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CALIFORNIA'S WILDLIFE

VOLUME I

AMPHIBIANS AND REPTILES

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Compiling Editors

David C. Zeiner
William F. Laudenslayer, Jr.
Kenneth E. Mayer

Style Edited
by
Marshall White



California Statewide Wildlife Habitat Relationships System

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME
Sacramento, California

May 2, 1988

A028 Western Spadefoot *Scaphiopus hammondi*

Family: Pelobatidae Order: Anura Class: Amphibia Date: November 29, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The western spadefoot ranges throughout the Central Valley and adjacent foothills, and is usually quite common where it occurs. In the Coast Ranges it is found from Point Conception, Santa Barbara Co., south to the Mexican border. Elevations of occurrence extend from sea level to 1363 m (4500 ft) in the southern Sierra foothills. This species occurs primarily in grassland situations, but occasional populations also occur in valley-foothill hardwood woodlands. Some populations persist for a few years in orchard-vineyard habitats.

SPECIFIC HABITAT REQUIREMENTS

Feeding: Adults take insects, worms, and other invertebrates (Stebbins 1972). Adults of the very similar species *S. multiplicatus* were found to eat primarily butterfly and moth larvae, ants, termites and beetles (Whitaker *et al.* 1977, Dimmitt and Ruibal 1980). Tadpoles consume planktonic organisms and algae, but are also carnivorous (Bragg 1964) and consume dead aquatic larvae of amphibians, including their own species. *S. bombifrons* tadpoles capture and consume fairy shrimp (Bragg 1962).

Cover: *Scaphiopus* are rarely found on the surface. Most of the year is spent in underground burrows up to 0.9 m (36 in) deep (Stebbins 1972), which they construct themselves. Some individuals also use mammal burrows. Recently metamorphosed juveniles seek refuge in the immediate vicinities of breeding ponds for up to several days after transformation. They hide in drying mud cracks, under boards and other surface objects including decomposing cow dung (Weintraub 1980).

Reproduction: Breeding and egg laying occur almost exclusively in shallow, temporary pools formed by heavy winter rains. Egg masses are attached to plant material, or the upper surfaces of small submerged rocks (Stebbins 1951).

Water: Rainfall is important in the formation and maintenance of breeding ponds. Most surface movements by adults are associated with rains or high humidities at night. During dry periods, the moist soil inside burrows provides water for absorption through the skin (Ruibal *et al.* 1969, Shoemaker *et al.* 1969). Dispersal of postmetamorphic juveniles from breeding ponds often occurs without rainfall.

Pattern: Grasslands with shallow temporary pools are optimal habitats for the western spadefoot.

SPECIES LIFE HISTORY

Activity Patterns: They are active on the surface nocturnally during rains or periods of high humidity.

Seasonal Movements/Migration: Adults remain in underground burrows during most of the year, but the first rains of fall usually initiate surface movements. Breeding activities normally conclude by the end of March. Tadpoles transform during late spring and disperse after spending a few hours or days near the pond margins.

Home Range: Few movements occur during most of the year, but they will travel up to several meters on rainy nights. Movements to and from breeding ponds are rarely extensive.

Territory: The western spadefoot is not territorial during most of the year, but aggressive encounters between calling males at a breeding site suggested a degree of territoriality (Whitford 1967).

Reproduction: Breeding and egg laying normally occur from late winter to the end of March. Chorusing males may be heard during this period, but agricultural irrigation may elicit vocalizations in any month. Females lay numerous small, irregular clusters containing 10 to 42 eggs. They may lay more than 500 eggs in one season (Stebbins 1951). Eggs hatch rapidly, normally within two weeks.

Niche: Tadpoles may compete for food or space with other amphibian larvae. Because of their secretive behavior during most of the year, adults probably avoid predators. Dense populations of tadpoles may be heavily preyed upon by wading birds, or certain species of mammals. Childs (1953) suggested raccoons as probable tadpole predators.

REFERENCES

Stebbins 1951, 1972, Childs 1953, Bragg 1962, 1964, Whitford 1967, Ruibal *et al.* 1969, Shoemaker *et al.* 1969, Whitaker *et al.* 1977, Dimmitt and Ruibal 1980, Weintraub 1980.

