Appendix C. Spatial Summary for Iprodione Uses

I. Labeled Uses for Iprodine

The following use list (**Table 1**) is derived from label use information. It is used as a basis for the spatial analysis of iprodine.

Table 1. Use list from labels	
Category/Mapping Layer	**Use**
Cultivated crops	Beans, caneberries and bushberries (blackberry, blueberry, caneberries, currant, elderberry, gooseberry, huckleberry, loganberry, raspberry), cole crops (broccoli, Brussels sprouts, ca bbage, canola, cauliflower, crucifer, kale, kohlrabi, turnip greens), carrot, cotton, garlic, ornamentals.
Orchards and Vineyards	Almond, stone fruits (apricot, cherry, nectarine, peach, plum, prune), grapes, lettuce, onion, peanuts, potato, radish, rutabaga, strawberry
Turf	Golf course, sod farm, commercial industrial lawns.
Forest	Coniferous trees.

II. Initial Area of Concern

After determining which uses will be assessed from label information, an evaluation of the potential 'footprint' of use patterns is determined. The 'footprint' includes all areas within the state of California where the pesticide could be applied (**Figure 1**). The footprint of potential use represents the chemical's initial area of concern, and is typically based on available land cover data. Uses that are not represented through available land cover data are not displayed spatially, as their extent cannot be defined using existing categories of land cover classes (*e.g.* dumpsters). The initial area of concern spatial representation is the starting point for the action area.

A. Land Cover

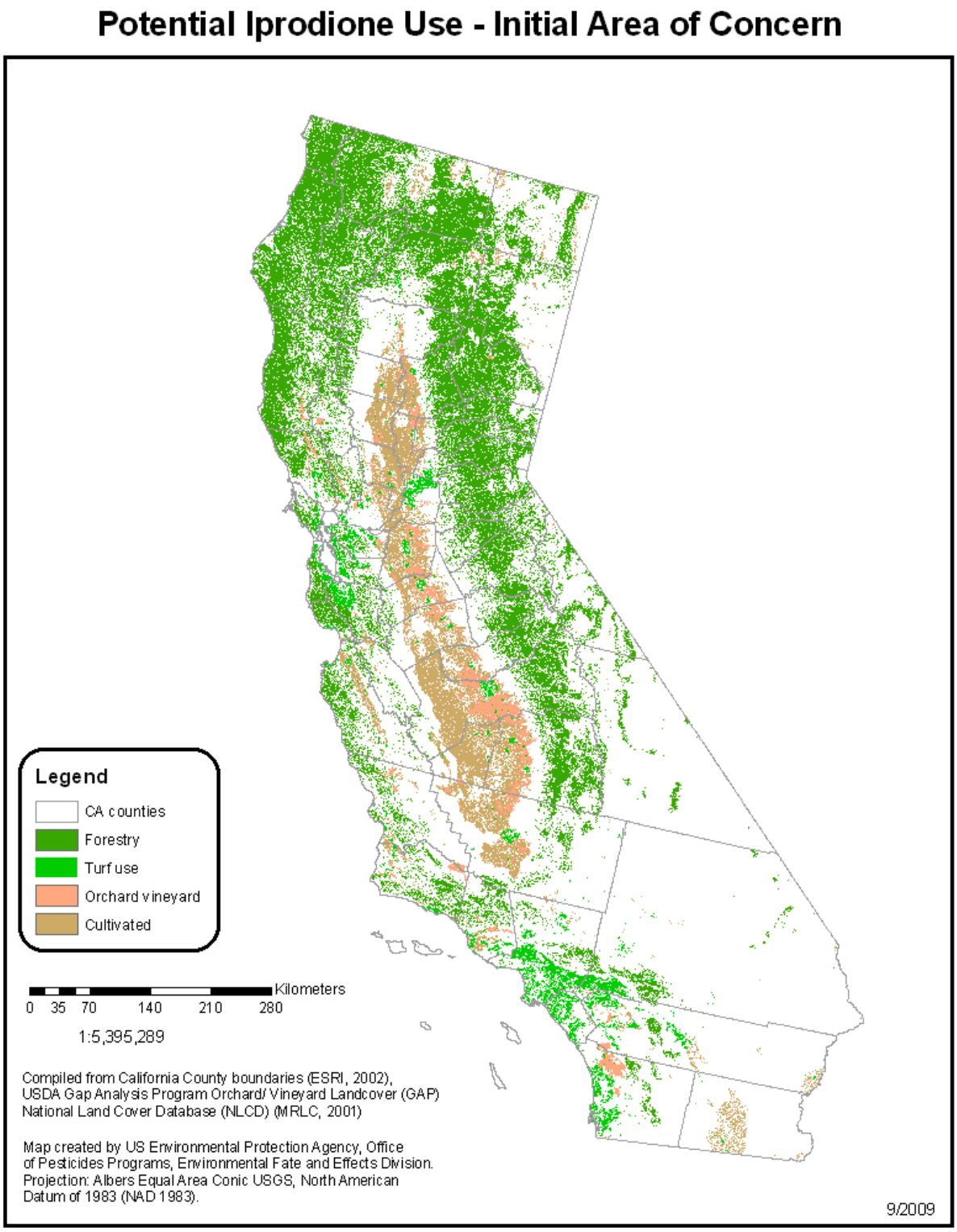
Base mapping land cover layers for the initial area of concern analysis were obtained from the National Land Cover Dataset (NLCD 2001) for the majority of land use types. The NLCD was released as a nationally consistent, regionally indexed dataset in January 2007. California GAP data from the Biogeography Lab from UCLA-Santa Barbara (1998) were obtained for the orchard and vineyard uses. These raster files were converted to vectors using simplification and majority filter routines, and used in the analysis. The turf layer is derived NLCD classes and impervious surface layers with corrections applied from. **Table 2** shows the complete list of NLCD and other derived layers used for initial area of concern representation.

