pseudopsectra usingeri* | Hemerobiidae | Usinger's brown lacewing | HI. |
| | | | BEETLES (Insects, Order Coleoptera). | | | |
| 2 | U | R1 | *Acneus beeri* | Eubriidae | Beer's false water penny (beetle) | OR. |
| 2 | U | R1 | *Acneus burnelli* | Eubriidae | Burnell's false water penny (beetle) | OR. |
| 1 | D | R1 | *Aegialia concinna* | Scarabaeidae | Ciervo aegialian scarab (beetle) | CA. |
| 2 | U | R1 | *Aegialia crescenta* | Scarabaeidae | Crescent Dune aegialian scarab (beetle). | NV. |
| 2 | U | R1 | *Aegialia hardyi* | Scarabaeidae | Hardy's aegialian scarab (beetle) | NV. |
| 2 | U | R1 | *Aegialia magnifica* | Scarabaeidae | Large aegialian scarab (beetle) | NV. |
| 2 | U | R1 | *Agabus rumppi* | Dytiscidae | Death Valley agabus diving beetle | CA, NV. |
| 2 | U | R1 | *Agonum belleri* | Carabidae | Beller's ground beetle | WA, OR. |
| 2 | U | R4 | *Alabameubria starki* | Eubriidae | Stark's false water penny (beetle) | AL. |
| 2 | D | R1 | *Anchotefflus gracilis* | Carabidae | Gracile anchotefflus ground beetle | HI |
| 2* | U | R4 | *Anomala exigua* | Scarabaeidae | Exiguous anomalan scarab (beetle) | FL. |
| 2* | U | R4 | *Anomala eximia* | Scarabaeidae | Archbold anomalan scarab (beetle) | FL. |
| 2* | U | R2 | *Anomala tibialis* | Scarabaeidae | Tibial scarab (beetle) | TX. |
| 2 | U | R1 | *Anthicus antiochensis* | Anthicidae | Antioch Dunes anthicid (beetle) | CA. |
| 2 | U | R1 | *Anthicus sacramento* | Anthicidae | Sacramento anthicid (beetle) | CA. |
| 2 | U | R1 | *Aphodius* sp. | Scarabaeidae | Crescent Dune aphodius scarab (beetle). | NV. |
| 2 | U | R1 | *Aphodius* sp. | Scarabaeidae | Big Dune aphodius scarab (beetle) | NV. |
| 2 | U | R1 | *Aphodius* sp. | Scarabaeidae | Sand Mountain aphodius scarab (beetle). | NV. |
| 2 | U | R4 | *Aphodius fordi* | Scarabaeidae | Ford's aphodius scarab (beetle) | GA. |
| 2 | U | R4 | *Aphodius troglodytes* | Scarabaeidae | Aphodius tortoise commensal scarab (beetle). | FL, SC. |
| 2 | U | R1 | *Apterocyclus honoluluensis* | Lucanidae | Kauai flightless stag beetle | HI. |
| 2 | U | R4 | *Arianops sandersoni* | Pselaphidae | Magazine Mountain mold beetle | AR. |
| 2 | U | R4 | *Ataenius superficialis* | Scarabaeidae | Big Pine Key ataenius dung beetle | FL. |
| 2 | U | R4 | *Ataenius woodruffi* | Scarabaeidae | Woodruff's ataenius dung beetle | FL. |
| 2* | U | R1 | *Atelothrus transiens* | Carabidae | Transient atelothrus ground beetle | HI |
| 2 | U | R1 | *Atractelmis wawona* | Elmidae | Wawona riffle beetle | CA. |
| 2 | U | R2 | *Batrisodes venyivi* | Pselaphidae | Helotes mold beetle | TX |
| 2* | D | R1 | *Blackburnia insignis* | Carabidae | Oahu blackburnia ground beetle | HI |
| 2 | U | R1 | *Chaetarthria leechi* | Hydrophilidae | Leech's chaetarthrian water scavenger beetle. | CA. |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R6 | *Chaetarthria utahensis* | Hydrophilidae | Utah chaetarthrian water scavenger beetle. | UT. |
| 2 | I | R1 | *Cicindela arenicola* | Cicindelidae | Idaho dunes tiger beetle | ID. |
| 2* | U | R2 | *Cicindela cazieri* | Cicindelidae | Cazier's tiger beetle | TX. |
| 2* | U | R2 | *Cicindela chlorocephala smythi* | Cicindelidae | Smyth's tiger beetle | TX. |
| 2 | D | R4 | *Cicindela highlandensis* | Cicindelidae | Scrub tiger beetle | FL. |
| 2 | U | R1 | *Cicindela hirticollis abrupta* | Cicindelidae | Sacramento Valley tiger beetle | CA. |
| 2* | U | R1 | *Cicindela latesignata obliviosa* | Cicindelidae | Oblivious tiger beetle | CA. |
| 1 | D | R6 | *Cicindela limbata albissima* | Cicindelidae | Coral Pink Dunes tiger beetle | UT. |
| 2 | U | R5 | *Cicindela marginipennis* | Cicindelidae | Cobblestone tiger beetle | AL, IN, MS, NH, NJ, OH, VT, NY*, PA*, WV*. |
| 2 | D | R6 | *Cicindela nevadica lincolniana* | Cicindelidae | Salt Creek tiger beetle | NE. |
| 2 | U | R2 | *Cicindela nevadica olmosa* | Cicindelidae | Los Olmos tiger beetle | TX, NM, Mexico?. |
| 2 | U | R2 | *Cicindela nigrocoerula subtropica* | Cicindelidae | Subtropical blue-black tiger beetle | TX. |
| 2* | U | R2 | *Cicindela obsoleta neojuvenalis* | Cicindelidae | Neojuvenile tiger beetle | TX. |
| 2 | U | R2 | *Cicindela oregona maricopa* | Cicindelidae | Maricopa tiger beetle | AZ. |
| 2 | U | R2 | *Cicindela politula barbarannae* | Cicindelidae | Barbara Ann's tiger beetle | TX. |
| 2 | U | R2 | *Cicindela politula petrophila* | Cicindelidae | Guadalupe Mountains tiger beetle | TX. |
| 2 | D | R1 | *Cicindela tranquebarica viridissima* | Cicindelidae | Greenest tiger beetle | CA. |
| 2 | U | R1 | *Cicindella hirticollis gravida* | Cicindelidae | Sandy beach tiger beetle | CA, Mexico. |
| 2 | U | R1 | *Cicindella tranquebarica* ssp. | Cicindelidae | San Joaquin tiger beetle | CA. |
| 2 | U | R1 | *Coelus globosus* | Tenebrionidae | Globose dune beetle | CA, Mexico. |
| 1 | D | R1 | *Coelus gracilis* | Tenebrionidae | San Joaquin dune beetle | CA. |
| 2 | U | R1 | *Coelus pacificus* | Tenebrionidae | Channel Islands dune beetle | CA. |
| 2 | U | R1 | *Coenonycha clementina* | Scarabaeidae | San Clemente Island coenonycha beetle. | CA. |
| 2 | U | R4 | *Copris gopheri* | Scarabaeidae | Copris tortoise commensal scarab (beetle). | FL. |
| 2* | U | R4 | *Cyclocephala miamiensis* | Scarabaeidae | Miami roundhead scarab (beetle) | FL. |
| 2 | U | R2 | *Cylloepus parkeri* | Elmidae | Parker's riffle beetle | AZ. |
| 2 | U | R2 | *Cymbiodyta arizonica* | Hydrophilidae | Chiricahua water scavenger beetle | AZ. |
| 2 | U | R1 | *Deinocossonus nesiotes* | Curculionidae | Oahu nesiotes weevil | HI. |
| 2 | U | R2 | *Deronectes neomexicana* | Dytiscidae | Bonita diving beetle | NM, TX. |
| 2 | U | R1 | *Deropristus deroderus* | Carabidae | Haleakala deropristus ground beetle | HI |
| 2* | U | R4 | *Desmopachria cenchramis* | Dytiscidae | Fig seed diving beetle | FL. |
| 2 | U | R3 | *Dicranopselaphus variegatus* | Eubriidae | Variegated false water penny (beetle). | IL. |
| 2* | U | R1 | *Disenochus micantipennis* | Carabidae | Kauai disenochus ground beetle | HI |
| 2 | U | R4 | *Dryobius sexnotatus* | Cerambycidae | Sixbanded longhorn beetle | KY, LA, MD, MS, OH, PA, AL*, AR*, IN*, KS*, MI*, MO*, TN*, VA*, WV*. |
| 3C | N | R5 | *Dubiraphia* sp. | Elmidae | Dubiraphian riffle beetle (undescribed). | ME. |
| 2 | U | R1 | *Dubiraphia brunnescens* | Elmidae | Brownish dubiraphian riffle beetle | CA. |
| 2 | U | R1 | *Dubiraphia giulianii* | Elmidae | Giuliani's dubiraphian riffle beetle | CA. |
| 2 | U | R4 | *Dubiraphia parva* | Elmidae | Little riffle beetle | OK, LA. |
| 2 | U | R3 | *Dubiraphia robusta* | Elmidae | Robust dubiraphian riffle beetle | WI. |
| 2 | U | R1 | *Eanus hatchi* | Elateridae | Hatch's click beetle | WA, Canada? |
| 2 | U | R1 | *Eopenthes ambiguus* | Elateridae | Ambiguous eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes arduus* | Elateridae | Arduous eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes auratus* | Elateridae | Golden eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes celatus* | Elateridae | Hidden eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes cognatus* | Elateridae | Cognatus eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes debilis* | Elateridae | Weak eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes deceptor* | Elateridae | Deceptive eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes funebris* | Elateridae | Death eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes germanus* | Elateridae | Germanus eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes kauaiensis* | Elateridae | Kauai eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes muticus* | Elateridae | Muticus eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes pallipes* | Elateridae | Pallipes eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes plebeius* | Elateridae | Common eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes politus* | Elateridae | Politus eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes tarsalis* | Elateridae | Tarsalis eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes tinctus* | Elateridae | Tinged eopenthes click beetle | HI |
| 2 | U | R1 | *Eopenthes unicolor* | Elateridae | Unicolored eopenthes click beetle | HI |
| 2 | U | R1 | *Glacicavicola bathysciodes* | Leiodidae | Blind cave leiodid (beetle) | ID. |
| 2 | U | R1 | *Glaresis arenata* | Scarabaeidae | Kelso Dune glaresis scarab (beetle) | CA. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R4 | *Gronocarus multispinosus* | Scarabaeidae | Spiny Florida sandhill scarab (beetle). | FL. |
| 2 | U | R4 | *Gymnocthebius maureenae* | Hydraenidae | Maureen's gymnocthebius minute moss beetle. | MS. |
| 2 | U | R2 | *Haideoporus texanus* | Dytiscidae | Texas cave diving beetle | TX. |
| 2* | U | R2 | *Haliplus nitens* | Haliplidae | Disjunct crawling water beetle | TX?, Canada. |
| 2 | U | R1 | *Heteramphus filicum* | Curculionidae | Oahu heteramphus fern weevil | HI. |
| 1 | U | R2 | *Heterelmis comalensis* | Elmidae | Comal Springs riffle beetle | TX. |
| 2 | U | R2 | *Heterelmis stephani* | Elmidae | Stephan's riffle beetle | AZ. |
| 2 | U | R1 | *Holcobius pikoensis* | Anobiidae | Piko anobiid beetle | HI. |
| 2* | U | R5 | *Horologion speokoites* | Carabidae | Arbuckle Cave ground beetle | WV. |
| 2 | U | R2 | *Huleechius marroni carolus* | Elmidae | Marron's San Carlos riffle beetle | AZ. |
| 2 | S | R5 | *Hydraena maureenae* | Hydraenidae | Maureen's hydraenan minute moss beetle. | VA. |
| 2 | U | R1 | *Hydrochara ricksecker*i | Hydrophilidae | Ricksecker's water scavenger beetle | CA. |
| 2 | U | R5 | *Hydrochus* sp. | Hydrophilidae | Seth Forest water scavenger beetle. | MD. |
| 2* | U | R5 | *Hydroporus elusivus* | Dytiscidae | Elusive hydroporus diving beetle | NH. |
| 2 | U | R4 | *Hydroporus folkertsi* | Dytiscidae | Folkerts' hydroporus diving beetle | AL. |
| 2 | U | R1 | *Hydroporus hirsutus* | Dytiscidae | Wooly hydroporus diving beetle | CA. |
| 2 | U | R1 | *Hydroporus leechi* | Dytiscidae | Leech's skyline diving beetle | CA. |