123 °

121 °

119 °

117 °

115 °

WESTERN SPADEFOOT

AUTHORSHIP

Species Note Prepared By: S. Morey
 Species Note Edited By: E. C. Beedy, R. Duke
 Species Note Reviewed By: T. Papenfuss

43°

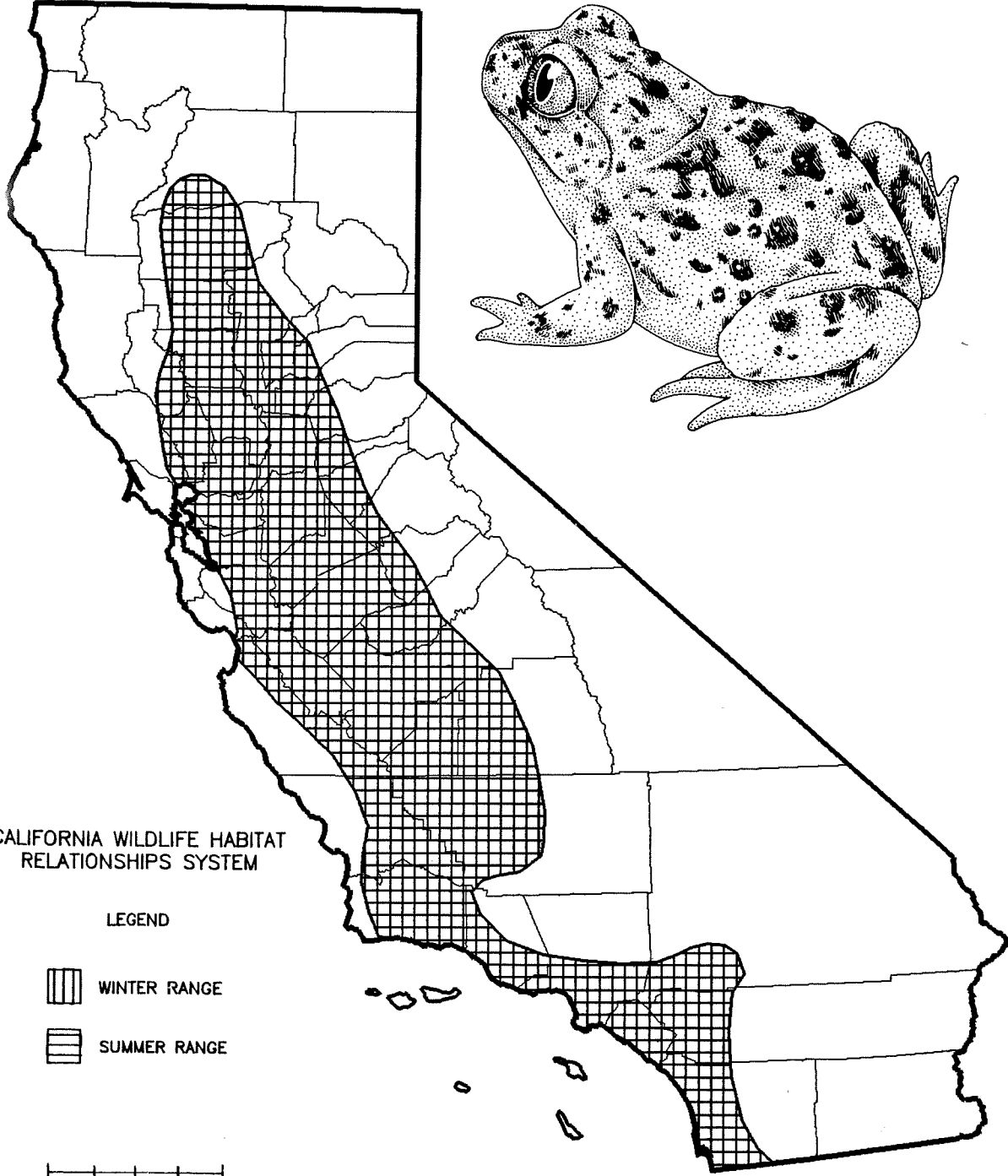
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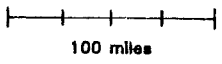
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CALIFORNIA WILDLIFE HABITAT
 RELATIONSHIPS SYSTEM

LEGEND

-  WINTER RANGE
-  SUMMER RANGE



123 °

121 °

119 °

117 °

115 °

06/87

A039 Pacific Treefrog *Hyla regilla*

Family: Hylidae Order: Anura Class: Amphibia Date: December 19, 1984

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

This widely distributed species is California's most common amphibian, absent only from dry desert habitats. Elevations of occurrence extend from sea level to at least 3384 m (11,000 ft) in the Sierra Nevada (Stebbins 1985).