Table 2. Land Cover Data Sources		
Layer name	**Base source**	**Description**
Cultivated Crops	NLCD	Grid code 82: Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and orchards/vineyards, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.
Developed, High Intensity	NLCD	Grid code 24: Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to100 percent of the total cover.
Developed, Low Intensity	NLCD	Grid code 22: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.
Developed, Medium Intensity	NLCD	Grid code 23: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 percent of the total cover. These areas most commonly include single-family housing units.
Developed, Open Space	NLCD	Grid code 21: Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
Forest	NLCD	Grid codes 41,42,43: Deciduous, evergreen and mixed. Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover.
Coniferous forest	NLCD	Grid codes 42, 43 for evergreen and mixed forest types. For mixed forest types, neither deciduous nor evergreen species are greater than 75% of the total tree cover.
Open Water	NLCD	Grid code 11: All areas of open water, generally with less than 25% cover of vegetation or soil.
Orchards and vineyards	CA GAP	Grid codes 11210, 11211 and 11212. This is the only CA GAP reference.
Pasture/Hay	NLCD	Grid code 81: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.
Wetlands	NLCD	Grid codes 90, 95: Woody wetlands and emergent herbaceous.
Turf	NLCD	A derived NLCD class based on developed classes and the impervious surface layer with corrections applied.
Rights-of-way	US DOT; TeleAtlas	A derived class using road, rail, and pipeline coverages.

B. Initial Stream Reaches

In addition to the land cover classes described above, the initial area of concern includes the stream segments found within those land cover areas. The stream segments are obtained from the NHDPlus dataset. For each stream reach in the hydrography network, the data provide a tally of the total area in each NLCD land cover class for the upstream cumulative area contributing to the given stream reach. Using the cumulative land cover data provided by the NHDPlus (http://www.horizon-systems.com/nhdplus/), an aggregated use class is created based on the classes listed in Table 1. A cumulative percent cropped area (PCA) is calculated for each stream reach based on the aggregate use class (divided by the total upstream contribution area). Pesticide exposures in the streams within the initial area of concern are conservatively assumed to be represented by the estimated environmental concentrations used in RQ calculation.

Figure 1.