| 2 | U | R1 | *Hydroporus simplex* | Dytiscidae | Simple hydroporus diving beetle | CA. |
| 2 | U | R6 | *Hydroporus spangleri* | Dytiscidae | Spangler's hydroporus diving beetle | UT. |
| 2* | U | R4 | *Hydroporus sulphurius* | Dytiscidae | Sulphur Springs hydroporus diving beetle. | AR. |
| 2 | U | R6 | *Hydroporus utahensis* | Dytiscidae | Utah hydroporus diving beetle | UT. |
| 2 | U | R1 | *Hygrotus curvipes* | Dytiscidae | Curved-foot hygrotus diving beetle | CA. |
| 2 | S | R6 | *Hygrotus diversipes* | Dytiscidae | Narrow-foot hygrotus diving beetle | WY. |
| 2 | U | R1 | *Hygrotus fontinalis* | Dytiscidae | Travertine band-thigh diving beetle | CA. |
| 2 | U | R3 | *Hygrotus sylvanus* | Dytiscidae | Sylvan hygrotus diving beetle | MN, MA*, NY*. |
| 2 | U | R1 | *Itodacnus novicornis* | Elateridae | Necker itodacnus click beetle | HI. |
| 2 | U | R1 | *Itodacnus paradoxus* | Elateridae | Strange itodacnus click beetle | HI |
| 2 | U | R1 | *Lichnanthe albopilosa* | Scarabaeidae | White sand bear scarab (beetle) | CA. |
| 2 | U | R1 | *Lichnanthe ursina* | Scarabaeidae | Bumblebee scarab (beetle) | CA. |
| 2 | U | R2 | *Limnebius aridus* | Hydraenidae | Animas minute moss beetle | NM. |
| 2 | U | R2 | *Limnebius texanus* | Hydraenidae | Texas minute moss beetle | TX. |
| 2 | U | R6 | *Limnebius utahensis* | Hydraenidae | Utah minute moss beetle | UT. |
| 2* | U | R5 | *Lordithon niger* | Staphylinidae | Black lordithon rove beetle | AR, CT, DC, GA, IL, KY, MI, MO, NY, NC, OH, PA, TX, VA, WV, Canada. |
| 2 | U | R1 | *Lytta hoppingi* | Meloidae | Hopping's blister beetle | CA. |
| 2* | U | R1 | *Lytta inseparata* | Meloidae | Mojave Desert blister beetle | CA. |
| 2 | U | R2 | *Lytta mirifica* | Meloidae | Anthony blister beetle | NM*, Mexico. |
| 2* | U | R1 | *Lytta moesta* | Meloidae | Moestan blister beetle | CA. |
| 2 | U | R1 | *Lytta molesta* | Meloidae | Molestan blister beetle | CA. |
| 2 | U | R1 | *Lytta morrisoni* | Meloidae | Morrison's blister beetle | CA. |
| 2 | D | R1 | *Metromenus bardus* | Carabidae | Heavy metromenus ground beetle | HI |
| 2* | D | R1 | *Metromenus cuneipennis* | Carabidae | Wedge-winged metromenus ground beetle. | HI |
| 2* | U | R1 | *Metromenus oceanicus* | Carabidae | Oceanic metromenus ground beetle | HI |
| 2 | D | R1 | *Microcylleopus fomicoideus* | Elmidae | No common name | CA |
| 2 | D | R1 | *Microcylleopus similis* | Elmidae | No common name | CA |
| 2 | S | R6 | *Microcylloepus browni* | Elmidae | Brown's microcylloepus riffle beetle. | MT. |
| 2 | U | R4 | *Micronaspis floridana* | Lampyridae | Florida intertidal firefly | FL. |
| 2 | U | R1 | *Miloderes nelsoni* | Curculionidae | Nelson's miloderes weevil | CA. |
| 2 | U | R1 | *Miloderes rulieni* | Curculionidae | Rulien's miloderes weevil | NV. |
| 2 | U | R4 | *Mycotrupes pedester* | Scarabaeidae | Scrub Island burrowing scarab (beetle). | FL. |
| 2 | U | R1 | *Nebria darlingtoni* | Carabidae | South Forks ground beetle | CA. |
| 2 | U | R1 | *Nebria gebleri siskiyouensis* | Carabidae | Siskiyou ground beetle | CA. |
| 2 | U | R1 | *Nebria sahlbergii triad* | Carabidae | Trinity Alps ground beetle | CA. |
| 2 | U | R1 | *Necydalis rudei* | Cerambycidae | Rude's longhorn beetle | CA. |
| 2 | U | R1 | *Nesotocus giffordi* | Curculionidae | Gifford's nesotocus weevil | HI. |
| 2* | U | R1 | *Nesotocus kauaiensis* | Curculionidae | Kauai nesotocus weevil | HI. |
| 2 | U | R1 | *Nesotocus munroi* | Curculionidae | Munro's nesotocus weevil | HI. |
| 2 | U | R1 | *Ochthebius crassalus* | Hydraenidae | Wing-shoulder minute moss beetle | CA. |
| 2* | U | R3 | *Ochthebius putnamensis* | Hydraenidae | Putnam minute moss beetle | IN. |
| 2 | U | R1 | *Ochthebius reticulatus* | Hydraenidae | Wilbur Springs minute moss beetle | CA. |
| 2 | D | R4 | *Onthophagus polyphemi* | Scarabaeidae | Onthophagus tortoise commensal scarab (beetle). | SC, GA, FL, AL, MS. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R1 | *Onychobaris langei* | Curculionidae | Lange's El Segundo Dune weevil | CA. |
| 2 | U | R1 | *Oodemas breviscapum* | Curculionidae | Nihoa oodemas weevil | HI |
| 2 | U | R1 | *Oodemas erro* | Curculionidae | Wandering oodemas weevil | HI |
| 2 | U | R1 | *Oodemas laysanensis* | Curculionidae | Laysan oodemas weevil | HI |
| 2 | U | R1 | *Oodemas neckeri* | Curculionidae | Necker oodemas weevil | HI |
| 2 | U | R4 | *Optioservus browni* | Elmidae | Brown's optioservus riffle beetle | AR. |
| 2 | U | R1 | *Optioservus canus* | Elmidae | Pinnacles optioservus riffle beetle | CA. |
| 2 | S | R6 | *Optioservus phaeus* | Elmidae | Scott optioservus riffle beetle | KS. |
| 2* | U | R1 | *Paleoxenus dohrni* | Eucnemidae | Dohrn's elegant eucnemid beetle | CA. |
| 2 | U | R4 | *Peltotrupes youngi* | Scarabaeidae | Ocala burrowing scarab (beetle) | FL. |
| 2 | U | R1 | *Pentarthrum blackburni* | Curculionidae | Blackburn's pentarthrum weevil | HI. |
| 2 | U | R1 | *Pentarthrum obscura* | Curculionidae | Obscure pentarthrum weevil | HI. |
| 2 | U | R4 | *Photuris* sp. | Lampyridae | Turtle Mound firefly | FL. |
| 2 | U | R4 | *Photuris brunnipennis floridana* | Lampyridae | Everglades brownwing firefly | FL. |
| 2 | U | R1 | *Plagiithmysus swezeyanus* | Cerambycidae | Ahinahina long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus alani* | Cerambycidae | Maui alani long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus annectans* | Cerambycidae | Kauai annectant long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus bidensae* | Cerambycidae | Bidens long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus bridwelli* | Cerambycidae | Bridwell's long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus claviger* | Cerambycidae | Hawaii clubbed long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus decorus* | Cerambycidae | Hawaii decorus long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus dubautianus* | Cerambycidae | Maui dubautia long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus elegans* | Cerambycidae | Hawaii elegant long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus forbesianus* | Cerambycidae | Forbes' Kauai long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus forbesii* | Cerambycidae | Forbes' Maui long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus fractus* | Cerambycidae | Molokai fractured long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus greenwelli* | Cerambycidae | Greenwell's long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus haasi* | Cerambycidae | Haas' 'iliahi long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus ignotus* | Cerambycidae | Kauai kalia long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus koae* | Cerambycidae | Maui koa long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus kohalae* | Cerambycidae | Kohala long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus kraussi* | Cerambycidae | Krauss' long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus kuhnsi* | Cerambycidae | Kuhns' Oahu long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus lanaiensis* | Cerambycidae | Lanai 'ohi'a long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus laticollis* | Cerambycidae | Maui wide-necked long-horned beetle. | HI |
| 2 | U | R1 | *Plagithmysus longicollis* | Cerambycidae | Long-necked long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus mezoneuri* | Cerambycidae | Hawaii uhiuhi long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus muiri* | Cerambycidae | Muir's ala'a long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus nihoae* | Cerambycidae | Nihoa long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus paludis* | Cerambycidae | Kauai swamp long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus permundus* | Cerambycidae | Kauai 'ahakea long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus pipturicola* | Cerambycidae | Maui mamaki long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus platydesmae* | Cerambycidae | Pilo kea long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus podagricus* | Cerambycidae | Hawaii podagricus long-horned beetle. | HI |
| 2 | U | R1 | *Plagithmysus polystictus* | Cerambycidae | Kauai holio long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus pulvillatus* | Cerambycidae | Ohi'a long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus rubi* | Cerambycidae | Maui 'akala long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus simillimus* | Cerambycidae | Maui similar long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus simplicollis* | Cerambycidae | Simple-necked long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus speculifer* | Cerambycidae | Maui speculifer long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus sulphurescens* | Cerambycidae | Hawaii opuhe long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus superstes* | Cerambycidae | Oahu super long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus swezeyi* | Cerambycidae | Swezey's long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus sylvai* | Cerambycidae | Maui forest long-horned beetle | HI |
| 2 | U | R1 | *Plagithmysus vicinus* | Cerambycidae | Hawaii alani long-horned beetle | HI |
| PE | U | R1 | *Pleocoma conugens conjugens* | | Santa Cruz rain beetle | CA |
| 2 | U | R4 | *Polylamina pubescens* | Scarabaeidae | Wooly Gulf dune scarab (beetle) | FL. |
| 2 | U | R1 | *Polyphylla anteronivea* | Scarabaeidae | Saline Valley snow-front June beetle | CA. |
| 2 | U | R6 | *Polyphylla avittata* | Scarabaeidae | Spotted Warner Valley Dunes June beetle. | UT. |
| PE | D | R1 | *Polyphylla barbata* | Scarabaeidae | Mount Hermon (=barbate) June beetle. | CA. |
| 2 | U | R1 | *Polyphylla erratica* | Scarabaeidae | Death Valley June beetle | CA. |
| 2 | U | R1 | *Polyphylla nubila* | Scarabaeidae | Atascodero June beetle | CA. |
| 2 | U | R1 | *Polyphylla stellata* | Scarabaeidae | Delta June beetle | CA. |
| 2 | U | R1 | *Proterhinus* 72 spp. | Proterhinidae | Hawaiian proterhinid beetles | HI. |