SPECIFIC HABITAT REQUIREMENTS

Feeding: Adults take a variety of larval and adult invertebrates including slugs, spiders, isopods, centipedes, earthworms, and insects (Brattstrom and Warren 1955, Johnson and Bury 1965).

Cover: During the breeding season, individuals take daytime cover under clumps of vegetation and surface objects near water. During the remainder of the year, they leave their breeding sites and seek cover in moist niches in buildings, wells, rotting logs or burrows.

Reproduction: Breeding and egg-laying may occur in any body of water, but temporary pools with plenty of submerged and emergent vegetation appear to be favored. Egg clusters are usually deposited on stems anchored to the bottom in quiet shallow water.

Water: Although not restricted to wetland habitats, this species always selects moist refuges. Jameson (1966) showed that adults lose body water rapidly when exposed to high temperature and low humidity in laboratory conditions. Sustained movements by adults primarily occur during, or just after, rains. Tadpoles require standing water for periods long enough to complete their aquatic development, which varied from a month at warmer localities, to three, or more, months at high elevations in the Sierra.

Pattern: Associated with permanent or temporary water of all kinds in all California habitats, except dry desert types.

SPECIES LIFE HISTORY

Activity Patterns: At most localities, Pacific treefrogs concentrate their activities between late afternoon and midnight. At high elevations in the Sierra, diurnal activity is common. Individuals are active all year except during cold or dry periods.

Seasonal Movements/Migration: Areas of no breeding activity were up to 910 m (1000 yds) away from breeding sites (Brattstrom and Warren 1955). Migrations to and from breeding localities occur at night, usually during or just after rains.

Home Range: One study using marked individuals revealed that although many frogs moved less than 100 m (33 ft) during an entire breeding season, some traveled longer distances (Schaub and Larsen 1978). One individual moved 400 m (1300 ft) in no more than four days. Except for migration to and from breeding sites, movements usually do not exceed a few meters, except on rainy nights when longer distances may be traveled.

Territory: Whitney (1980) reported that males were territorial during the breeding season, defending circles around themselves with radii of about 50 cm (20 in). Territories are maintained by vocalizations and physical combat.

Reproduction: Reproduction occurs for a few weeks, anytime between January and July (Stebbins 1972) depending, on local conditions. Females remain at breeding sites for one or a few nights during the breeding season, while males stay there from a few weeks to over 2 months. Females deposit eggs in numerous small clusters, usually about 25 eggs (9-15) per cluster. Individual females may lay a total of 100-200 eggs. Eggs hatch in 1 to 5 weeks, and tadpoles attain a premetamorphic size of up to 55 mm (1.8 in). Males may attain sexual maturity in less than one year at some localities (Jameson 1957).

Niche: Brattstrom and Warren (1955) suggested competition between the Pacific treefrog and other sympatric species of frogs or toads, with the possible exception of the California treefrog. Pacific treefrogs and their tadpoles are preyed upon by introduced sunfishes, bullfrogs, garter snakes, a variety of birds, and some nocturnal mammals. Tadpoles are also preyed upon by predator insect larvae.

REFERENCES

Brattstrom and Warren 1955, Jameson 1957, Johnson and Bury 1965, Stebbins 1972, 1985, Schaub and Larsen 1978, Whitney 1980.