Potential Iprodione Use - Initial Area of Concern
Legend
CA counties
Forestry
Turf use
Orchard vineyard
Cultivated
Kilometers
0 35 70 140 210 280
1:5,395,289
Compiled from California County boundaries (ESRI, 2002),
USDA Gap Analysis Program Orchard/ Vineyard Landcover (GAP)
National Land Cover Database (NLCD) (MRLC, 2001)
Map created by US Environmental Protection Agency, Office
of Pesticides Programs, Environmental Fate and Effects Division.
Projection: Albers Equal Area Conic USGS, North American
Datum of 1983 (NAD 1983).
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III. *Spatial Extent of the Effects Determination*

There are three types of CRLF habitat areas: critical habitat, currently occupied core areas, and California Natural Diversity Database (CNDDB) occurrence sections (Figure 2). The overlap of land cover corresponding to iprodine use patterns that result in an LAA determination and CRLF habitat for the entire state of California is shown in Figure 3. The overlap map provides a depiction of land cover that corresponds to "LAA" iprodine use patterns, overlapped with habitat; however, the actual area of overlap is expected to be greater when off-site transport via spray drift is included for each land cover type. This is discussed in the risk discussion of the iprodione risk assessment. The buffers may be different for each land cover type due to varying application rates and/or methods for different use patterns. Further analysis of the extent of drift for each land cover type and the overlap with habitat can be included as part of the consultation process, if needed.

IV. A Note on Limitations and Constraints of Tabular and Geospatial Sources

The geographic data sets used in this analysis are limited with respect to their accuracy and timeliness. The National Land Cover Data Set (NLCD 2001) represents the most current and comprehensive collection of national land use and land cover information for the United States and represents land cover data obtained between 1994-1998. Two additional data sets were included to account for uses not clearly defined by the NLCD. These supplemental data include orchard and vineyard land cover data from the California Gap Analysis Project data (CaGAP 1998), and turf use data derived from NLCD landcover with corrections applied..

Hydrographic data are from the NHDPlus data set (http://www.horizon-systems.com/nhdplus/). NHDPlus contains the most current and accurate nationwide representation of hydrologic data. At a spatial scale of 1:100,000, the NHDPlus might omit the smallest streams and waterbodies. In addition, in some isolated instances, there are errors in the data including missing or disconnected stream segments and incorrect assignment of flow direction.

The relatively coarse spatial scale and general classification categories of these data sets preclude use of the data for highly localized study. Additionally, some labeled uses are not possible to map precisely due to the lack of appropriate spatial data in NLCD on the location of these areas.

OPP will continue to endeavor to identify and incorporate (as appropriate) additional land cover data sets for other land classes not captured in this assessment. In addition, as new updates to existing data occur, these will also be evaluated and incorporated as appropriate.

Figure 2.

