5.3.6 California Brackish Water Snail (*Tryonia imitator*)

Status

- None

Ecological Requirements

- RCIS Regions: Coastal Strand
- RCIS Natural Communities: Saline Emergent Wetland (CDFW 2020)
- Inhabits coastal lagoons, estuaries, sloughs, and *Salicornia*-dominated marshes with areas of permanent water harboring stands of emergent native vegetation and algae (CDFW 2020, Kellogg 1985). Typically associated with ditchgrass (*Ruppia marina*) in estuarine habitats that do not have strong marine influence (Kellogg 1985).
- Rare species found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities (4-44 parts per thousand) (CDFW 2020, Kellogg 1985).
- Sensitive todesiccation in habitats subjected to seasonal or occasional drying (Kellogg 1985).
- Key threats to peripheral estuarine wetlands include agricultural pollution, diking/draining, conversion to freshwater impoundments (Ritter et al. 2008). Other threats include non-native invasive plant species and altered tidal regimes.
- Full species account available: California Natural Diversity Database, RareFind 5 (CDFW 2020)
- RCIS Conservation Target: Moderate (non-listed, limited distribution in the RCIS area, representative of brackish marshes)

Associated Non-Focal Species

- None

Climate Change Vulnerability Assessment

In the RCIS area, occurrences of the California brackish water snail (CBWS) are primarily in Elkhorn Slough, and modeled suitable habitat also occurs at the mouth of the Carmel River. Fifty-year predictions of Elkhorn Slough estuarine habitat trends include a significant decrease

in the extent of salt marsh and conversion to mudflats and tidal creeks (Elkhorn Slough Tidal Wetland Project Team 2007). The erosion rate is expected to increase, causing significant marsh losses (Elkhorn Slough Tidal Wetland Project Team 2007). By mid-century, large portions of Elkhorn Slough's low-lying salt marshes are projected to be flooded. By the end-of-century, flooded areas are projected to expand and cover a larger region (NOAA 2015). Table 5-7. summarizes the climate change exposure, spatial distribution, and vulnerability of saline emergent wetland communities statewide, which could experience a 75 to 100 percent reduction in habitat suitability.

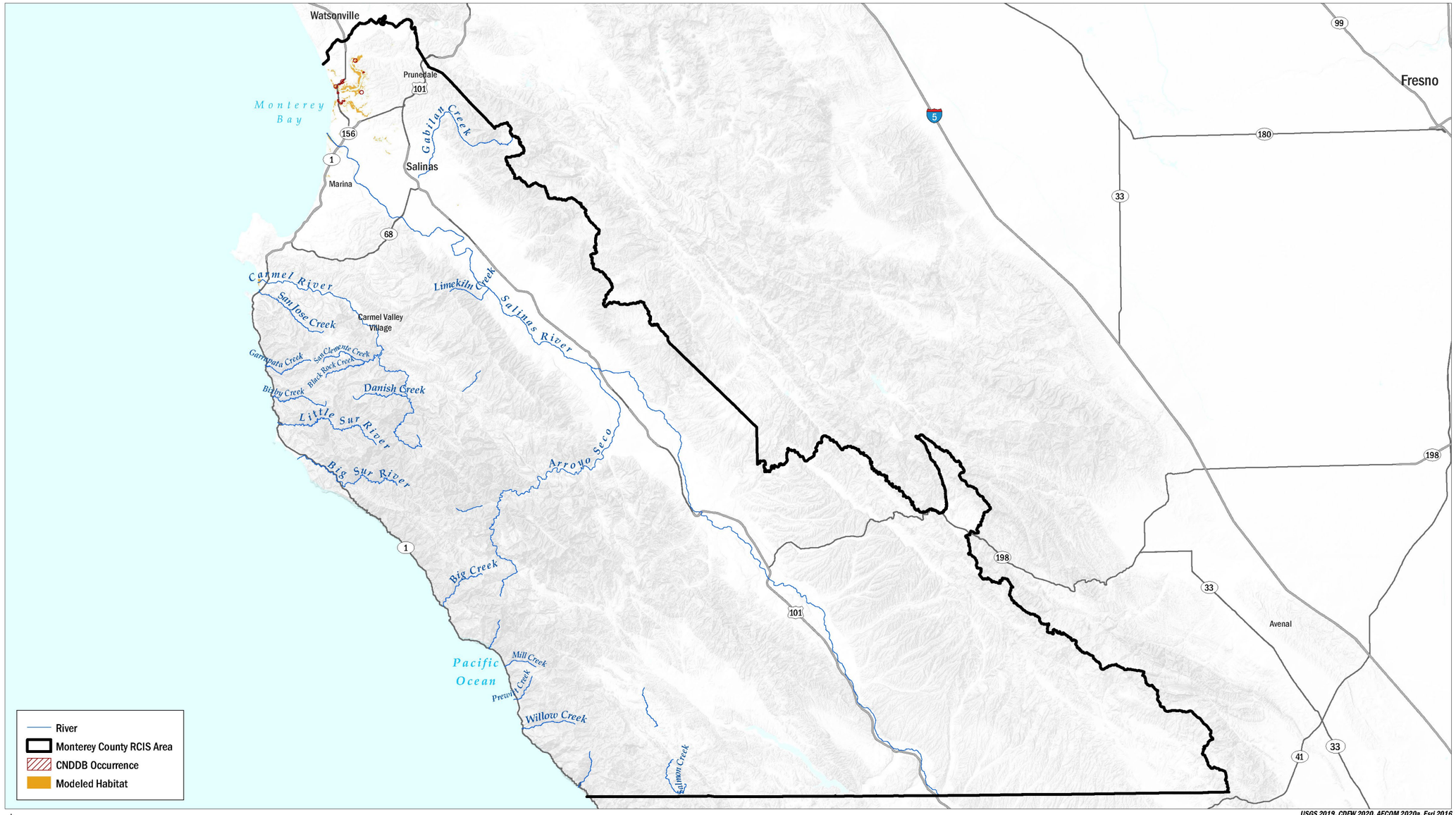
Table 5-7. California Brackish Water Snail Natural Communities Climate Vulnerability Ranking