123°

121°

119°

117°

115°

PACIFIC TREEFROG

AUTHORSHIP

Species Note Prepared By: S. Morey

Species Note Edited By: E. C. Beedy, R. Duke

Species Note Reviewed By: T. Papenfuss

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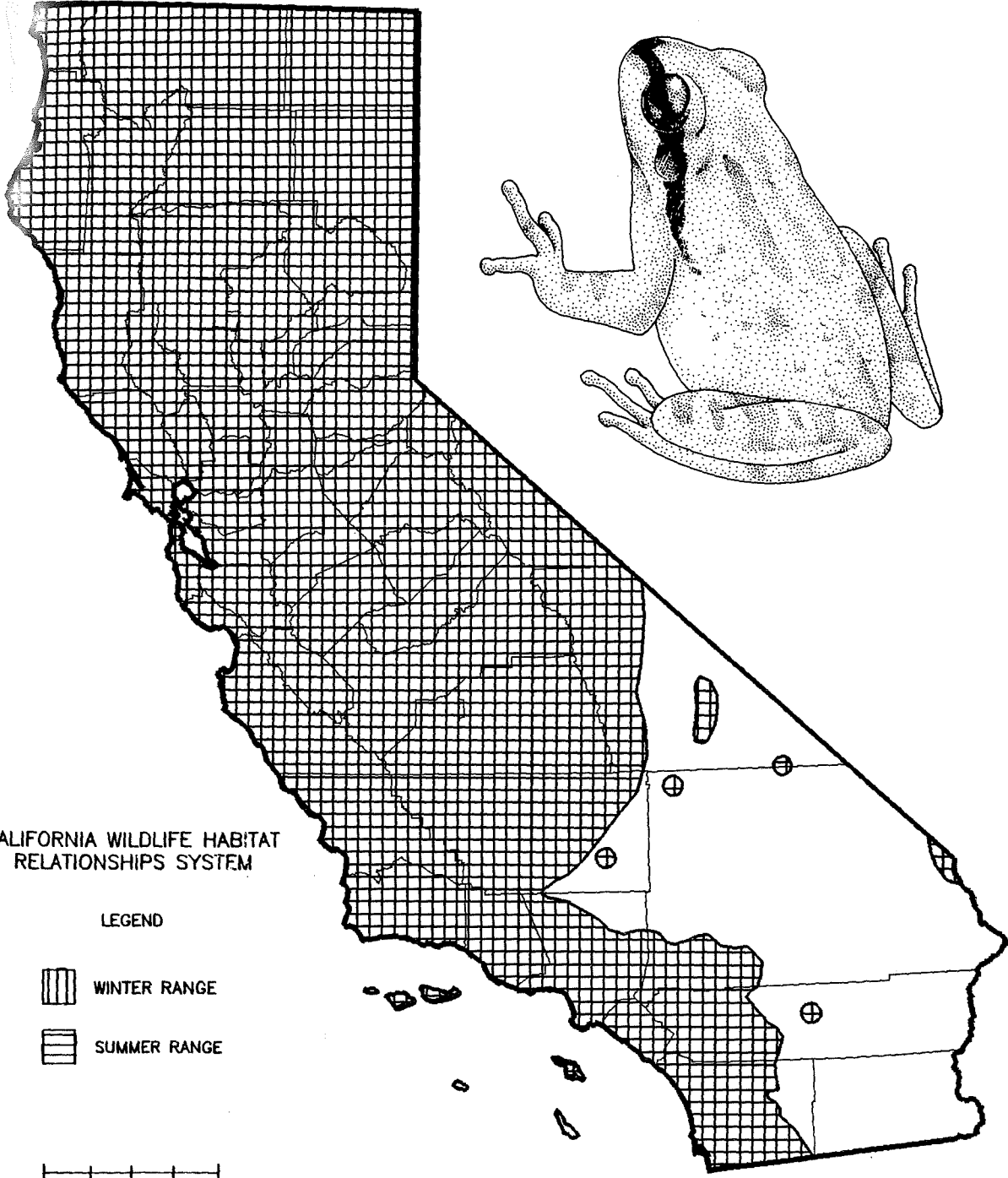
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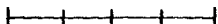


CALIFORNIA WILDLIFE HABITAT
RELATIONSHIPS SYSTEM

LEGEND

 WINTER RANGE

 SUMMER RANGE

 100 miles

06/67

123°

121°

119°

117°

115°

R004 Western Pond Turtle *Clemmys marmorata*

Family: Emydidae Order: Testudines Class: Reptilia Date: January 21, 1985

DISTRIBUTION, ABUNDANCE, AND SEASONALITY

The western pond turtle is uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest. Absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Elevation: sea level to 1830 m (6000 ft). Associated with permanent or nearly permanent water in a wide variety of habitat types.