| 2 | U | R2 | *Psephenus arizonensis* | Psephenidae | Arizona water penny (beetle) | AZ. |
| 2 | U | R2 | *Psephenus montanus* | Psephenidae | White Mountains water penny (beetle). | AZ. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 3C | N | R4 | *Pseudanophthalmus acherontis* | Carabidae | Snail shell (=Echo) cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus assimilis* | Carabidae | West Wills Valley cave beetle | AL. |
| 2 | U | R4 | *Pseudanophthalmus audax* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus avernus* | Carabidae | Avernus cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus bendermani* | Carabidae | Benderman's cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus caecus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus calcareus* | Carabidae | Limestone Cave beetle | KY. |
| 2 | U | R4 | *Pseudanophthalmus cataryctos* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus catherinae* | Carabidae | Catherine's cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus conditus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus cordicollis* | Carabidae | Little Kennedy Cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus deceptivus* | Carabidae | Deceptive cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus egberti* | Carabidae | Narrows (=New River Valley) Cave beetle. | VA. |
| 2 | U | R4 | *Pseudanophthalmus engelhardti* | Carabidae | Engelhardt's cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus exoticus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus fastigatus* | Carabidae | Tapered cave beetle | GA. |
| 2 | U | R4 | *Pseudanophthalmus fowlerae* | Carabidae | Fowler's cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus frigidus* | Carabidae | Icebox Cave beetle | KY. |
| 2 | U | R5 | *Pseudanophthalmus fuscus fuscus (=P. subaequalis).* | Carabidae | Greenbrier Valley cave beetle | WV. |
| 2 | U | R4 | *Pseudanophthalmus georgiae* | Carabidae | Georgian cave beetle | GA. |
| 2 | U | R4 | *Pseudanophthalmus globiceps* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus hadenoecus* | Carabidae | Timber Ridge Cave beetle | WV. |
| 2 | S | R5 | *Pseudanophthalmus hirsutus* | Carabidae | Cudjo's (=Lee County) Cave beetle | TN, VA. |
| 1 | S | R5 | *Pseudanophthalmus holsingeri* | Carabidae | Holsinger's cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus horni* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus hortulanus* | Carabidae | Garden cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus hubbardi* | Carabidae | Hubbard's cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus hubrichti* | Carabidae | Hubricht's cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus hypolithos* | Carabidae | Stone-dwelling cave beetle | KY. |
| 2 | U | R3 | *Pseudanophthalmus illinoisensis* | Carabidae | Illinois cave beetle | IL. |
| 2 | U | R4 | *Pseudanophthalmus inquisitor* | Carabidae | Searcher cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus insularis* | Carabidae | Baker Station Cave beetle | TN. |
| 2 | U | R5 | *Pseudanophthalmus intersectus* | Carabidae | Crossroads cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus jonesi* | Carabidae | Grassy Cove cave beetle | TN. |
| 2 | U | R3 | *Pseudanophthalmus krameri* | Carabidae | Kramer's cave beetle | OH. |
| 2* | D | R5 | *Pseudanophthalmus krekeleri* | Carabidae | Rich Mountain cave beetle | WV. |
| 2 | U | R5 | *Pseudanophthalmus lallemanti* | Carabidae | Lallemant's cave beetle | WV. |
| 2 | U | R5 | *Pseudanophthalmus limicola* | Carabidae | Shenandoah (=mud-dwelling) cave beetle. | VA. |
| 2 | U | R4 | *Pseudanophthalmus longiceps* | Carabidae | Long-headed cave beetle | TN, VA. |
| 2 | U | R4 | *Pseudanophthalmus major* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus montanus* | Carabidae | Dry Fork Valley cave beetle | WV. |
| 2 | U | R5 | *Pseudanophthalmus nelsoni* | Carabidae | Nelson's cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus nortoni* | Carabidae | Norton's cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus occidentalis* | Carabidae | Cane Creek (=western) cave beetle | TN. |
| 2 | U | R3 | *Pseudanophthalmus ohioensis* | Carabidae | Ohio cave beetle | OH. |
| 2 | U | R4 | *Pseudanophthalmus pallidus* | Carabidae | Pale cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus paradoxus* | Carabidae | Sensabush (=ridgetop) cave beetle | TN. |
| 2 | U | R5 | *Pseudanophthalmus parvicollis* | Carabidae | Thin-neck cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus parvus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus paulus* | Carabidae | Nobletts Cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus paynei* | Carabidae | Payne's cave beetle | TN. |
| 2 | U | R5 | *Pseudanophthalmus petrunkevitchi* | Carabidae | Petrunkevitch's cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus pholeter* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus pontis* | Carabidae | Natural Bridge cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus potomaca potomaca.* | Carabidae | South Branch Valley cave beetle | WV, VA. |
| 2 | U | R5 | *Pseudanophthalmus potomaca senecae.* | Carabidae | Seneca cave beetle | WV. |
| 2 | U | R5 | *Pseudanophthalmus praetermissus* | Carabidae | Overlooked cave beetle | VA. |
| 2 | U | R5 | *Pseudanophthalmus punctatus* | Carabidae | Spotted cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus pusillus* | Carabidae | Martin (=tiny) cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus puteanus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus quadratus* | Carabidae | Straley's Cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus rogersae* | Carabidae | Rogers' cave beetle | KY. |
| 2 | U | R5 | *Pseudanophthalmus sanctipauli* | Carabidae | Saint Paul cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus scholasticus* | Carabidae | Sawmill Hollow (=schoolhouse) cave beetle. | KY. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R4 | *Pseudanophthalmus scutilis* | Carabidae | New Mammoth Cave (=lean) cave beetle. | TN. |
| 2 | U | R4 | *Pseudanophthalmus sequoyah* | Carabidae | Sequoyah Caverns cave beetle | AL. |
| 2 | U | R5 | *Pseudanophthalmus sericus* | Carabidae | Silken cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus sidus* | Carabidae | Meridith Cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus simplex* | Carabidae | Flyn's hick (=simple) cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus simulans* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus tenebrosus* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R5 | *Pseudanophthalmus thomasi* | Carabidae | Thomas' cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus tiresias* | Carabidae | Indian Grave Point cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus troglodytes* | Carabidae | (Cave beetle, no common name) | KY |
| 2 | U | R4 | *Pseudanophthalmus unionis* | Carabidae | Union County cave beetle | TN. |
| 2 | U | R4 | *Pseudanophthalmus ventus* | Carabidae | Blowing Cave beetle | TN. |
| 2 | U | R5 | *Pseudanophthalmus virginicus (=Aphanotrechus v.).* | Carabidae | Maiden Spring cave beetle | VA. |
| 2 | U | R4 | *Pseudanophthalmus wallacei* | Carabidae | Wallace's cave beetle | TN. |
| 2 | U | R5 | *Pseudanopthalmus* sp. | Carabidae | Maryland cave beetle | MD. |
| 2 | U | R5 | *Pseudanopthalmus gracilis* | Carabidae | (Cave beetle, no common name) | VA. |
| 2 | U | R5 | *Pseudanopthalmus sylvaticus* | Carabidae | (Cave beetle, no common name) | WV. |
| 2 | U | R5 | *Pseudanopthalmus vicarius* | Carabidae | (Cave beetle, no common name) | VA. |
| 2* | U | R1 | *Pseudobroscus lentus* | Carabidae | Haleakala pseudobroscus ground beetle. | HI |
| 2 | U | R1 | *Pseudocotalpa andrewsi* | Scarabaeidae | Andrews' dune scarab (beetle) | CA. |
| 2 | U | R1 | *Pseudocotalpa giulianii* | Scarabaeidae | Giuliani's dune scarab (beetle) | NV. |
| 2 | U | R2 | *Pterostichus rothi* | Carabidae | Roth's blind ground beetle | OR. |
| 2 | U | R1 | *Pterostichus rothi* | Carabidae | Roth's blind ground beetle | OR |
| 2 | U | R2 | *Rhadine infernalis* | Carabidae | (Ground beetle, no common name) | TX |
| 2 | U | R4 | *Rhadine ozarkensis* | Carabidae | (Ground beetle, no common name) | AR. |
| 2 | U | R1 | *Rhyncogonus biformis* | Curculionidae | Necker rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus blackburni* | Curculionidae | Blackburn's rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus bryani* | Curculionidae | Laysan rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus exsul* | Curculionidae | Nihoa rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus freycinetiae* | Curculionidae | Ie'ie rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus giffardi* | Curculionidae | Giffard's rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus koebelei* | Curculionidae | Koebele's rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus lahainae* | Curculionidae | Lahaina rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus lanaiensis* | Curculionidae | Lanai rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus molokaiensis* | Curculionidae | Molokai rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus mutatus* | Curculionidae | Mutated rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus obsoletus* | Curculionidae | Obsolete rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus oleae* | Curculionidae | Olopua rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus segnis fordi* | Curculionidae | Ford's rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus segnis segnis* | Curculionidae | Slow rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus sharpi* | Curculionidae | Sharp's rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus simplex* | Curculionidae | Simple rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus squamiger* | Curculionidae | Scaley rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus stygius* | Curculionidae | Black rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus sylvicola* | Curculionidae | Kauai forest rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus tuberculatus* | Curculionidae | Tubercled rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus vittatus* | Curculionidae | Striped rhyncogonus weevil | HI |
