SELECTED AND ANNOTATED BIBLIOGRAPHY
FOR MANAGEMENT OF

THE CALIFORNIA RED-LEGGED FROG
(*Rana draytonii*)

Peer reviewed papers and publications (not exhaustive) that provide a good basis for professionals managing or consulting on projects that involve *Rana draytonii* and its habitat.

1. Allaback, M.L., D.M. Laabs, D.S. Keegan and J.D. Harwayne. 2010. *Rana draytonii* (California Red-legged Frog). Dispersal. Herpetological Review 41:204-206.

Drift-fence/pitfall-trap studies during the rainy season (October-April) documented mass emigration of metamorphs from red-legged frog breeding ponds during the first rain of the season. Almost all metamorphs that left the ponds were gone by 31 December.

2. Alvarez, J.A., M. A. Shea and S. M. Foster. 2013. Natural History Notes. *Rana draytonii* (California Red-legged Frog). Association with beaver. Herpetological Review 44:127-128.

Rana draytonii tadpoles and adults were displaced when beaver dams were removed. The authors suggest that beaver dams were historically an important part of *Rana draytonii* habitat

3. Alvarez, J., M. Shea, J. Wilcox, M. Allaback, S Foster, G. Padgett-Flohr and J. Haire. 2013. Sympatry in California tiger salamander and California red-legged frog breeding habitat within their overlapping range. California Fish and Game. 99(1):42-48.

Breeding habitat sympatry between the two species was detected in 58.12% of the 218 ponds and 2 creeks.

4. Alvarez, J.A., C. Dunn and A.F. Zuur. 2004. Response of California red-legged frogs to removal of non-native fish. 2002-2003 Transactions of the Western Section of the Wildlife Society 38/39:9-12.

Six ponds with exotic fish had little use by adult red-legged frogs and almost no successful reproduction. After the fish were removed, frog reproduction was successful, with counts up to 650 juvenile frogs in a single pond.

5. Bland, D. 2006. Relocations of California red-legged frogs, California, USA. Re-introduction News, Newsletter of the Re-introduction Specialist Group, IUCN, No. 25:12-13.

Nine frogs were re-located into nearby ponds when their ponds were to be subject to sediment removal. They were radio-tracked for two months. Four remained in the new habitat for at least 1 month. Two frogs returned to their ponds of origin, and 3 others ended up in dense cover in a direction towards their original ponds.

6. Bridges, C.M. and R.D. Semlitsch. 2000. Variation in pesticide tolerance of tadpoles among and within species of Ranidae and patterns of amphibian decline. Conservation Biology 14:1490-1499.

Rana a. draytonii and *R. pretiosa* tadpoles showed a higher tolerance of the pesticide carbaryl than other species of *Rana* tested.

7. Bulger, J.B., N.J. Scott Jr., and R.B. Seymour. 2003. Terrestrial activity and conservation of adult California red-legged frogs *Rana aurora draytonii* in coastal forests and grasslands. Biological Conservation 110:85-95.

Study of seasonal movements of radio-tagged frogs in the Santa Cruz Mountains, California. Documents winter and summer habitats and seasonal movements by 11-22% of adult population, most moving in a direct line rather than by following habitat corridors.

8. Christopher, S.V. 2004. Introduced predator effects on a threatened anuran. Ph.D. Dissertation, University of California, Santa Barbara. 356 pp.

In experimental and correlative studies, introduced fishes had stronger negative effects on *Rana a. draytonii* tadpoles and populations than bullfrogs or crayfish. Red-legged frog populations that coexisted in the study area with introduced predators are probably maintained by immigration from nearby sources that are free of the predators.

9. Cook, D. 1997. Microhabitat use and reproductive success of the California red-legged frog (*Rana aurora draytonii*) and bullfrog (*Rana catesbeiana*) in an ephemeral marsh. M.S. Thesis, Sonoma State University, California. 47 pp.

Habitat preferences by *R. draytonii* in Ledson Marsh, Sonoma County changed with changes in the vegetation and water levels during the year. Dead spikerush in shallow water (mean=39 cm) was important early in the year, and flooded smartweed dominated in the summer and fall. Frogs tended to avoid open water and bulrush cover. There was a 2-month gap between red-legged frog and bullfrog breeding seasons and bullfrog oviposition sites were in deeper water (mean=63 cm vs. 33 cm for red-legged frogs).