SPECIFIC HABITAT REQUIREMENTS

Feeding: This species is considered omnivorous. Aquatic plant material, including pond lilies, beetles and a variety of aquatic invertebrates as well as fishes, frogs, and even carrion have been reported among their food (Stebbins 1972, Nussbaum *et al.* 1983).

Cover: Pond turtles require basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. Turtles slip from basking sites to underwater retreats at the approach of humans or potential predators. Hibernation in colder areas is passed underwater in bottom mud.

Reproduction: Storer (1930) suggested that two distinct habitats may be used for oviposition. Along large slow-moving streams, eggs are deposited in nests constructed in sandy banks. Along foothill streams, females may climb hillsides, sometimes moving considerable distances to find a suitable nest site. Nussbaum *et al.* (1983) reports a nest in a clover field 100 m (325 ft) from water. Nests have been observed in many soil types from sandy to very hard. Soil must usually be at least 10 cm (4 in) deep for nesting. Nests must have a relatively high internal humidity for eggs to develop and hatch properly.

Water: Individuals normally associate with permanent ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams. Hatchlings may be subject to rapid death by desiccation if exposed to hot, dry conditions.

Pattern: Associated with permanent or nearly permanent water in a wide variety of habitat types below 1830 m (6000 ft) elevation.

SPECIES LIFE HISTORY

Activity Patterns: Most activity is diurnal but some crepuscular and nocturnal activity has been observed. Individuals are active all year where climates are warm but hibernate during cold periods elsewhere.

Seasonal Movements/Migration: During the spring or early summer, females move overland for up to 100 m (325 ft) to find suitable sites for egg-laying. Other long distance movements may be in response to drying of local bodies of water or other factors.

Home Range: The home range is normally quite restricted (Bury 1970, 1972) except for occasional long distance movements as described above.

Territory: The western pond turtle is not known to be territorial, but aggressive encounters including gesturing and physical combat (Bury and Wolfheim 1973) are common and may function to maintain spacing on basking sites and to settle disputes over preferred spots.

Reproduction: Three to 11 eggs (Ernst and Barbour 1972) are laid from March to August depending on local conditions. The incubation period for eggs maintained in the laboratory at 30° C (Feldman 1982) ranged from 73 to 80 days. Sexual maturity is thought to be attained in about eight years.

Niche: This is the only abundant native turtle in California. Hatchlings and juveniles are preyed upon by a variety of vertebrate predators including certain fishes, bullfrogs, garter snakes, wading birds, and some mammals. Competitive interactions with other species have not been reported.