| 2 | U | R1 | *Rhyncogonus welchii* | Curculionidae | Welch's rhyncogonus weevil | HI |
| 2 | U | R1 | *Scaphinotus behrensi* | Carabidae | (Ground beetle, no common name) | CA. |
| 2 | U | R4 | *Scaphinotus inflectus* | Carabidae | (Ground beetle, no common name) | AR. |
| 2 | U | R1 | *Scaphinotus longiceps* | Carabidae | Humboldt ground beetle | CA. |
| 2 | U | R4 | *Scaphinotus parisiana* | Carabidae | (Ground beetle, no common name) | AR. |
| 2 | U | R1 | *Serica* sp. | Scarabaeidae | Sand Mountain serican scarab (beetle). | NV. |
| 2 | U | R1 | *Serica* sp. | Scarabaidae | Crescent Dune serican scarab (beetle). | NV. |
| 2 | U | R4 | *Serica frosti* | Scarabaeidae | Frost's spring serican scarab (beetle). | FL. |
| 2* | U | R4 | *Serica tantula* | Scarabaeidae | Tantula serican scarab (beetle) | FL. |
| 2 | U | R4 | *Spanglerogyrus albiventris* | Gyrinidae | Red Hills unique whirligig (beetle) | AL. |
| 2 | U | R5 | *Sphaeroderus schaumi* ssp. | Carabidae | Schaum's Blue Ridge ground beetle | VA. |
| 2 | S | R1 | *Stenelmis calida calida* | Elmidae | Devil's Hole warm spring riffle beetle | NV. |
| 2 | U | R1 | *Stenelmis calida moapa* | Elmidae | Moapa warm springs riffle beetle | NV. |
| 2 | U | R3 | *Stenelmis douglasensis* | Elmidae | Douglas stenelmis riffle beetle | WI, IN*, MI*. |
| 2 | S | R4 | *Stenelmis gammoni* | Elmidae | Gammon's stenelmis riffle beetle | NC, AL, VA. |
| 2 | U | R1 | *Stenotrupis pritchardiae* | Curculionidae | Nihoa stenotrupis weevil | HI. |
| 1 | U | R2 | *Stygoparnus comalensis* | Dryopidae | Comal Springs dryopid beetle | TX. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R4 | *Trigonopelastes floridana* | Scarabaeidae | Scrub palmetto flower scarab (beetle). | FL. |
| 2 | D | R1 | *Trigonoscuta* sp. | Curculionidae | Doyen's trigonoscuta dune weevil | CA. |
| 2 | U | R1 | *Trigonoscuta blaisdelli* | Curculionidae | Blaisdell trigonoscuta weevil | CA. |
| 2* | U | R1 | *Trigonoscuta brunnotasselata* | Curculionidae | Brown-tassel trigonoscuta weevil | CA. |
| 2 | U | R1 | *Trigonoscuta catalina* | Curculionidae | Santa Catalina Island trigonscuta weevil. | CA. |
| 2 | U | R1 | *Trigonoscuta dorothea dorothea* | Curculionidae | Dorothy's El Segundo Dune weevil | CA. |
| 2 | U | R1 | *Trigonoscuta stantoni* | Curculionidae | Santa Cruz Island shore weevil | CA. |
| 2 | U | R4 | *Trox howelli* | Scarabaeidae | Caracara commensal scarab (beetle) | FL. |
| 1 | S | R6 | *Zaitzevia thermae* | Elmidae | Warm spring zaitzevian riffle beetle | MT. |
| | | | SCORPIONFLIES & ALLIES (Insects, Order Mecoptera). | | | |
| 2 | U | R1 | *Orbittacus obscurus* | Bittacidae | Gold rush hanging fly | CA. |
| | | | FLIES (Insects, Order Diptera). | | | |
| 2 | U | R1 | *Ablautus schlingeri* | Asilidae | Oso Flaco robber fly | CA. |
| 2 | U | R4 | *Asaphomyia floridensis* | Tabanidae | Florida asaphomyian tabanid fly | FL. |
| 2* | U | R2 | *Asaphomyia texanus* | Tabanidae | Texas asaphomyian tabanid fly | TX. |
| 2 | U | R1 | *Bryania bipunctata* | Asteriidae | Nihoa two-spotted asteriid fly | HI. |
| 2 | N | R1 | *Campsicnemus mirabilis (=Emperoptera m.).* | Dolichopodidae | Ko'olau spurwing long-legged fly | HI. |
| 2* | N | R1 | *Chersodromia hawaiiensis* | Empididae | Hawaiian chersodromian dance fly | HI. |
| 2* | U | R1 | *Cophura hurdi* | Asilidae | Antioch cophuran robberfly | CA. |
| 2* | N | R1 | *Drosophila lanaiensis* | Drosophilidae | Lanai pomace fly | HI. |
| 2 | U | R1 | *Efferia antiochi* | Asilidae | Antioch efferian robberfly | CA. |
| 2 | U | R4 | *Eulonchus marialiciae* | Acroceridae | Mary Alice's smallheaded fly | NC. |
| 2 | U | R4 | *Merycomyia brunnea* | Tabanidae | Brown merycomyian tabanid fly | FL. |
| 2 | U | R1 | *Metapogon hurdi* | Asilidae | Hurd's metapogon robberfly | CA. |
| 2 | U | R4 | *Mixogaster delongi* | Syrphidae | Delong's mixogaster flower fly | FL. |
| 2 | U | R4 | *Nemopalpus nearcticus* | Psychodidae | Sugarfoot moth fly | FL. |
| 2 | U | R1 | *Paracoenia calida* | Ephydridae | Wilbur Springs shore fly | CA. |
| | | | BUTTERFLIES & MOTHS (Insects, Order Lepidoptera). | | | |
| 2 | D | R5 | *Acronicta albarufa* | Noctuidae | Albarufan dagger moth | AR, MA, MO, NJ, Canada, CO*, CT*, GA*, NC*, NM*, NY*, OH*, PA*. |
| 2 | D | R1 | *Adella oplerella* | Incurvariidae | Opler's longhorn moth | CA. |
| 2 | U | R2 | *Adhemarius blanchardorum* | Sphingidae | Blanchards' sphinx moth | TX. |
| 2 | S | R4 | *Agrotis buchholzi* | Noctuidae | Buchholz' dart moth | NC, NJ. |
| 2* | U | R1 | *Agrotis cremata* | Noctuidae | Cremata agrotis noctuid moth | HI |
| 2* | U | R1 | *Agrotis melanoneura* | Noctuidae | Black-veined agrotis noctuid moth | HI |
| 2* | U | R1 | *Agrotis microreas* | Noctuidae | Microreas agrotis noctuid moth | HI |
| 2* | U | R1 | *Agrotis potophila* | Noctuidae | Potophila agrotis noctuid moth | HI |
| 2 | U | R4 | *Anaea troglodyta floridalis* | Nymphalidae | Florida leafwing (butterfly) | FL. |
| 2* | U | R1 | *Anomis vulpicolor* | Noctuidae | Red anomis noctuid moth | HI |
| 2* | U | R3 | *Apamea smythi* | Noctuidae | Smyth's apamea moth | IL, VA*. |
| 2 | U | R1 | *Areniscythris brachypteris* | Scythrididae | Oso Flaco flightless moth | CA. |
| 2* | U | R5 | *Argyresthia castaneela* | Argyresthiidae | Chestnut ermine moth | NH, VT. |
| 2 | D | R5 | *Atrytone arogos arogos* | Hesperiidae | Eastern beard grass skipper | AL, FL, MS, NC, NY, NJ, SC, GA*, PA*, VA*. |
| 2 | U | R1 | *Carolella busckana* | Phaloniidae | Busck's gall moth | CA. |
| 2 | U | R1 | *Carposina (=Heterocrossa) viridis* | Carposinidae | Green carposinid moth | HI. |
| 2 | U | R1 | *Carterocephalus palaemon* ssp. | Hesperiidae | Sonoma arctic skipper | CA. |
| 2 | U | R5 | *Catocala pretiosa pretiosa* | Noctuidae | Precious underwing (moth) | MA, NJ, CT*, NH*, NY*, PA*, OH*, MD*, VA*. |
| 2 | U | R1 | *Cercyonis pegala* ssp. | Nymphalidae | Carson Valley wood nymph (butterfly). | CA, NV. |
| 2 | U | R1 | *Cercyonis pegala* ssp. | Nymphalidae | White River wood nymph (butterfly) | NV. |
| 2 | U | R1 | *Chlosyne acastus* | Nymphalidae | Spring Mountains acastus checkerspot (butterfly). | NV. |
| 2 | U | R1 | *Chlosyne leanira osoflaco* | Nymphalidae | Oso Flaco patch butterfly | CA. |
| 2 | U | R1 | *Coenonympha tullia yontockett* | Nymphalidae | Yontocket saytr (butterfly) | CA. |
| 2 | N | R5 | *Coleophora leucochrysella* | Coleophoridae | Chestnut casebearer moth | CT, PA*. |
| 2 | U | R5 | *Crambus daeckeellus* | Pyralidae | Daecke's pyralid moth | NJ. |
| 2 | U | R6 | *Decodes stevensi* | Tortricidae | Stevens' tortricid moth | CO. |
| 2* | U | R5 | *Ectodemia castaneae* | Nepticulidae | American chestnut nepticulid moth | MD. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2* | U | R5 | *Ectodemia phleophaga* | Nepticulidae | Phleophagan chestnut nepticulid moth. | MD. |
| 2 | U | R3 | *Erythroecia hebardi* | Noctuidae | Hebard's noctuid moth | OH, NJ, VA*. |
| 2 | U | R6 | *Ethmia monachella* | Ethmiidae | Lost ethmiid moth | CO. |
| 2 | U | R5 | *Euchlaena milnei* | Geometridae | (Looper moth, no common name) | VA, WI, WV, IL*, NC*, OH*. |
| 2 | U | R1 | *Euchloe hyantis andrewsi* | Pieridae | Andrew's marble butterfly | CA. |
| 2 | U | R1 | *Eucosma hennei* | Olethreutidae | Henne's eucosman moth | CA. |
| 2 | S | R4 | *Eumaeus atala florida* | Lycaenidae | Florida atala (butterfly) | FL. |
| 2 | U | R1 | *Euphilotes battoides* ssp. | Lycaenidae | Baking Powder Flat blue (butterfly) | NV. |
| 2 | U | R1 | *Euphilotes enoptes* ssp. | Lycaenidae | Dark blue (butterfly) | NV. |
| 2 | U | R1 | *Euphilotes rita* ssp. | Lycaenidae | Sand Mountain blue (butterfly) | NV. |
| 2 | U | R1 | *Euphilotes rita mattoni (=Shijimaeoides r. m.).* | Lycaenidae | Mattoni's blue (butterfly) | NV. |
| 2 | U | R1 | *Euphydryas anicia morandi* | Nymphalidae | Morand's checkerspot (butterfly) | NV. |
| 2 | U | R1 | *Euphydryas editha monoensis* | Nymphalidae | Mono checkerspot (butterfly) | CA, NV. |
| PE | D | R1 | *Euphydryas editha quino (=E. e. wrighti).* | Nymphalidae | Quino checkerspot (butterfly) | CA, Mexico. |
| 2 | U | R4 | *Euphyes bayensis* | Hesperiidae | (Skipper, no common name) | MS. |
| 2 | U | R1 | *Euphyes vestris harbisoni* | Hesperiidae | Dun skipper | CA. |
| 2 | U | R1 | *Glyphodes (=Margaronia) cyanomichla.* | Pyralidae | Blue glyphodes moth | HI. |
| 2 | U | R1 | *Glyphodes (=Margaronia) exaula* | Pyralidae | Green glyphodes moth | HI. |
| 2 | D | R5 | *Hemileuca* sp. | Saturniidae | (Buckmoth, no common name) | NY, Canada. |
| 2 | U | R4 | *Hemipachnolia subporphyria subporphyria.* | Noctuidae | Venus flytrap noctuid (moth) | NC |
| 2 | U | R4 | *Hepialus sciophanes* | Hepialidae | (Ghost moth, no common name) | NC, VA |
| 2 | U | R1 | *Hesperia comma* ssp. | Hesperiidae | Spring Mountain comma skipper | NV. |
| 2 | U | R3 | *Hesperia dacotae* | Hesperiidae | Dakota skipper | MN, IA, SD, ND, IL*, Canada. |
| 2 | U | R1 | *Hesperia mirimae* ssp. | Hesperiidae | White Mountains skipper | CA, NV. |
| 2 | U | R1 | *Hesperia uncas* ssp. | Hesperiidae | Railroad Valley skipper | NV. |
| 2 | D | R1 | *Hesperopsis gracielae* | Hesperiidae | MacNeill sooty wing skipper | AZ, CA, NV, UT. |
| 1 | U | R1 | *Icaricia icariodes* ssp. | Lycaenidae | Point Reyes blue (butterfly) | CA. |
| 2 | D | R1 | *Icaricia icarioides fenderi* | Lycaenidae | Fender's blue (butterfly) | OR. |
| 2 | U | R1 | *Icaricia icarioides moroensis* | Lycaenidae | Morro Bay blue (butterfly) | CA. |
| 2 | | R4 | *Idia gopheri* | Noctuidae | Tortoise commensal noctuid moth | FL. |
| 2 | U | R1 | *Incisalia mossii* ssp. | Lycaenidae | San Gabriel Mountains elfin (butterfly). | CA. |
| 2 | U | R1 | *Incisalia mossii* ssp. | Lycaenidae | Marin elfin (butterfly) | CA |
| 2 | U | R1 | *Kauaiina (=Fletcherana) ioxantha* | Geometridae | Ioxanthan looper (moth) | HI. |