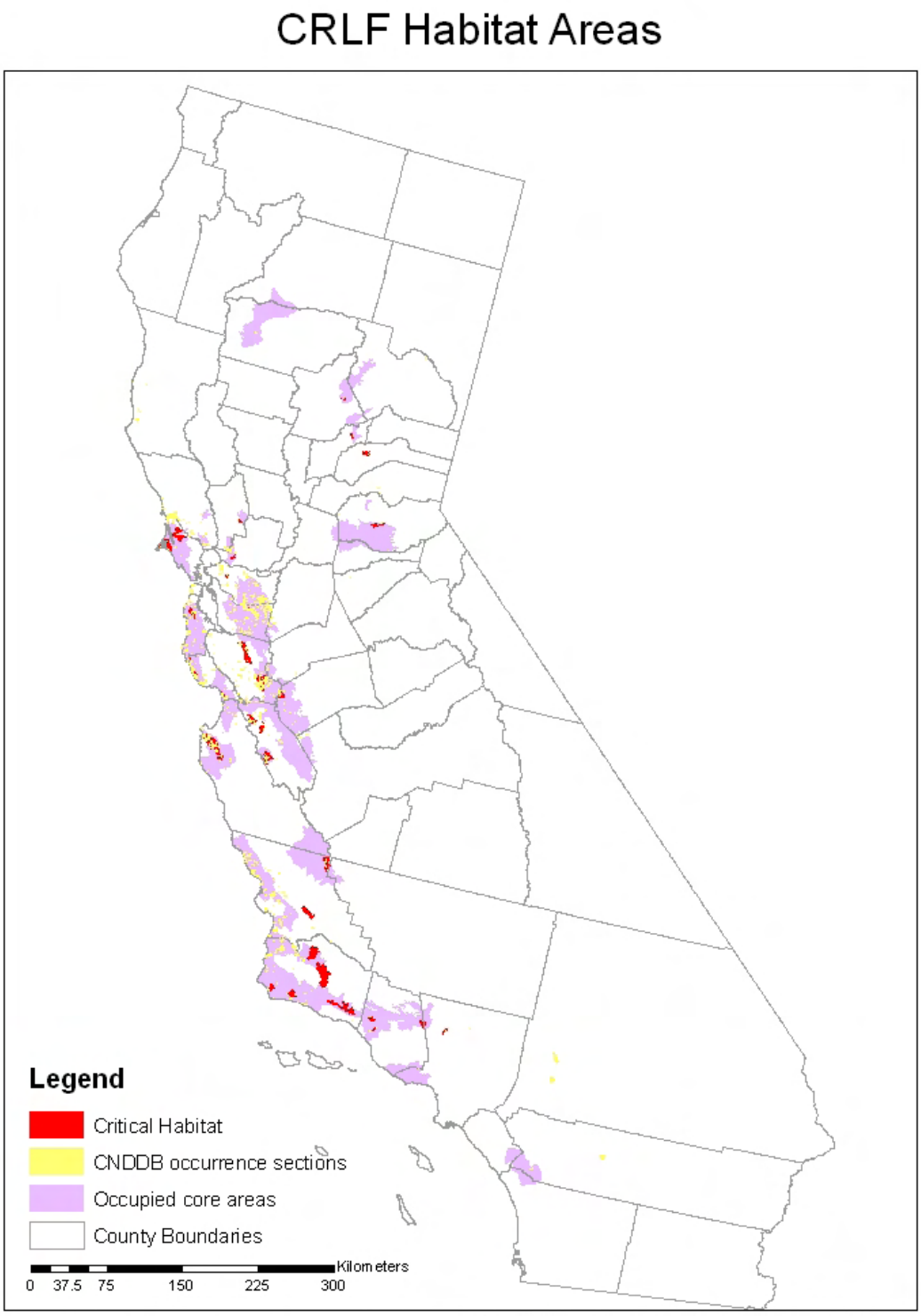
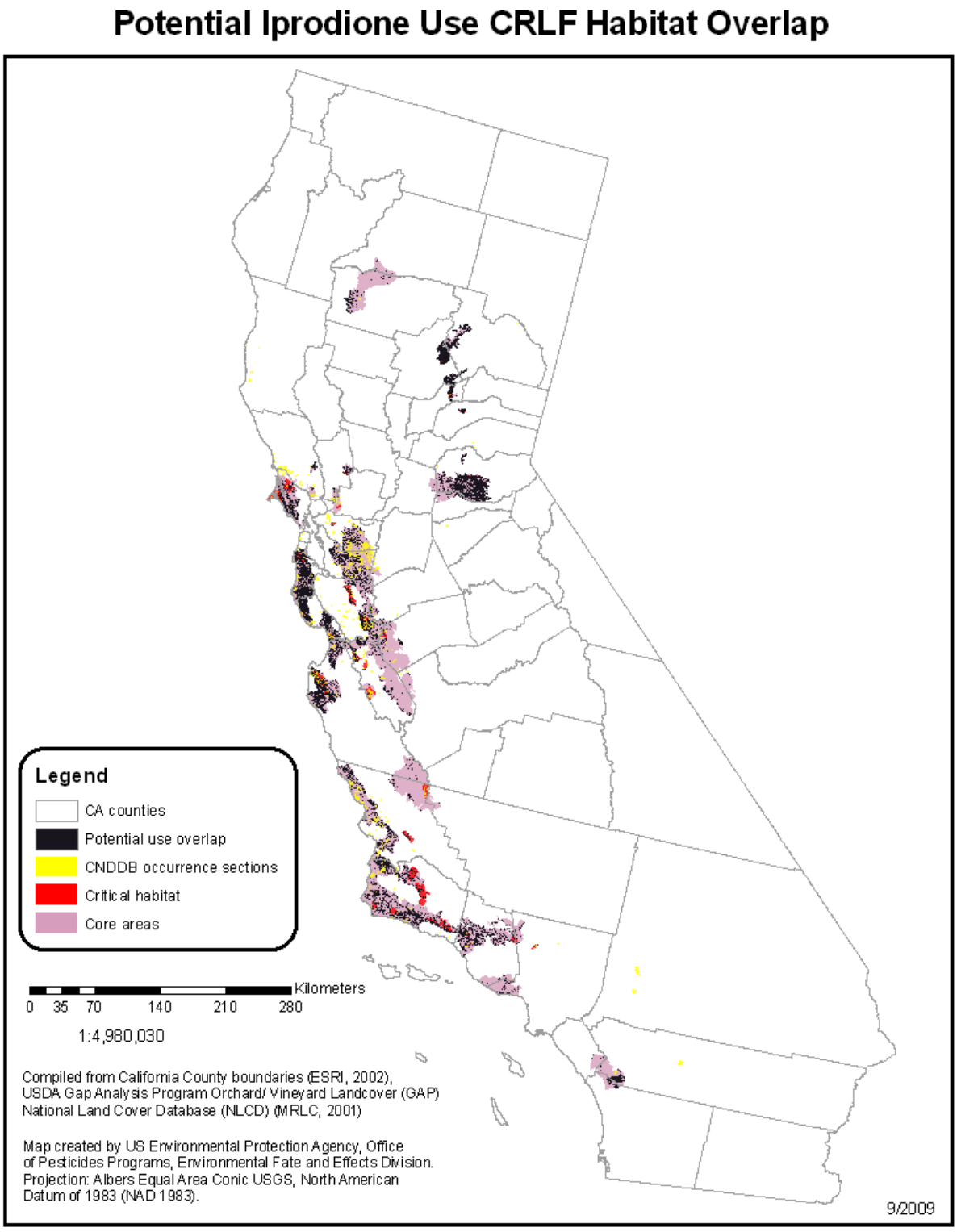