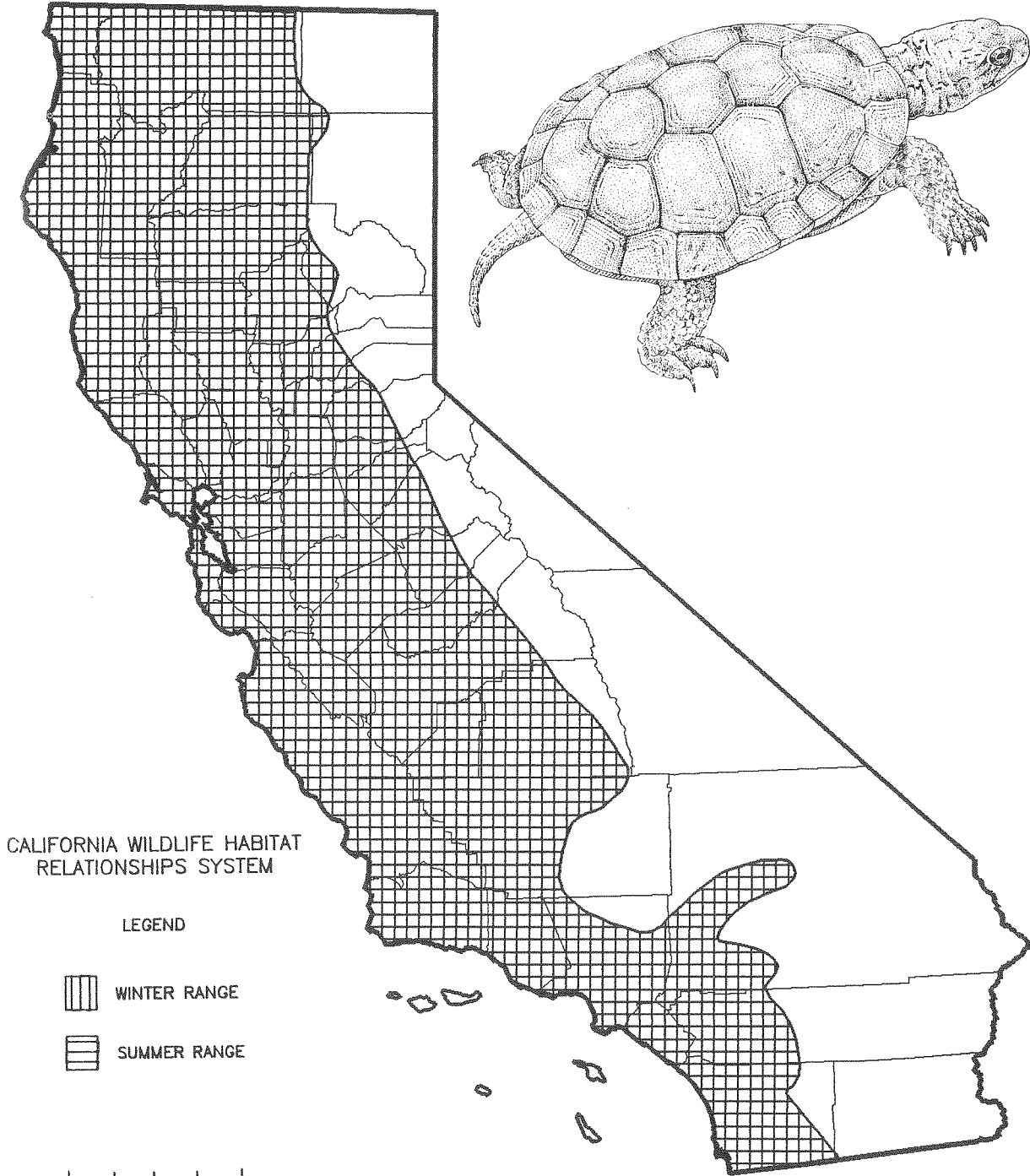
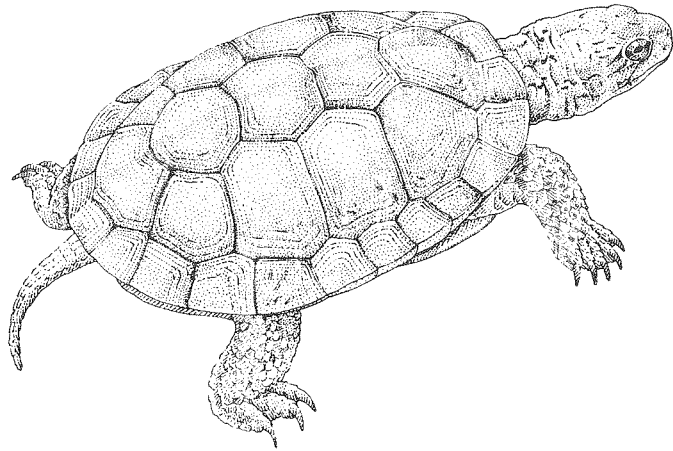
REFERENCES

Storer 1930, Bury 1970, 1972, Ernst and Barbour 1972, Stebbins 1972, Bury and Wolfheim 1973, Feldman 1982, Nussbaum *et al.* 1983.

WESTERN POND TURTLE



AUTHORSHIP

Species Note Prepared By: S. Morey
Species Note Edited By: R. Duke
Species Note Reviewed By: T. Papenfuss



CALIFORNIA WILDLIFE HABITAT
RELATIONSHIPS SYSTEM

LEGEND

-  WINTER RANGE
-  SUMMER RANGE

100 miles

06/87