The marsh is typically dry by fall, seriously limiting survival of bullfrog tadpoles. Survivorship from eggs to metamorphosis was estimated at 1.9% for red-legged tadpoles and 0.0001% for bullfrogs.

10. Cook, D.G. and M.R. Jennings. 2007. Microhabitat use of the California red-legged frog (*Rana draytonii*) and introduced bullfrog (*Rana catesbeiana*) in a seasonal marsh. Herpetologica 63:430-440.

Published version of Cook (1997).

11. D'Amore A., V. Hemingway and K. Wasson. 2010. Do a threatened native amphibian and its invasive congener differ in response to human alteration of the landscape? Biological Invasions 12:145-154.

A comparison of the different habitat correlates of sympatric bullfrogs and *R. draytonii* in an agricultural landscape. Several human-mediated factors favor bullfrogs.

12. D'Amore A., V. Hemingway and K. Wasson. 2010. Do a threatened native amphibian and its invasive congener differ in response to human alteration of the landscape? Biological Invasions 12:155.

A minor correction to the previous article.

13. Davidson, C. 2004. Declining downwind: Amphibian population declines in California and historical pesticide use. Ecological Applications 14:1892-1902.

Using the same *R. draytonii* data set as Davidson, et al. (2002), the author concluded that total upwind pesticide use, especially organophosphates and carbamates, was a strong correlate of population disappearances.

14. Davidson, C., H.B. Shaffer, and M.R. Jennings. 2001. Declines of the California red-legged frog: Climate, UV-B, habitat, and pesticides hypotheses. Ecological Applications 11:464-79.

Testing four hypotheses (climate change, UV-B radiation, pesticides, habitat destruction) for their relevance to the disappearance of red-legged frogs from habitats in California, the authors determined that frogs had disappeared disproportionately from lower latitudes, from higher elevations, from near urbanized centers, and upwind of agricultural land use.

15. Davidson, C., H.B. Shaffer, and M.R. Jennings. 2002. Spatial tests of the pesticide drift, habitat destruction, UV-B, and climate-change hypotheses for California amphibian declines. Conservation Biology 16:1588-1601.

Using a slightly different data set and more refined analytical techniques, the results for the red-legged frog are the same as those in Davidson et al. (2001).

16. Deal, C., J. Edwards, N. Pellman, R. Tuttle and D. Woodward. 1997. Ponds – Planning, Design, Construction. Natural Resources Conservation Service. Agriculture handbook (#590).

Presents information on the creation of agricultural ponds and how to estimate pond creation, hydrological factors influencing the pond, different types of ponds, and revegetating. Strong agricultural basis.

17. Doubledee, R.A., E.B. Muller, and R.M. Nisbet. 2003. Bullfrogs, disturbance regimes, and the persistence of California red-legged frogs. Journal of Wildlife Management 67:424-438.

A model simulation concluded that winter floods and draining stockponds every two years benefited red-legged frog survival, whereas shooting adult bullfrogs was only effective with extreme effort. A strategy combining pond drainage with bullfrog shooting was the most effective at facilitating red-legged frog survival.

18. Drost, C.A. and G.M. Fellers. 1996. Collapse of a regional frog fauna in the Yosemite area of the California Sierra Nevada. Conservation Biology 10:414-425.

Retracing a route across the Sierra Nevada taken by biologists in 1915 and 1919, they found many fewer amphibian populations. Three species, including *R. aurora draytonii*, were not found at all.

19. Fellers, G.M. 2005. *Rana draytonii* Baird and Girard 1852(b). California red-legged frog. Pages 552-554 *in* M. Lanoo (editor). Amphibian declines: The conservation status of United States species. University of California Press, Berkeley, Los Angeles, London. 1094 pages.

An up-to-date and exhaustive compilation of historic and current distribution and abundance, life history features, and conservation.

20. Fellers, G.M., R.A. Cole, D.M. Reinitz, and P. M. Kleeman. 2011. Amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) in coastal and montane California, USA anurans. Herpetological Conservation and Biology 6:383-394.

Chytrid fungus (Bd) was found in all of the six species of frogs that were examined. Where 10 or more sites within a watershed were examined, the number of infected sites varied between 21% and 80%. The percentage of infected sites varied from year to year, and various variables were correlated with the presence or absence of Bd.