| 2* | U | R5 | *Lambdina canitiaria* | Geometridae | (Looper moth, no common name) | NY |
| 2 | D | R1 | *Limenitus archippus lahontani* | Nymphalidae | Nevada viceroy (butterfly) | NV. |
| 2 | U | R1 | *Limenitus weidemeyerii nevadae* | Nymphalidae | Nevada admiral (butterfly) | NV. |
| 3C | N | R5 | *Lithophane lemmeri* | Noctuidae | Lemmer's pinnion (=noctuid) moth | FL, MD, NC, NJ, SC, VA, CT*. |
| 2* | U | R4 | *Luperina trigona* | Noctuidae | (Noctuid moth, no common name) | TN. |
| 2 | S | R5 | *Lycaena dorcas claytoni* | Lycaenidae | Clayton's copper (butterfly) | ME, Canada. |
| 2 | U | R1 | *Lycaena hermes* | Lycaenidae | Hermes copper (butterfly) | CA, Mexico. |
| 2 | U | R1 | *Lycaena rubicus* ssp. | Lycaenidae | White Mountains copper (butterfly) | CA, NV. |
| 2 | U | R4 | *Lytrosis permagnaria* | Geometridae | (Looper moth, no common name) | GA, KY, MO, TN, MS*. |
| 1 | D | R1 | *Manduca blackburni* | Sphingidae | Blackburn's sphinx moth | HI. |
| 2 | U | R5 | *Merolonche dolli* | Noctuidae | Doll's merolonche | MI, MN, NJ, NY, PA. |
| 2 | U | R4 | *Mitoura (=Callophrys) gryneus sweadneri.* | Lycaenidae | Sweadner's olive hairstreak (butterfly). | FL. |
| 2 | U | R1 | *Mitoura thornei* | Lycaenidae | Thorne's hairstreak (butterfly) | CA. |
| 2 | U | R1 | *Oeobia dryadopa* | Pyralidae | 'Ohenaupaka oeobian moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylelpta) asaphombra* | Pyralidae | 'Ohe omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) anastrepta* | Pyralidae | Molokai sedge omoides moth | HI. |
| 2 | U | R1 | *Omoides (=Hedylepta) anastreptoides.* | Pyralidae | Kohala Mountain sedge omoides moth. | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) euryprora* | Pyralidae | Ola'a banana omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) fullawayi* | Pyralidae | Fullaway's banana omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) giffardi* | Pyralidae | Giffard's 'ohe omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) iridias* | Pyralidae | Kilauea pa'iniu omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) meyricki* | Pyralidae | Meyrick's banana omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) monogona* | Pyralidae | Hawaiian bean leafroller (moth) | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) musicola* | Pyralidae | Maui banana omoides moth | HI. |
| 2* | U | R1 | *Omoides (=Hedylepta) pritchardii* | Pyralidae | Hawaiian lo'ulu omoides moth | HI. |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R1 | *Panoquina errans (=panoquinoides e.).* | Hesperiidae | Wandering (=salt marsh) skipper | CA, Mexico. |
| 2 | S | R5 | *Papaipema* sp. | Noctuidae | Flypoison borer moth | PA. |
| 2 | U | R5 | *Papaipema aerata* | Noctuidae | (Noctuid moth, no common name) | IL*, MI*, NH*, NJ*, NY*, PA*, Canada (Que.) |
| 2* | U | R3 | *Papaipema aweme* | Noctuidae | (Noctuid moth, no common name) | MI, NY, Canada. |
| 2 | U | R3 | *Papaipema eryngii* | Noctuidae | Rattlesnake-master borer moth | IL, IN*. |
| 2 | U | R5 | *Papaipema sulphurata* | Noctuidae | Decodon borer moth | MA. |
| 2* | U | R1 | *Petrochroa neckerensis* | Gracilariidae | Necker petrochroan leaf miner (moth). | HI. |
| 2* | D | R1 | *Philodoria* sp. | Gracillariidae | Oahu hesperonmannia philodoria moth. | HI |
| 2* | D | R1 | *Philodoria naenaeiella* | Gracillariidae | Kauai naenae philodoria moth | HI |
| 2* | U | R1 | *Philodoria ureraella* | Gracillariidae | Oahu opuhe leaf mining moth | HI |
| 2 | U | R1 | *Philotiella speciosa bohartorum* | Lycaenidae | Boharts' blue (butterfly) | CA. |
| 2 | U | R3 | *Phyciodes batesi* | Nymphalidae | Tawny crescent butterfly | NC, VA, NY, MI, WI, ND, SD, MN, Canada, GA*, WV*, PA*, NJ*. |
| 2 | U | R1 | *Phyciodes pascoensis* ssp. | Nymphalidae | Steptoe Valley crescentspot (butterfly). | NV. |
| 2 | U | R1 | *Plebulina emigdionis (=Plebejus e.)* | Lycaenidae | San Emigdio blue (butterfly) | CA. |
| 2 | U | R1 | *Plejebus icarioides* ssp. | Lycaenidae | White Mountains icarioides blue (butterfly). | CA, NV. |
| 2 | U | R1 | *Plejebus icarioides* ssp. | Lycaenidae | Spring Mountains icarioides blue (butterfly). | CA, NV. |
| 2 | U | R1 | *Plejebus saepiolus* ssp. | Lycaenidae | San Gabriel Mountains blue (butterfly). | CA. |
| 2 | U | R1 | *Plejebus saepiolus* ssp. | Lycaenidae | White Mountains saepiolus blue (butterfly). | CA, NV. |
| 2 | D | R1 | *Plejebus shasta charlestonensis* | Lycaenidae | Spring Mountains blue (butterfly) | NV. |
| 2* | D | R1 | *Plutella capparidis* | Plutellidae | Oahu capper moth | HI |
| 2 | U | R5 | *Poanes massasiot chermocki* | Hesperiidae | Chermock's mulberry wing skipper | MD. |
| 2 | U | R1 | *Polites mardon* | Hesperiidae | Mardon skipper | CA. |
| 2 | U | R1 | *Polites sabuleti albomontana* | Hesperiidae | White Mountains sandhill skipper | CA, NV. |
| 2 | U | R1 | *Polites sabuleti sinemaculata* | Hesperiidae | Denio sandhill skipper | NV. |
| 2 | U | R4 | *Problema bulenta* | Hesperiidae | Rare skipper | GA, MD, NC, SC, VA. |
| 2 | U | R1 | *Psammobotys fordi* | Pyralidae | Ford's sand dune moth | CA. |
| 2 | U | R1 | *Pseudocopaeodes eunus eunus* | Hesperiidae | Alkali (=wandering) skipper | CA, NV, AZ?, Mexico?. |
| 2 | U | R4 | *Pyreferra ceromatica* | Noctuidae | Annointed sallow (=ceromatic noctuid) moth. | FL, SC, AL*, CT*, IN*, MA*, ME*, NC*, NJ*, NY*, PA*, Canada*. |
| PE | U | R1 | *Pyrgus ruralis lagunae* | Hesperiidae | Laguna Mountains skipper | CA. |
| 2 | D | R5 | *Pyrgus wyandot* | Hesperiidae | Grizzled skipper | MD, MI, NY, OH, PA, VA, WV, KY*, NC*, NJ*. |
| 2 | U | R1 | *Satyrium auretorum fumosum* | Lycaenidae | Santa Monica Mountains hairstreak (butterfly). | CA. |
| 2 | U | R3 | *Schinia indiana* | Noctuidae | (Noctuid moth, no common name) | MI, MN, WI, AR?*, IL*, IN*, NC?, NE?, TX?. |
| 2 | U | R4 | *Semiothisa fraserata* | Geometridae | Fraser fir geometrid | NC, VA |
| 2 | S | R4 | *Spartiniphaga carterae* | Noctuidae | Carter's noctuid moth | NC, NJ. |
| 2 | U | R1 | *Speyeria adiaste adiaste* | Nymphalidae | Unsilvered fritillary (butterfly) | CA. |
| 2 | U | R1 | *Speyeria atlantis greyi* | Nymphalidae | Grey's silverspot (butterfly) | NV. |
| PE | D | R1 | *Speyeria callippe callippe* | Nymphalidae | Callippe silverspot (butterfly) | CA. |
| 2 | U | R4 | *Speyeria diana* | Nymphalidae | Diana fritillary (butterfly) | AR, GA, MO, NC, SC, TN, VA, WV, IL*, IN*, LA*, MD*, MS*, OH*, PA*. |
| 2 | U | R1 | *Speyeria egleis tehachapina* | Nymphalidae | Tehachapi Mountain silverspot (butterfly). | CA. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | D | R5 | *Speyeria idalia* | Nymphalidae | Regal fritillary (butterfly) | AR, CO, IA, IL, IN, KS, MA, MD, MI, MN, MO, ND, NE, OH, OK, PA, SD, VA, WI, CT*, DE*, ME*, MT*, NC*, NH*, NJ*, NY*, VT*, WV*, Canada. |
| 2 | U | R1 | *Speyeria nokomis* ssp. | Nymphalidae | Carson Valley silverspot (butterfly) | CA, NV. |
| 2 | U | R2 | *Speyeria nokomis caerulescens* | Nymphalidae | Blue silverspot (butterfly) | AZ*, Mexico. |
| 2 | D | R6 | *Speyeria nokomis nokomis* | Nymphalidae | Great basin silverspot (butterfly) | CO, UT. |
| PE | D | R1 | *Speyeria zerene behrensii* | Nymphalidae | Behren's silverspot (butterfly) | CA. |
| 2 | U | R1 | *Speyeria zerene carolae* | Nymphalidae | Carole's silverspot (butterfly) | NV. |
| 2 | U | R1 | *Spheterista oheoheana* | Tortricidae | 'Ohe'ohe leafroller (moth) | HI. |
| 2 | U | R1 | *Spheterista pterotropiana* | Tortricidae | Greenbanded 'ohe'ohe leafroller (moth). | HI. |
| 2 | U | R1 | *Spheterista reynoldsiana* | Tortricidae | Wailupe leafroller (moth) | HI. |
| 2 | U | R2 | *Stallingsia maculosus* | Megathymidae | Maculated manfreda skipper | TX, Mexico. |
| 2 | U | R4 | *Strymon acis bartrami* | Lycaenidae | Bartram's hairstreak (butterfly) | FL. |
| 3C | N | R4 | *Synanthedon castaneae* | Sesiidae | Chestnut clearwing moth | AL, FL, GA, NC, SC, VA*, PA*, ME*, MS*, NY*. |
| 2 | U | R1 | *Thyrocopa apatela* | Oecophoridae | Haleakala flightless thyrocopa moth | HI |
| 2* | U | R1 | *Thyrocopa sapindiella* | Oecophoridae | Oahu aulu thyrocopa moth | HI |
| 2 | U | R1 | *Tinostoma smaragditis* | Sphingidae | Fabulous green sphinx of Kauai (moth). | HI. |
| 2* | U | R5 | *Tischeria perplexa* | Tischeriidae | Chestnut leaf miner moth | VA. |
| 2 | S | R4 | *Zale perculta* | Noctuidae | Okefenokee zale moth | GA, FL*. |
| | | | CADDISFLIES (Insects, Order Trichoptera). | | | |
| 2 | U | R3 | *Agapetus artesus* | Glossosomatidae | Artesian agapetus caddisfly | MO. |
| 2 | U | R1 | *Agapetus denningi* | Glossosomatidae | Denning's agapetus caddisfly | OR. |
| 2 | U | R4 | *Agapetus jocassee* | Glossosomatidae | (Caddisfly, no common name) | NC, SC. |
| 2 | U | R4 | *Agapetus medicus* | Glossosomatidae | Arkansas agapetus caddisfly | AR. |
| 2 | U | R4 | *Agarodes alabamensis* | Sericostomatidae | (Caddisfly, no common name) | AL. |
| 2 | U | R4 | *Agarodes stannardi* | Sericostomatidae | Stannard's agarodes caddisfly | MS, TN. |
| 2 | U | R4 | *Agarodes ziczac* | Sericostomatidae | Zigzag blackwater caddisfly | FL. |
| 2 | U | R1 | *Apatania tavala (=Radema t.)* | Limnephilidae | Cascades apatanian caddisfly | OR. |
| 2 | U | R2 | *Austrotinodes* sp. | Ecnomidae | Texas Austrotinodes caddisfly | TX |
| 2 | U | R4 | *Ceraclea* sp. | Leptoceridae | Lenat's ceraclea | NC |
| 3C | N | R4 | *Ceraclea enodis (=sp. nov.)* | Leptoceridae | (Caddisfly, no common name) | AL, NC, Canada. |
| 2* | U | R4 | *Ceraclea floridana* | Leptoceridae | Florida ceraclean longhorn caddisfly | FL. |
| 2 | U | R1 | *Ceraclea vertreesi (=Athripsodes v.)* | Leptoceridae | Vertrees's ceraclean caddisfly | OR. |
| 2 | U | R4 | *Ceratopsyche (=Hydropsyche) etnieri.* | Hydropsychidae | Buffalo Springs caddisfly | TN. |
| 3C | N | R2 | *Cheumatopsyche flinti* | Hydropsychidae | Flint's net-spinning caddisfly | TX. |
| 2 | U | R5 | *Cheumatopsyche helma* | Hydropsychidae | Helma's net-spinning caddisfly | ME, KY*, PA*, TN*. |
| 2 | U | R4 | *Cheumatopsyche morsei* | Hydropsychidae | Morse's net-spinning caddisfly | LA. |