Natural Communities	Mean Combined Vulnerability Rank Low Emissions (RCP4.5)	Mean Combined Vulnerability Rank High Emissions (RCP8.5)
Saline Emergent Wetland	High	High

Source: Thorne et al. 2016

The goals, objectives, and actions shown in Table 5-8. aim to protect, enhance, and restore present day suitable habitats for California brackish water snail, as well as habitats that may become suitable in the future because of projected climate changes. Actions also address population stability, such as research into California brackish water snail biology, which may allow individuals to move to newly suitable habitats in the future.

Figure 5-2 shows the range and modeled habitat of the California brackish water snail.



Note:
Range is everywhere that species is found.

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FIGURE 5-2
California Brackish Water Snail

Figure 5-2. California Brackish Water Snail Range and Modeled Habitat

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California Brackish Water Snail Conservation Priorities, Goals, Objectives, and Actions

All RC goals, objectives, and actions apply to this species and Water Objectives 1.2 and 1.3 apply to California brackish water snail. Table 5-8. summarizes species-specific goals, objectives, and actions.

Conservation Priorities

- Acquire and protect habitat near known occurrences at Elkhorn Slough at the mouth of the Salinas River, Struve Pond, Moro Cojo Slough and Porter Marsh, to encourage habitat connectivity between occupied and suitable but unoccupied habitat (RC Objective 1.1).
- Because population size and trend data are lacking for this species, conduct species surveys in brackish habitats along the coastline, including the Carmel River, Salinas River, and Elkhorn Slough. Correlate water quality data with presence/absence of California brackish water snails to advance knowledge of the impacts of agricultural input (e.g., nutrients, herbides, pesticides)(CBWS 1.2.1).
- Remove non-native New Zealand mudsnail (*Potamopyrgus antipodarum*) in suitable brackish habitats (CBWA 1.2.2).

Table 5-8. California Brackish Water Snail Goals, Objectives, and Actions

Goal	Objective	Threats	Co-Benefits	Action
CBWS Goal 1. Promote persistence of California brackish water snail populations in the RCIS area through protection, restoration, and enhancement of habitat.	CBWS Objective 1.1: Protect known occurrences and allow expansion by protecting 390 acres of suitable habitat. Measure progress toward achieving this objective in acres of habitat and adjacent/equivalent acres protected.	• Habitat loss, degradation, fragmentation	• Other focal/ non-focal species • Biodiversity • Climate change resilience	RC Objective 1.1 (Protection) actions
CBWS Goal 1.	CBWS Objective 1.2: Enhance or restore occupied, suitable, and potentially suitable California brackish water snail habitat in the RCIS area. Measure progress toward achieving this objective in acres of habitat and adjacent/equivalent acres enhanced or restored and occupied by California brackish water snail.	• Habitat loss, degradation, fragmentation • Agricultural pollution	• Other focal/ non-focal species • Biodiversity • Water quality	CBWS 1.2.1: Survey known occupied and potentially suitable habitats to enhance knowledge about population size and population trends. Include correlating water quality data (e.g., nutrients, herbicides, pesticides) with species presence/absence.

Goal	Objective	Threats	Co-Benefits	Action
CBWS Goal 1.	CBWS Objective 1.2:	• Non-native species	• Non-native invasive species • Other focal/ non-focal species • Biodiversity	CBWS 1.2.2: Remove non-native plant species and non-native New Zealand mudsnail (*Potamopyrgus antipodarum*) in suitable brackish habitats throughout the RCIS area.
CBWS Goal 1.	CBWS Objective 1.2:	• Altered vegetation communities • Climate change	• Water quality • Climate change resilience • Other focal/ non-focal species • Biodiversity	CBWS 1.2.3: Enhance or restore native submerged vegetation in suitable or potentially suitable habitat.

Goal	Objective	Threats	Co-Benefits	Action
CBWS Goal 1.	CBWS Objective 1.2:	• Altered natural flow regimes (e.g., tidal regimes, freshwater intrusion) • Climate change	• Other focal/ non-focal species • Biodiversity • Climate change resilience	CBWS 1.2.4: Restore tidal regimes in suitable or potentially suitable habitat.

Sources: CDFW 2015, 2020