21. Fellers, G.M., A.E. Launer, G. Rathbun, S. Bobzien, J. Alvarez, D. Sterner, R.B. Seymour, and M. Westphal. 2001. Overwintering tadpoles in the California red-legged frog (*Rana aurora draytonii*). Herpetological Review 32:156-157.

Documentation of the relatively rare occurrence of overwintering tadpoles at several sites from Point Reyes south through the Bay Area to San Luis Obispo County, California.

22. Fellers, G.M. and P.M. Kleeman. 2007. California red-legged frog (*Rana draytonii*) movement and habitat use: Implications for conservation. Journal of Herpetology 41:276-286.

Many frogs were radiotracked on Point Reyes, Marin County, California. 66% of females and 25% of males moved from the breeding pond to non-breeding areas. Ponds were breeding habitat and streamsides were summer habitat.

23. Fisher, R.N. and H.B. Shaffer. 1996. The decline of amphibians in California's Great Central Valley. Conservation Biology 10:1387-1397.

California red-legged frogs were not found in 24 of 28 Central Valley counties where they formerly occurred.

24. Foster, C.D., J. Traverse, P. Martin, A. Varsik, and E. Stanhaus. 2007. Anuran conservation through collaborations: Santa Barbara Zoo teams up with the U.S. Forest Service. Herpetological Review 38:141-142.

Cooperative surveys of *R. draytonii* and *Bufo californicus* in streams of coastal central California. Photographs of *R. draytonii* egg masses.

25. Frost, R. 2001. The California red-legged frog: A species in crisis. Outdoor California 62:21-23.

A concise, slightly dated, popular description of the frog's status.

26. Gerwin, V. 2006. Frog forces EPA to reassess pesticides. Frontiers in Ecology and the Environment 4:511.

The Center for Biological Diversity reached an agreement with the US Environmental Protection Agency to ban 66 pesticides from California red-legged frog habitat until they can be assessed for harmful impacts on the frog.

27. Gray, I.A. 2009. Breeding pond dispersal of interacting California red-legged frogs (*Rana draytonii*) and American bullfrogs (*Lithobates catesbeianus*) of California: a mathematical model with management strategies. M.S. Thesis, Humboldt State University, California.

A mathematical model showed that a network of permanent and seasonal ponds would allow the coexistence of bullfrogs and red-legged frogs for at least 60 years without management. Bullfrog control was necessary to maintain red-legged frog populations in permanent ponds.

28. Green, D.E., K.A. Converse and A.K. Schrader. 2002. Epizootiology of sixty-four amphibian morbidity and mortality events in the USA, 1996-2001.

A good overview of the factors causing amphibian die-offs in the US. Chytrid fungus was the most common causative agent, and was diagnosed or suspected in the two mortality events studied in 2002 in *Rana draytonii*. Crayfish introduction was also probably a contributing factor in one case.

29. Hayes, M.P. and M.R. Jennings. 1989. Habitat correlates of distribution of the California red-legged frog (*Rana aurora draytonii*) and the foothill yellow-legged frog (*Rana boylii*): Implications for management. Pages 144-158 in R.E. Szaro, K.E. Severson, and D.R. Patton (technical coordinators). Proceedings of the Symposium on the Management of Amphibians, Reptiles, and Small Mammals in North America. U.S. Department of Agriculture, Forest Service General Technical Report RM-166.

Rana a. draytonii recorded most commonly from intermittent streams that had pools >0.6 m deep and intact shoreline or emergent vegetation. Negative habitat components included bullfrogs, introduced fishes, and perennial water.

30. Hayes, M.P. and M.R. Jennings. 1986. Decline of ranid frog species in western North America: Are bullfrogs (*Rana catesbeiana*) responsible? Journal of Herpetology 20:490-509.

Bullfrogs, habitat alteration, and introduced fishes have contributed to the decline of ranid frogs, with the latter probably having the most serious effect.

31. Jennings, M.R. 1988b. Natural history and decline of native ranids in California. Pages 61-72 in H.F. DeLisle, P.R. Brown, B. Kaufman, and B.M. McGurty (editors).

Proceedings of the conference on California herpetology. Southwestern Herpetologists Society Special Publication No. 4.

Summary of biology and habitat for *R. draytonii*, and discussion of current threats.