CRLF Habitat Areas
Legend
Critical Habitat
CNDDB occurrence sections
Occupied core areas
County Boundaries
Kilometers
0 37.5 75 150 225 300
Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)
Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Figure 3.


Potential Iprodione Use CRLF Habitat Overlap
Legend
CA counties
Potential use overlap
CNDDB occurrence sections
Critical habitat
Core areas
Kilometers
0 35 70 140 210 280
1:4,980,030
Compiled from California County boundaries (ESRI, 2002),
USDA Gap Analysis Program Orchard/ Vineyard Landcover (GAP)
National Land Cover Database (NLCD) (MRLC, 2001)
Map created by US Environmental Protection Agency, Office
of Pesticides Programs, Environmental Fate and Effects Division.
Projection: Albers Equal Area Conic USGS, North American
Datum of 1983 (NAD 1983).
9/2009

V. References for GIS Maps

CNDDB Occurrence Sections – California Natural Diversity Database. http://www.dfg.ca.gov/bdb/html/cnddb.html

ESRI. 2002. Detailed Counties, ESRI data and maps. (1:24,000) www.esri.com

GAP. 1998. Gap Analysis. Orchard/vineyard land cover data. National Biological Information Infrastructure. www.nbii.gov

NHDPlus dataset (http://www.horizon-systems.com/nhdplus/)

NLCD. 2001. Multiresolution Land Characteristics (MRLC) www.mrlc.gov

TeleAtlas. 2007. "Dynamap 2000." Version No. 17.1. Released April 2007. USPS Currentness. February 2007.

U.S. Department of Transportation's National Pipeline Mapping System. 1999. USDoT/Baker. Office of Pipeline Safety, Washington, D.C. 03/30/1999. www.npms.rspa.dot.gov

USFWS. 2002. Recovery Plan for the California Red-legged Frog (*Rana aurora draytonii*). Region 1, USFWS, Portland, Oregon. (http://ecos.fws.gov/doc/recovery_plans/2002/020528.pdf)

USFWS. 2002. California Red-legged frog Core Areas.

USFWS. 2006. Endangered and threatened wildlife and plants: determination of critical habitat for the California red-legged frog. 71 FR 19244-19346.