| 2* | U | R5 | *Cheumatopsyche vannotei* | Hydropsychidae | Vannote's net-spinning caddisfly | PA. |
| 2 | U | R3 | *Chilostigma itascae* | Limnephilidae | Headwater chilostigman caddisfly | MN. |
| 2 | U | R4 | *Chimarra holzenthali* | Philoptamidae | (Caddisfly, no common name) | LA. |
| 2 | U | R1 | *Cryptochia denningi* | Limnephilidae | Denning's cryptic caddisfly | CA. |
| 2 | U | R1 | *Cryptochia excella* | Limnephilidae | Kings Canyon cryptochian caddisfly | CA. |
| 2 | U | R1 | *Cryptochia neosa* | Limnephilidae | Blue Mountains cryptochian caddisfly | OR. |
| 2 | U | R1 | *Cryptochia shasta* | Limnephilidae | Confusion caddisfly | CA. |
| 2 | U | R1 | *Desmona bethula* | Limnephilidae | Amphibious caddisfly | CA. |
| 2 | U | R1 | *Diplectrona californica* | Hydropsychidae | California diplectronan caddisfly | CA. |
| 2 | U | R4 | *Diplectrona rossi* | Hydropsychidae | (Caddisfly, no common name) | LA. |
| 2 | U | R1 | *Ecclisomyia bilera* | Limnephilidae | King's Creek ecclisomyian caddisfly | CA. |
| 2 | U | R1 | *Eobrachycentrus gelidae* | Brachycentridae | Mt. Hood primitive brachycentrid caddisfly. | OR. |
| 2 | U | R1 | *Farula* sp. | Limnephilidae | Long-tailed caddisfly | CA. |
| 2* | U | R1 | *Farula davisi* | Limnephilidae | Green Springs Mountain farulan caddisfly. | OR. |
| 2 | U | R1 | *Farula jewetti* | Limnephilidae | Mt. Hood farulan caddisfly | OR. |
| 2 | U | R1 | *Farula reaperi* | Limnephilidae | Tombstone Prairie farulan caddisfly | OR. |
| 2 | U | R3 | *Glyphopsyche missouri* | Limnephilidae | Missouri glyphopsyche caddisfly | MO. |
| 2 | U | R1 | *Goeracea oregona* | Limnephilidae | Sagehen Creek goeracean caddisfly | CA. |
| 2 | U | R4 | *Helicopsyche paralimnella* | Helicopsychidae | (Caddisfly, no common name) | NC, SC. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | u | R1 | *Homoplectra schuhi* | Hydropsychidae | Schuh's homoplectran caddisfly | OR. |
| 2 | U | R1 | *Hydropsyche abella* | Hydropsychidae | Abellan hydropsyche caddisfly | OR. |
| 2 | U | R2 | *Hydropsyche reiseni* | Hydropsychidae | Reisen's hydropsyche caddisfly | OK. |
| 2 | U | R4 | *Hydroptila chelops* | Hydroptilidae | (Caddisfly, no common name) | AL. |
| 3C | N | R4 | *Hydroptila decia* | Hydroptilidae | Knoxville hydroptilan micro caddisfly | TN. |
| 2 | U | R4 | *Hydroptila englishi* | Hydroptilidae | (Caddisfly, no common name) | NC, SC. |
| 2 | U | R4 | *Hydroptila lagoi* | Hydroptilidae | (Caddisfly, no common name) | AL. |
| 2 | U | R4 | *Hydroptila ouachita* | Hydroptilidae | (Caddisfly, no common name) | LA. |
| 2 | U | R1 | *Lepidostoma ermanae* | Lepidostomatidae | Cold Spring caddisfly | CA. |
| 2 | U | R4 | *Lepidostoma etnieri* | Lepidostomatidae | (Caddisfly, no common name) | TN |
| 2 | U | R1 | *Lepidostoma goedeni* | Lepidostomatidae | Goeden's lepidostoman caddisfly | OR. |
| 2 | U | R1 | *Limnephilus atercus* | Limnephilidae | Fort Dick limnephilus caddisfly | CA, OR. |
| 2 | U | R2 | *Metrichia volada* | Hydroptilidae | Page Spring micro caddisfly | AZ. |
| 2 | U | R1 | *Neothremma andersoni* | Limnephilidae | Columbia Gorge neothremman caddisfly. | OR. |
| 2 | U | R1 | *Neothremma genella* | Limnephilidae | Golden-horned caddisfly | CA. |
| 2 | U | R1 | *Neothremma siskiyou* | Limnephilidae | Siskiyou caddisfly | CA. |
| 2 | U | R3 | *Neotrichia kitae* | Hydroptilidae | Kite's neotrichian micro caddisfly | MO. |
| 2 | U | R4 | *Ochotrichia elongiralla* | Hydroptilidae | (Caddisfly, no common name) | AL. |
| 2 | U | R4 | *Ochrotrichia contorta* | Hydroptilidae | Contorted ochrotrichian micro caddisfly. | MO, AR. |
| 2* | U | R1 | *Ochrotrichia phenosa* | Hydroptilidae | Deschutes ochrotrichian micro caddisfly. | OR. |
| 2 | U | R4 | *Ochrotrichia provosti* | Hydroptilidae | Provost's ochrotrichian micro caddisfly. | FL. |
| 2 | U | R1 | *Ochrotrichia vertreesi* | Hydroptilidae | Vertrees's ochrotrichian micro caddisfly. | OR. |
| 2* | U | R4 | *Oecetis parva* | Leptoceridae | Little oecetis longhorn caddisfly | FL. |
| 2 | U | R1 | *Oligophlebodes mostbento* | Limnephilidae | Tombstone Prairie oligophlebodes caddisfly. | OR. |
| 2 | U | R4 | *Oxyethira florida* | Hydroptilidae | Florida oxyethiran micro caddisfly | FL, TX?. |
| 2 | U | R4 | *Paduniella nearctica* | Psychomyidae | Nearctic paduniellan caddisfly | AR. |
| 2* | U | R1 | *Parapsyche extensa* | Hydropsychidae | King's Creek parapsyche caddisfly | CA. |
| 2* | U | R1 | *Philocasca oron* | Limnephilidae | Clatsop philocascan caddisfly | OR. |
| 2 | U | R4 | *Polycentropus carlsoni* | Polycentropodidae | Carlson's polycentropus caddisfly | SC. |
| 2 | U | R4 | *Polycentropus harrisi* | Polycentropidae | (Caddisfly, no common name) | AL. |
| 2 | U | R2 | *Protoptila arca* | Glossosomatidae | San Marcos saddle-case caddisfly | TX. |
| 2 | U | R2 | *Protoptila balmorhea* | Glossosomatidae | Balmorhea saddle-case caddisfly | AZ, TX. |
| 2 | U | R4 | *Protoptila cahabensis* | Glossosomatidae | Cahaba saddle-case caddisfly | AL. |
| 2 | U | R6 | *Rhyacophila alexanderi* | Rhyacophilidae | Alexander's rhyacophilan caddisfly | MT. |
| 2 | U | R1 | *Rhyacophila colonus* | Rhyacophilidae | Obrien rhyacophilan caddisfly | OR. |
| 2 | U | R1 | *Rhyacophila haddocki* | Rhyacophilidae | Haddock's rhyacophilan caddisfly | OR. |
| 2 | U | R1 | *Rhyacophila lineata* | Rhyacophilidae | Castle Crags rhyacophilan caddisfly | CA. |
| 2 | U | R1 | *Rhyacophila mosana* | Rhyacophilidae | Bilobed rhyacophilan caddisfly | CA. |
| 2 | U | R1 | *Rhyacophila spinata* | Rhyacophilidae | Spiny rhyacophilan caddisfly | CA. |
| 2 | U | R1 | *Rhyacophila unipunctata* | Rhyacophilidae | One-spot rhyacophilan caddisfly | OR. |
| 2 | D | R4 | *Schinia rufipenna* | Noctuidae | Scrub golden aster noctuid moth | FL. |
| 3C | N | R4 | *Setodes epicampes* | Leptoceridae | (Caddisfly, no common name) | AL, TN. |
| 2 | U | R4 | *Stactiobiella cahaba* | Hydroptilidae | (Caddisfly, no common name) | AL. |
| 2 | U | R4 | *Theliopsyche tallapoosa* | Lepidostomatidae | (Caddisfly, no common name) | AL. |
| 2 | U | R1 | *Tinodes siskiyou* | Psychomyiidae | Siskiyou caddisfly | OR. |
| 2* | U | R4 | *Triaenodes tridonta* | Leptoceridae | Three-tooth long-horned caddisfly | OK, FL. |
| 2 | U | R4 | *Wormaldia oconee* | Philoptamidae | (Caddisfly, no common name) | SC. |
| | | | *ANTS, BEES, & WASPS (Insects, Order Hymenoptera).* | | | |
| 2 | U | R1 | *Bombus franklini* | Apidae | Franklin's bumblebee | OR, CA. |
| 2 | U | R1 | *Deinomimesa hawaiiensis* | Sphecidae | Hawaiian deinomimesan sphecid wasp. | HI. |
| 2 | U | R1 | *Deinomimesa punae* | Sphecidae | Puna deinomimesan sphecid wasp | HI. |
| 2* | U | R1 | *Ectemnius (=Nesoprosopis) rubrocaudatus.* | Sphecidae | Redtail sphecid wasp (not yellow-faced bee). | HI. |
| 2 | U | R1 | *Ectemnius bidecoratus (=Nesocrabo b.).* | Sphecidae | Bidecoratus sphecid wasp | HI. |
| 2 | U | R1 | *Ectemnius curtipes (=Oreocrabro c.)* | Sphecidae | Short-foot ectemnius sphecid wasp | HI. |
| 2 | U | R1 | *Ectemnius fulvicrus (=Oreocrabro f.)* | Sphecidae | Brown cross ectemnius sphecid wasp. | HI. |
| 2 | U | R1 | *Ectemnius giffardi (=Nesocrabo g.)* | Sphecidae | Giffard's ectemnius sphecid wasp | HI. |
| 2 | U | R1 | *Ectemnius haleakalae (=Oreocrabro h.).* | Sphecidae | Haleakala ectemnius sphecid wasp | HI. |
| 2 | U | R1 | *Eucerceris ruficeps* | Sphecidae | Redheaded sphecid wasp | CA*, NV. |
| 2 | U | R1 | *Eupelmus nihoaensis* | Eupelmidae | Nihoa eupelmus wasp | HI. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) andrenoides.* | Hylaeidae | Andrenoid yellow-faced bee | HI. |
| 2 | U | R1 | *Hylaeus (=Nesoprosopis) anomala* | Hylaeidae | Anomalous yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) anthricina* | Hylaeidae | Anthricinan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) assimulans.* | Hylaeidae | Assimulans yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) caeruleipennis.* | Hylaeidae | Bluewing yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) chlorosticata.* | Hylaeidae | Chlorostictan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) comes* | Hylaeidae | Comes yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) coniceps* | Hylaeidae | Conehead yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) crabronoides.* | Hylaeidae | Crabronoid yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) difficilis* | Hylaeidae | Difficult yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) dimidiata* | Hylaeidae | Dimidiatan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) facilis* | Hylaeidae | Easy yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) filicum* | Hylaeidae | Fern yellow-faced bee | HI. |
| 2 | U | R1 | *Hylaeus (=Nesoprosopis) flavifrons* | Hylaeidae | Very yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) flavipes* | Hylaeidae | Yellow-foot yellow-faced bee | HI. |
| 2 | U | R1 | *Hylaeus (=Nesoprosopis) fuscipennis.* | Hylaeidae | Darkwing yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) haleakalae* | Hylaeidae | Haleakala yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) hirsutula* | Hylaeidae | Hirsute yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) hostilis* | Hylaeidae | Hostile yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) hula* | Hylaeidae | Hulan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) insignis* | Hylaeidae | Insignis yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) kauaiensis* | Hylaeidae | Kauai yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) koae* | Hylaeidae | Koa yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) kona* | Hylaeidae | Kona yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) laeta* | Hylaeidae | Laetan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) longiceps* | Hylaeidae | Longhead yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) obscurata* | Hylaeidae | Obscuratan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) ombrias* | Hylaeidae | Ombrias yellow-faced bee | HI. |