32. Jennings, M.R. and M.P. Hayes. 1985. Pre-1900 overharvest of California red-legged frogs (*Rana aurora draytonii*): The inducement for bullfrog (*Rana catesbeiana*) introduction. Herpetologica 41:94-103.

Because of declining red-legged frog populations, bullfrogs were introduced to California to satisfy the frog-leg market.

33. Jennings, M.R. and M.P. Hayes. 1995. Amphibian and reptile species of special concern in California. Final report submitted to the California Department of Fish and Game, Inland Fisheries Division, Contract No. 8023. 255 pages.

Distribution map for *R. a. draytonii* and summaries of its taxonomy, biology, and presumed threats.

34. Kupferberg, S.J., W.J. Palen, A.J. Lind, S. Bobzien, A. Catenazzi, J. Drennann, and M.E. Power. 2012. Effects of flow regimes altered by dams on survival, population declines, and range-wide losses of California river-breeding frogs. Conservation Biology 26:513-524.

Dams and the resultant disruption of natural flow regimes are correlated with the decimation and disappearance of downstream populations of *Rana boylii* and *R. draytonii.*

35. Lawler, S.P., D. Dritz, T. Strange, and M. Holyoak. 1999. Effects of introduced mosquitofish and bullfrogs on the threatened California red-legged frog. Conservation Biology 13:613-622.

In experimental ponds, *Gambusia* did not affect red-legged frog tadpole survival, but they did inhibit growth and delayed metamorphosis. Bullfrog tadpoles reduced survivorship of red-legged tadpoles to about 5%.

36. McCasland, C., J. Davis, and D. Krofta. 2001. Endangered and threatened wildlife and plants: Final determination of critical habitat for the California red-legged frog; final rule. Federal Register 66:14626-14758.

An accurate, up-to-date summary of the biology and habitat requirements of the California red-legged frog. Includes detailed maps and description of the 1,674,582 ha critical habitat.

37. Miller, K.J., A. Willy, S. Larsen, and S. Morey. 1996. Endangered and threatened wildlife and plants: Determination of threatened status for the California red-legged frog. Federal Register 61:25813-25833.

Notification of the listing the California red-legged frog as threatened under the Endangered Species Act.

38. Miller, K.J. 1994. Endangered and threatened wildlife and plants: Proposed endangered status for the California red-legged frog. Federal Register 59:4888-4895.

U. S. Fish and Wildlife Service listing package with a summary of the frog's biology and threats to its persistence.

39. Morafka, D.J. and B.H. Banta. 1976. Ecological relationships of the recent herpetofauna of Pinnacles National Monument, Monterey and San Benito Counties, California. The Wasmann Journal of Biology 34: 304-324.

Rana draytonii (as *R. aurora*) was seen active in all months except January and February; it was most active in the warm months, March through October.

40. Moyle, P.B. 1973. Effects of introduced bullfrogs, *Rana catesbeiana*, on the native frogs of the San Joaquin Valley, California. Copeia 1973:18-22.

The bullfrog appears to have displaced the red-legged frog from all of its former habitat in the San Joaquin Valley.

41. Padgett-Flohr, G. E. and R. L. Hopkins. 2010. Landscape epidemiology of *Batrachochytrium dendrobatidis* in central California. Ecography 33:688-697.

A sampling of 6 amphibian species, including *R. draytonii*, for *Bd* in 54 ponds over 4 years resulted in no difference in status of *Bd* infection based on land use practices. Authors attribute *Bd* infection between ponds to waterfowl and amphibians and not livestock or humans.

42. Padgett-Flohr, G. E. and R. L. Hopkins II. 2009. *Batrachochytrium dendrobatidis*, a novel pathogen approaching endemism in central California. Diseases Of Aquatic Organisms 83:1-9.

A total of 687 amphibian museum specimens from four species collected between 1897 and 2005 from central California were examined for chytrid fungus infection. The earliest infections detected (1961) were in *Lithobates catesbeianus* on the Stanford University campus, followed by infections in *Rana boylii* (1966), *Pseudacris regilla* (1970s), and *Rana draytonii* (1980s). *Bd* appears to have spread in a radial pattern through central California from an initial central location over a period of 40 yr. *Pseudacris regilla* appears to be the major vector of the disease.

43. Padgett-Flohr, G. E. 2008. Pathogenicity of *Batrachochytrium dendrobatidis* in two threatened California amphibians: *Rana draytonii* and *Ambystoma californiense.* Herpetological Conservation and Biology 3:182-191.

Six of 12 *Rana draytonii* tadpoles had chytrid infections when collected. The tadpoles were maintained for 18 months through metamorphosis, during which none died. Infected tadpoles/frogs maintained weight and growth equal to the non-infected controls.

44. Preston, D.L., J.S. Henderson and P.T.J. Johnson. 2012. Community ecology of invasions: Direct and indirect effects of multiple invasive species on aquatic communities. Ecology 93:1254.

An examination of the individual and combined effects of nonnative fish predators and nonnative bullfrogs on native communities. Among 139 wetlands, nonnative fish (bass, sunfish and mosquitofish) negatively influenced the probability of occupancy of Pacific treefrogs (*Pseudacris regilla*), but neither invader had strong effects on occupancy of California newts (*Taricha torosa*), Western toads (*Anaxyrus boreas*) or Red-legged frogs (*Rana draytonii*). Bullfrog larvae reduced the growth of native anurans but had no effect on survival.

45. Rathbun, G. 2012. Water temperatures in a California red-legged frog breeding pond. Immediate Science Ecology 1:7-11.

Use of data loggers to gather water temperature profiles of one pond on the coast of Central California. Water temperatures did not follow ambient air temperatures due to solar radiation. It is hypothesized that without cattle grazing the pond would become too overgrown and not support a temperature regime in shallow waters to support CRF>

46. Rathbun, G.B. and J. Schneider. 2001. Translocation of California red-legged frogs (*Rana aurora draytonii*). Wildlife Society Bulletin 29:1300-1303.

Describes juvenile and adult frogs homing after being moved from breeding pond. One adult male returned 2.8km back to the breeding pond in less than 32 days.

47. Rathbun, G.B., N.J. Scott, Jr., and T.G. Murphey. 1997. *Rana aurora draytonii* (California red-legged frog). Behavior. Herpetological Review 28:85-86.

Red-legged frogs climbed over a fence designed to be a frog barrier.

48. Reis, D.K. 1999. Habitat characteristics of California red-legged frogs (*Rana aurora draytonii*): Ecological differences between eggs, tadpoles, and adults in a coastal brackish and freshwater system. M.S. Thesis, San Jose State University, California.

A multivariate analysis of habitats showed eggs and larvae were found in relatively shallow, warm water, with a high abundance of pondweed (*Potamogeton*) an indicator of larval habitat. Adults were found in deeper water.

49. Richmond, J., K. Barr, A. Backlin, A. Vandergast and R. Fisher. 2013. Evolutionary dynamics of a rapidly receding southern range boundary in the threatened California red-legged frog (*Rana draytonii*). Evolutionary Applications. pp 15.

Through microsatellites and mtDNA, the authors evaluated the "abundant-center" hypothesis as it pertains to the southern population of *R. draytonii* in three populations in southern California. The spatial configuration of *R. draytonii* populations forming the southern range edge and their interdigitation within major urban centers acts to suspend gene flow along the periphery of the distribution and raises conservation concerns for some of the most threatened populations in the species' range. The low diversity and isolation sink populations at the range edge suggest that management efforts should focus on preserving high diversity, interior sources.

50. Snyder-Velto, D.K. 2008. Moving quickly saves a breeding season. Endangered Species Bulletin 33:32-33.

After a flood, a rapid response by the Forest Service and the Fish and Wildlife Service created breeding habitat for a critically vulnerable population of red-legged frogs, one of only two known in Los Angeles County.

51. Stitt, E.W. and G.T. Downard. 2000. Status of the California red-legged frog and California tiger salamander at Concord Naval Weapons Station, California. Transactions of the Western Section of the Wildlife Society 36:32-39.

Extensive survey of red-legged frog habitats and comments on the disappearance of bullfrogs from the station.

52. Stuart, S.N., M. Hoffmann, J.S. Chanson, N.A. Cox, R.J. Berridge, P. Ramani, and B.E. Young (editors). 2008. Threatened amphibians of the world. IUCN, Gland, Switzerland and Conservation International, Arlington, Virginia, USA. Lynx Editions, Barcelona, Spain.

Rana draytonii (as *R. a. draytonii*) has been extirpated from about 70% of its former range. It still occurs in 256 drainages in 28 counties. The principal threats are habitat loss and non-native predators. The USGS has implemented a monitoring plan, and the USFWS has designated 1.7 million hectares as Critical Habitat in California. A monitoring and conservation program must be implemented in the Mexican part of its range, as this does not include any protected areas.