| 2 | U | R1 | *Hylaeus (=Nesoprosopis) perkinsiana.* | Hylaeidae | Perkin's yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) pubescens* | Hylaeidae | Furry yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) satellus* | Hylaeidae | Satellus yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) simplex* | Hylaeidae | Simple yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) specularis* | Hylaeidae | Specular yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) sphecodoides.* | Hylaeidae | Sphecodoid yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) unica* | Hylaeidae | Unique yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) vicina* | Hylaeidae | Vicinan yellow-faced bee | HI. |
| 2* | U | R1 | *Hylaeus (=Nesoprosopis) volatilis* | Hylaeidae | Volatile yellow-faced bee | HI. |
| 2 | U | R1 | *Myrmosula pacifica (=Myrmosa p.)* | Mutillidae | Antioch mutillid wasp | CA. |
| 2 | U | R1 | *Nesomimesa kauaiensis* | Sphecidae | Kauai nesomimesan sphecid wasp | HI. |
| 2 | U | R1 | *Nesomimesa perkinsi* | Sphecidae | Perkins' nesomimesan sphecid wasp | HI. |
| 2 | U | R1 | *Nesomimesa sciopteryx* | Sphecidae | Shade-winged nesomimesan sphecid wasp. | HI. |
| 2 | D | R1 | *Odynerus nigripennis* | Vespidae | Black-winged odynerus vespid wasp | HI |
| 2 | U | R1 | *Odynerus niihauensis* | Vespidae | Niihau odynerus vespid wasp | HI. |
| 2 | D | R1 | *Odynerus radula* | Vespidae | Radulan odynerus vespid wasp | HI |
| 2 | U | R1 | *Odynerus soror* | Vespidae | Soror odynerus vespid wasp | HI. |
| 2* | U | R1 | *Perdita hirticeps luteocincta* | Andrenidae | Yellow-banded andrenid bee | CA. |
| 2 | U | R1 | *Perdita scitula antiochensis* | Andrenidae | Antioch andrenid bee | CA. |
| 1 | D | R1 | *Phaeogramma* sp. | Tephritidae | Po'olanui gall fly | HI |
| 2 | U | R1 | *Philanthus nasalis* | Sphecidae | Antioch sphecid wasp | CA. |
| 2 | U | R1 | *Proceratium californicum* | Formicidae | Valley oak ant | CA. |
| 2 | U | R1 | *Sclerodermus nihoaensis* | Bethylidae | Nihoa sclerodermus wasp | HI. |
| 2 | U | R1 | *Smithistruma reliquia* | Formicidae | Ancient ant | CA. |
| | | | *ARACHNIDS (Class Arachnida).* | | | |
| | | | *SPIDERS (Arachnids, Order Aranea).* | | | |
| 1 | D | R1 | *Adelocosa anops* | Lycosidae | Kauai cave wolf spider (pe'e pe'e maka 'ole). | HI. |
| 2 | U | R4 | *Cesonia irvingi* | Gnaphosidae | Key gnaphosid spider | FL. |
| 2 | U | R2 | *Cicurina bandida* | Dictynidae | Bandit Cave spider | TX |
| 2 | U | R2 | *Cicurina baroni* | Dictynidae | Robber Baron Cave spider | TX |
| 2 | U | R2 | *Cicurina cueva* | Dictynidae | (Spider, no common name) | TX |
| 2 | U | R2 | *Cicurina madla* | Dictynidae | Madla's cave spider | TX |

| Status Category | Status Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 2 | U | R2 | *Cicurina venii* | Dictynidae | Veni's cave spider | TX |
| 2 | U | R2 | *Cicurina vespera* | Dictynidae | Vesper cave spider | TX |
| 1 | U | R2 | *Cicurina wartoni* | Dictynidae | Warton's cave spider | TX |
| 2 | U | R4 | *Cyclocosmia torreya* | Ctenizidae | Torreya trap-door spider | FL. |
| 2 | U | R5 | *Islandiana speophila* | Lymphiidae | Cavern sheet-web spider | WV. |
| 2 | U | R1 | *Meta dollof* | Araneidae | Dolloff Cave spider | CA. |
| PE | | R4 | *Microhexura montivaga* | Dipluridae | Spruce-fir moss spider | NC, TN. |
| 2 | U | R2 | *Neoleptoneta microps* | Leptonetidae | Government Canyon cave spider | TX |
| 2 | U | R4 | *Nesticus cooperi* | Nesticidae | Lost Nantahala Cave spider | NC. |
| 2 | U | R4 | *Nesticus dilutus* | Nesticidae | Grassy Creek Cave spider | TN. |
| 2 | U | R4 | *Nesticus furtivus* | Nesticidae | Crystal Caverns cave spider | TN. |
| 2 | U | R4 | *Nesticus jonesi* | Nesticidae | Cave Spring Cave spider | AL. |
| 2 | U | R4 | *Nesticus valentinei* | Nesticidae | Valentine's cave spider | TN. |
| 2 | U | R4 | *Sosippus placidus* | Lycosidae | Lake Placid funnel wolf spider | FL. |
| 2 | U | R1 | *Telema* sp. | Telemidae | Santa Cruz telemid spider | CA. |
| | | | *PSEUDOSCORPIONS (Arachnids, Order Pseudoscorpiones).* | | | |
| 2 | U | R1 | *Aphrastochthonius grubbsi* | Chthoniidae | Grubbs' cave pseudoscorpion | CA. |
| 2 | U | R1 | *Aphrastochthonius similis* | Chthoniidae | Carlow's Cave pseudoscorpion | CA. |
| 2 | U | R1 | *Apochthonius malheuri* | Chthoniidae | Malheur pseudoscorpion | OR. |
| 2 | U | R5 | *Apochthonius paucispinosus* | Chthoniidae | Dry Fork Valley cave pseudoscorpion. | WV. |
| 2 | U | R1 | *Archeolarca aalbui* | Garypidae | Aalbu's cave pseudoscorpion | CA. |
| 2 | U | R2 | *Archeolarca cavicola* | Garypidae | Grand Canyon cave pseudoscorpion | AZ. |
| 2 | U | R2 | *Archeolarca guadalupensis* | Garypidae | Guadalupe cave pseudoscorpion | TX. |
| 2 | U | R5 | *Chitrella regina* | Syarinidae | Royal syarinid pseudoscorpion | WV. |
| 2 | U | R5 | *Kleptochthonius henroti* | Chthoniidae | Greenbrier Valley cave pseudoscorpion. | WV. |
| 2 | U | R5 | *Kleptochthonius hetricki* | Chthoniidae | Organ Cave pseudoscorpion | WV. |
| 2 | U | R5 | *Kleptochthonius orpheus* | Chthoniidae | Orpheus cave pseudoscorpion | WV. |
| 2 | U | R5 | *Kleptochthonius proserpinae* | Chthoniidae | Proserpina cave pseudoscorpion | WV. |
| 2 | U | R1 | *Larca laceyi* | Garypidae | Lacey's cave pseudoscorpion | CA. |
| 2 | U | R1 | *Microcreagris imperialis* | Neobisiidae | Empire Cave pseudoscorpion | CA. |
| 2 | U | R1 | *Pauroctonus maritimus* | Vejovidae | Monterey Dunes scorpion | CA. |
| 2 | U | R1 | *Pseudogarypus orpheus* | Pseudogarypidae | Music Hall Cave pseudoscorpion | CA. |
| | | | *HARVESTMEN (Arachnids, Order Opiliones).* | | | |
| 2 | U | R1 | *Calcina (=Sitalcina) minor* | Phalangodidae | Edgewood blind harvestman | CA. |
| 2 | U | R1 | *Microcina edgewoodensis* | Phalangodidae | Edgewood Park micro-blind harvestman. | CA. |
| 2 | U | R1 | *Microcina homi* | Phalangodidae | Hom's micro-blind harvestman | CA. |
| 2 | U | R1 | *Microcina jungi* | Phalangodidae | Jung's micro-blind harvestman | CA. |
| 2 | U | R1 | *Microcina leei* | Phalangodidae | Lee's micro-blind harvestman | CA. |
| 2 | U | R1 | *Microcina lumi* | Phalangodidae | Lum's micro-blind harvestman | CA. |
| 2 | U | R1 | *Microcina tiburona* | Phalangodidae | Tiburon micro-blind harvestman | CA. |
| 2 | U | R2 | *Texella cokendolpheri* | Phalangodidae | Robber Baron Cave harvestman | TX |
| | | | *CRUSTACEANS (Class Crustacea).* | | | |
| | | | *FAIRY SHRIMPS (Crustaceans, Order Anostraca).* | | | |
| 1 | D | R1 | *Artemia monica* | Artemiidae | Mono Lake brine shrimp | CA. |
| PE | U | R1 | *Branchinecta conservatio* | Branchinectidae | Conservancy fairy shrimp | CA. |
| PE | U | R1 | *Branchinecta longiantenna* | Branchinectidae | Longhorn fairy shrimp | CA. |
| PE | D | R1 | *Branchinecta lynchi* | Branchinectidae | Vernal pool fairy shrimp | CA. |
| PE | U | R1 | *Branchinecta sandiegoensis* | Branchinectidae | San Diego fairy shrimp | CA. |
| PE | U | R1 | *Lepidurus packardi* | Triopsidae | Vernal pool tadpole shrimp | CA. |
| PE | D | R1 | *Linderiella occidentalis* | Linderiellidae | California linderiella | CA. |
| | | | *CLAM SHRIMP (Crustaceans, Order Spinicaudata).* | | | |
| 2 | U | R5 | *Eulimnadia agassizii* | Limnadiidae | Faxon's clam shrimp | MA. |
| 2 | U | R5 | *Eulimnadia stoningtonensis* | Limnadiidae | Connecticut clam shrimp | CT. |
| 2 | U | R5 | *Limnadia lenticularis* | Limnadiidae | American clam shrimp | MA, FL*, Greenland, Northern Europe. |
| | | | *OSTRACODS (Crustaceans, Order Podocopa).* | | | |
| 2 | U | R4 | *Ascetocthere cosmeta* | Entocytheridae | Grayson crayfish ostracod | NC, VA |
| 2 | U | R4 | *Cymocythere clavata* | Entocytheridae | Oconee crayfish ostracod | NC, SC |
| 2 | U | R4 | *Dactylocythere isabelae* | Entocytheridae | (Ostracod, no common name) | NC. |

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|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | U | R4 | *Dactylocythere peedeensis* | Entocytheridae | (Ostracod, no common name) | NC. |
| 2 | U | R4 | *Dactylocythere prinsi* | Entocytheridae | Whitewater crayfish ostracod | NC |
| 2 | U | R4 | *Waltoncythere acuta* | Entocytheridae | (Ostracod, no common name) | NC. |
| 2 | U | R4 | *Diacyclops jeannelli putei* | Cyclopidae | Carolina well diacyclops | NC |
| 2 | U | R4 | *Skistodiaptomus carolinensis* | Cyclopidae | Carolina skistodiaptomus | NC |
| | | | *ISOPODS (Crustaceans, Order Isopoda).* | | | |
| 2 | U | R4 | *Caecidotea barri* | Asellidae | Clifton Cave isopod | KY. |
| 2 | U | R5 | *Caecidotea cannulus* | Asellidae | (Isopod, no common name) | MD, WV. |
| 2 | U | R4 | *Caecidotea carolinensis* | Asellidae | Bennets Mill Cave water slater | NC, SC |
| 2 | U | R3 | *Caecidotea filicispeluncae* | Asellidae | (Isopod, no common name) | OH. |
| 2 | S | R5 | *Caecidotea franzi* | Asellidae | Franz's isopod | MD, PA. |
| 2 | U | R2 | *Caecidotea macropoda* | Asellidae | Bat Cave isopod | OK. |
| 2 | U | R4 | *Caecidotea nickajackensis* | Asellidae | Nickajack Cave isopod | TN. |
| 2 | U | R5 | *Caecidotea simonini* | Asellidae | (Isopod, no common name) | WV. |
| 2 | U | R5 | *Caecidotea sinuncus* | Asellidae | (Isopod, no common name) | WV. |
| 2 | U | R1 | *Caecidotea tomalensis* | Asellidae | (Isopod, no common name) | CA. |
| 2 | U | R5 | *Lirceus culveri* | Asellidae | Rye Cove Cave isopod | VA. |
| | | | *AMPHIPODS (Crustaceans, Order Amphipoda).* | | | |
| 2 | U | R3 | *Allocrangonyx hubrichti* | Gammaridae | Central Missouri cave amphipod | MO. |
| 2 | U | R2 | *Allocrangonyx pellucidus* | Gammaridae | Oklahoma cave amphipod | OK. |
| 2 | U | R5 | *Crangonyx dearolfi* | Crangonyctidae | Dearolf's (=Pennsylvania) cave amphipod. | MD, PA*. |
| 2 | U | R4 | *Crangonyx grandimanus* | Crangonyctidae | Florida cave amphipod | FL. |
| 2 | U | R4 | *Crangonyx hobbsi* | Crangonyctidae | Hobb's cave amphipod | FL. |
| 1 | D | R3 | *Gammarus acherondytes* | Gammaridae | Illinois cave amphipod | IL. |
| 2 | U | R4 | *Gammarus bousfieldi* | Gammaridae | Bousfield's amphipod | KY. |
| 2 | U | R2 | *Gammarus desperatus* | Gammaridae | Noel's amphipod | NM. |