53. Symonds, K. 2008. Ranchers restore amphibian-friendly ponds. Endangered Species Bulletin 33(1):30-31.

Short description of a program developed by the Alameda County Resource Conservation District, the National Resource Conservation Service, and the U.S. Fish and Wildlife Service to encourage Alameda County ranchers to repair stock ponds, thus creating habitat for red-legged frogs and tiger salamanders.

54. Tatarian, P.J. 2008. Movement patterns of California red-legged frogs (*Rana draytonii*) in an inland California environment. Herpetological Conservation and Biology 3:155-169.

Less than half of 49 radio-tagged frogs moved away from their source pools over two seasons. Most movement occurred after the first rains and before the breeding season. Upland sites where frogs located were closer to pools and had more cover than random sites.

55. Tatarian, P. and G. Tatarian. 2010. Chytrid infection of *Rana draytonii* in the Sierra Nevada, California, USA. Herpetological Review 41:325-327.

Swab samples of *Rana draytonii* from four of the eight known sites where the frog still occurs in the Sierra Nevada showed chytrid infections in small samples ranging from 29%-100% of the frogs examined. No dead frogs or outward signs of the infection were seen.

56. Trumbo, J. 2005. An assessment of the hazard of a mixture of the herbicide rodeo and the non-ionic surfactant R-11 to aquatic invertebrates and larval amphibians. California Department of Fish and Game 91(1):38-46.

Analyzing effects to northern leopard frog (*Rana pipiens*) from both Rodeo and surfactant, with the results that the Rodeo concentrate declined rapidly during the first 48 hours. The hazard

comes from the mixture of the R-11 surfactant and the Rodeo herbicide, not the individual components.

57. U.S. Environmental Protection Agency. 2010. Pesticides: Endangered Species Protection Program. Effects determinations for the California red-legged frog and other California listed species. Web site: http:www.epa.gov/espp/litstatus/effects/redleg-frog/

A list of pesticides and their effects on California species. The information is species specific, but much of the general amphibian data is probably applicable to *Rana draytonii*.

58. U.S. Fish and Wildlife Service. 2010. Endangered and threatened wildlife and plants; revised designation of critical habitat for the California red-legged frog (*Rana draytonii*); final rule. Federal Register 75:12816-12959.

More than 647,000 ha are encompassed in this final (we hope), biologically based, ruling on critical habitat.

59. U.S. Fish and Wildlife Service. 2008. Endangered and threatened wildlife and plants; revised critical habitat for the California red-legged frog (*Rana aurora draytonii*); proposed rule. Federal Register 73:53492-53680.

Spurred by a lawsuit from the Center for Biological Diversity, this proposes to fix, by using biological data, most of the problems of U.S. Fish and Wildlife Service (2006) by increasing critical habitat from 182,225 ha to 730,402 ha. The comment period ended in November, 2008.

60. U.S. Fish and Wildlife Service. 2006. Endangered and threatened wildlife and plants; designation of critical habitat for the California red-legged frog, and special rule exemption associated with final listing for existing routine ranching activities; final rule. Federal Register 71:19244-19292.

A revision of McCasland, et al. (2001) that greatly reduced the critical habitat from 1.7 million ha to 182,225 ha by ignoring the frog's biology, and by eliminating areas covered by Habitat Conservation Plans and existing or draft management plans of other agencies. Areas where the frog has been extirpated were also excluded.

61. U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessments and field surveys for the California red-legged frog. Web site: http://www.fws.gov/sacramento/es/documents/crf_survey_guidance_aug2005.doc.

Current protocol for site assessments and frog surveys.

62. U.S. Fish and Wildlife Service. 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, Oregon. 173 pp.

Summary of biology and description of conservation measures needed to remove frog from federal list of threatened and endangered species.

63. Wilcox, J.T. 2011. *Rana draytonii* (California Red-Legged Frog). Predation. Herpetological Review 42:414-415.

Seven bullfrog stomachs from a stock pond contained 6 red-legged frog metamorphs.

64. Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada. Comstock Publishing Associates, Ithaca, New York. 640 pages.

Distribution, habitat, description of *R. a. draytonii*, and a summary of its biology, with quotes from field notes and photographs of animals.

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