| 2 | U | R2 | *Gammarus hyalleloides* | Gammaridae | Diminutive amphipod | TX. |
| 2 | U | R2 | *Gammarus pecos* | Gammaridae | Pecos amphipod | TX. |
| 2 | U | R1 | *Metabetaeus lohena* | Alpheidae | (Amphipod, no common name) | HI. |
| 1 | U | R1 | *Spelaeorchestia koloana* | Talitridae | Kauai cave amphipod | HI. |
| 2 | U | R5 | *Stygobromus araeus (=Apocrangonyx a.).* | Crangonyctidae | Tidewater interstitial amphipod | VA. |
| 2 | U | R2 | *Stygobromus arizonensis (=Stygonectes a.).* | Crangonyctidae | Arizona cave amphipod | AZ. |
| 2 | U | R2 | *Stygobromus balconis (=Stygonectes b.).* | Crangonyctidae | Balcones cave amphipod | TX. |
| 2 | U | R3 | *Stygobromus barri (=Stygonectes b.)* | Crangonyctidae | Barr's cave amphipod | MO. |
| 2 | U | R2 | *Stygobromus bifurcatus (=Stygonectes b.).* | Crangonyctidae | Bifurcated cave amphipod | TX. |
| 2 | U | R5 | *Stygobromus biggersi* | Crangonyctidae | Bigger's amphipod | MD, PA, VA, WV |
| 2 | U | R2 | *Stygobromus bowmani (=Stygonectes b.).* | Crangonyctidae | Bowman's cave amphipod | OK. |
| 2 | U | R4 | *Stygobromus carolinensis* | Crangonyctidae | Yancey sideswimmer | NC |
| 2 | U | R6 | *Stygobromus clantoni (=Stygonectes c.).* | Crangonyctidae | Clanton's cave amphipod | KS, MO. |
| 2 | U | R5 | *Stygobromus conradi (=Stygonectes c.).* | Crangonyctidae | Burnsville Cove cave amphipod | VA. |
| 2 | U | R5 | *Stygobromus cooperi (=Stygonectes c.).* | Crangonyctidae | Cooper's cave amphipod | WV. |
| 2 | U | R5 | *Stygobromus culveri* | Crangonyctidae | Culver's cave amphipod | WV. |
| 2 | U | R2 | *Stygobromus dejectus (=Stygonectes d.).* | Crangonyctidae | Cascade Cave amphipod | TX. |
| 3B | N | R4 | *Stygobromus elatus (=Stygonectes e.).* | Crangonyctidae | Elevated Spring amphipod | AR. |
| 2 | U | R2 | *Stygobromus flagellatus (=Stygonectes f.).* | Crangonyctidae | Ezell's Cave amphipod | TX. |
| 2 | U | R1 | *Stygobromus gradyi* | Crangonyctidae | Grady's cave amphipod | CA. |
| 2 | U | R2 | *Stygobromus hadenoecus (=Stygonectes h.).* | Crangonyctidae | Devil's Sinkhole amphipod | TX. |
| 2 | U | R1 | *Stygobromus harai* | Crangonyctidae | Hara's cave amphipod | CA. |
| 2 | U | R5 | *Stygobromus hoffmani* | Crangonyctidae | (Amphipod, no common name) | VA. |
| 2 | U | R1 | *Stygobromus hubbsi* | Crangonyctidae | Malheur Cave amphipod | OR. |
| 2 | U | R5 | *Stygobromus indentatus (=Stygonectes i.).* | Crangonyctidae | Tidewater amphipod | MD, NC, VA. |
| 2 | U | R2 | *Stygobromus longipes (=Stygonectes l.).* | Crangonyctidae | Long-legged cave amphipod | TX. |
| 2 | U | R1 | *Stygobromus mackenziei* | Crangonyctidae | MacKenzie's cave amphipod | CA. |

| Status: Category | Status: Trend | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| 3B | N | R4 | *Stygobromus montanus (=Stygonectes m.).* | Crangonyctidae | Mountain cave amphipod | AR. |
| 2 | U | R5 | *Stygobromus morrisoni (=Stygonectes m.).* | Crangonyctidae | Morrison's cave amphipod | VA, WV. |
| 2 | U | R5 | *Stygobromus mundus (=Stygonectes m.).* | Crangonyctidae | Bath County cave amphipod | VA. |
| 2 | U | R5 | *Stygobromus nanus* | Crangonyctidae | Pocahontas cave amphipod | WV. |
| 2 | U | R4 | *Stygobromus nortoni (=Apocrangonyx n.).* | Crangonyctidae | Norton's cave amphipod | TN. |
| 2 | U | R5 | *Stygobromus parvus (=Apocrangonyx p.).* | Crangonyctidae | Minute cave amphipod | WV. |
| 1 | U | R2 | *Stygobromus pecki (=Stygonectes p.).* | Crangonyctidae | Peck's cave amphipod | TX. |
| 2 | U | R5 | *Stygobromus pizzinii (=Stygonectes p.).* | Crangonyctidae | Pizzini's amphipod | DC, MD, PA, VA. |
| 2 | U | R3 | *Stygobromus putealis* | Crangonyctidae | Wisconsin well amphipod | WI. |
| 2 | U | R5 | *Stygobromus redactus* | Crangonyctidae | Redacted cave amphipod | WV. |
| 2 | U | R2 | *Stygobromus redelli (=Stygonectes r.).* | Crangonyctidae | Redell's cave amphipod | TX. |
| 2 | U | R4 | *Stygobromus smithi* | Crangonyctidae | Alabama well amphipod | AL. |
| 2 | U | R5 | *Stygobromus spinatus (=Stygonectes s.).* | Crangonyctidae | Spring cave amphipod | WV. |
| 2 | U | R5 | *Stygobromus stellmacki (=Stygonectes s.).* | Crangonyctidae | Stellmack's cave amphipod | PA. |
| 2 | U | R3 | *Stygobromus subtilis (=Apocrangonyx s.).* | Crangonyctidae | Subtle cave amphipod | IL, MO. |
| 2 | U | R1 | *Stygobromus wengerorum* | Crangonyctidae | Wengerors' cave amphipod | CA. |
| | | | *CRAYFISHES & SHRIMPS (Crustaceans, Order Decapoda).* | | | |
| 2 | U | R1 | *Antecaridina lauensis* | Atyidae | (Shrimp, no common name) | HI. |
| 2 | U | R1 | *Calliasmata pholidota* | Hippolytidae | (Shrimp, no common name) | HI. |
| 3C | N | R4 | *Cambarus catagius* | Cambaridae | Greensboro burrowing crayfish | NC. |
| 2 | U | R4 | *Cambarus englishi* | Cambaridae | (Crayfish, no common name) | AL, GA. |
| 2 | U | R4 | *Cambarus extraneus* | Cambaridae | Chickamauga crayfish | GA, TN. |
| 3C | N | R4 | *Cambarus georgiae (subgen. Puncticambarus).* | Cambaridae | Little Tennessee crayfish | NC, GA. |
| 2 | U | R4 | *Cambarus hiwassensis (subgen. Puncticambarus).* | Cambaridae | Hiwassee crayfish | NC, GA. |
| 2 | U | R4 | *Cambarus miltus* | Cambaridae | (Crayfish, no common name) | AL. |
| 2 | U | R4 | *Cambarus obeyensis* | Cambaridae | Obey crayfish | TN. |
| 2 | U | R4 | *Cambarus parrishi (subgen. Puncticambarus).* | Cambaridae | Parrish crayfish | NC, GA. |
| 2 | U | R4 | *Cambarus reburrus (subgen. Puncticambarus).* | Cambaridae | French Broad crayfish | NC. |
| 2 | U | R2 | *Cambarus tartarus* | Cambaridae | (Crayfish, no common name) | OK. |
| 2 | U | R5 | *Cambarus veteranus* | Cambaridae | (Crayfish, no common name) | VA, WV, KY |
| 2 | D | R4 | *Distocambarus youngineri* | Cambaridae | Saluda crayfish | SC. |
| 2 | U | R4 | *Fallicambarus burrisi* | Cambaridae | (Crayfish, no common name) | AL, MS. |
| 2 | U | R4 | *Fallicambarus danielae* | Cambaridae | (Crayfish, no common name) | MS, AL. |
| 2 | U | R4 | *Fallicambarus gilpini* | Cambaridae | (Crayfish, no common name) | AR. |
| 2 | U | R4 | *Fallicambarus gordoni* | Cambaridae | (Crayfish, no common name) | MS. |
| 2 | U | R4 | *Fallicambarus harpi* | Cambaridae | (Crayfish, no common name) | AR. |
| 2 | U | R4 | *Fallicambarus jeanae* | Cambaridae | (Crayfish, no common name) | AR. |
| 2 | U | R4 | *Fallicambarus petilicarpus* | Cambaridae | (Crayfish, no common name) | AR. |
| 2 | U | R1 | *Halocaridina palahemo* | Atyidae | (Shrimp, no common name) | HI. |
| 2 | U | R4 | *Hobbseus orconectoides* | Cambaridae | Oktibbeha rivulet crayfish | MS. |
| 2 | U | R4 | *Orconectes* sp. | Cambaridae | Shelta Cave crayfish | AL. |
| 2 | D | R3 | *Orconectes indianensis* | Cambaridae | Indiana crayfish | IL, IN. |
| 2 | U | R4 | *Orconectes jeffersoni* | Cambaridae | Louisville crayfish | KY. |
| 2 | U | R4 | *Orconectes virginiensis (subgen. Crockerinus).* | Cambaridae | Chowanoke crayfish | NC, VA. |
| 2 | U | R4 | *Orconectes williamsi* | Camabaridae | (Crayfish, no common name) | AR, MO. |
| 2 | U | R1 | *Palaemonella burnsi* | Palaemonidae | (Shrimp, no common name) | HI. |
| 2 | U | R2 | *Palaemonetes antrorum* | Palaemonidae | Texas cave shrimp | TX. |
| 2 | U | R4 | *Procambarus acherontis* | Cambaridae | Palm Springs Cave crayfish | FL. |
| 3C | N | R4 | *Procambarus barbiger* | Cambaridae | Jackson Prairie crayfish | MS. |
| 2 | U | R4 | *Procambarus cometes* | Cambaridae | Mississippi flatwoods crayfish | MS. |
| 2 | U | R4 | *Procambarus connus* | Cambaridae | Carrollton crayfish | MS. |
| 2 | U | R4 | *Procambarus ferrugineus* | Cambaridae | (Crayfish, no common name) | AR. |
| 2 | U | R4 | *Procambarus fitzpatricki* | Cambaridae | Spinytail crayfish | MS. |
| 3C | N | R4 | *Procambarus lagniappe* | Cambaridae | (Crayfish, no common name) | MS. |

| Status | | Lead Region | Scientific name | Family | Common name | Historic range |
|---|---|---|---|---|---|---|
| Category | Trend | | | | | |
| 2 | D | R4 | *Procambarus lepidodactylus* | Cambaridae | Pee Dee lotic crayfish | NC, SC. |
| 2 | U | R4 | *Procambarus lylei* | Cambaridae | Shutispear crayfish | MS. |
| 2 | U | R4 | *Procambarus medialis (subgen. Ortmannicus).* | Cambaridae | Albermarle crayfish | NC. |
| 2 | D | R4 | *Procambarus pictus* | Cambaridae | Black Creek crayfish | FL. |
| 2 | U | R4 | *Procambarus plumimanus (subgen. Ortmannicus).* | Cambaridae | Croatan crayfish | NC. |
| 2 | U | R4 | *Procambarus pogum* | Cambaridae | Bearded red crayfish | MS. |
| 2 | U | R1 | *Procaris hawaiana* | Procarididae | (Shrimp, no common name) | HI. |
| 2 | U | R4 | *Typhlatya monae* | Atyidae | Mona cave shrimp | PR, West Indies. |
| 2 | U | R1 | *Vetericaris chaceorum* | Procaridae | (Shrimp, no common name) | HI. |
| | | | *EARTHWORMS (Annelids, Class Oligochaeta).* | | | |
| 2 | U | R1 | *Megascolides macelfreshi* | Megascolecidae | Oregon giant earthworm | OR. |
| | | | *FLATWORMS (Turbellaria).* | | | |
| 2 | U | R3 | *Kenkia glandulosa (=Macrocotyla g.)* | Kenkiidae | (Planarian, no common name) | MO, IA. |
| 2 | U | R1 | *Kenkia rhynchida* | Kenkiidae | (Planarian, no common name) | OR. |
| 2 | U | R5 | *Procotyla typhlops* | Kenkiidae | (Planarian, no common name) | MD, VA. |
| 2 | U | R5 | *Sphalloplana culveri* | Kenkiidae | Culver's planarian | WV. |
| 2 | U | R5 | *Sphalloplana pricei* | Kenkiidae | Refton Cave planarian | PA. |
| 2 | U | R5 | *Sphalloplana virginiana* | Kenkiidae | (Planarian, no common name) | VA. |
| | | | *HYDROIDS (Cnidaria).* | | | |
| 2 | U | R1 | *Ostroumovia horii* Naumov | Moerisiidae | (Hydroid, no common name) | HI, Japan |
| | | | *SPONGES (Porifera).* | | | |
| 2 | U | R4 | *Corvomeyenia carolinensis* | Spongillidae | Carolina sponge | SC. |
| 2 | U | R4 | *Dosilia palmeri* | Spongillidae | Oklawaha sponge | FL, Mexico. |
| 2 | U | R4 | *Ephydatia subtilis* | Spongillidae | Kissimmee sponge | FL. |
| 3B | N | R5 | *Heteromeyenia longistylis* | Spongillidae | Pennsylvania sponge | PA. |
| 3B | N | R5 | *Spongilla heterosterifa* | Spongillidae | Oneida sponge | NY. |

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