State of the ART: Using artificial refuge traps to control invasive crayfish in southern California streams

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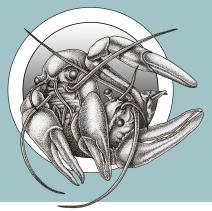


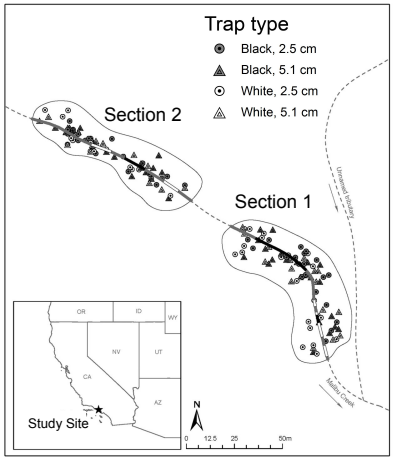


Fig. 2 *Study location, Malibu Creek Watershed, Los Angeles County, CA*

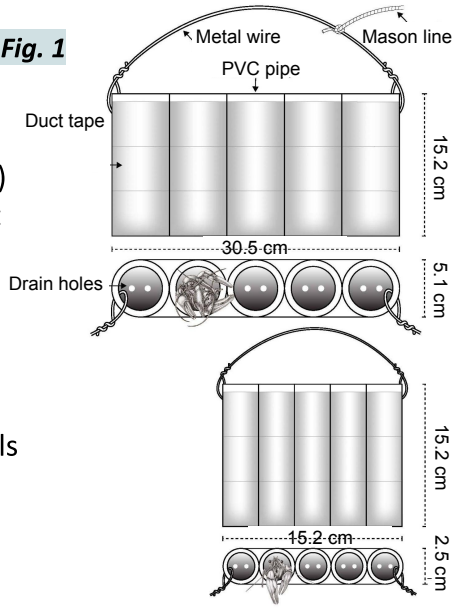
Purpose

- Red swamp crayfish (*Procambarus clarkii)* were introduced into Southern California in 1924 (Holmes 1924)
- Invasive crayfish presence linked with decreases in native aquatic taxa
- Traditional passive baited traps result in native bycatch and can have substantial impacts on native populations
- Apparent need for a crayfish trap that successfully removes invasive crayfish but does not result in native bycatch

Methods

- Constructed Artificial Refuge Traps (ARTs) that mimic invasive crayfish burrows (***Fig. 1***)
- Month-long field experiment (***Fig. 2)*** to test **1)** effectiveness of ARTs to remove crayfish without bycatch and, **2)** to optimize design and deployment of ARTs including color (black, white), diameter (2.5, 5.1 cm), and soak duration (1-,2-,4-,7-days)
- Built generalized linear mixed-effects models to determine best performing ARTs and evaluated model performance with Akaike Information Criteria (AIC)

Fig. 1



Key Findings

1. All traps removed 240 crayfish with **no native bycatch**
2. There were no significant differences in male or female catch, although 5.1 cm traps tended to have more males and 2.5 cm traps tended to have more females
3. Models that included soak time and ART type as predictor variables were most supported (ΔAIC ≤ 2)
4. Black, 5.1 cm ARTs removed the most crayfish on average (***Fig 3.)*** and 1-day soaks maximize the number of crayfish removed per unit effort (***Fig 4.)***

Fig. 3

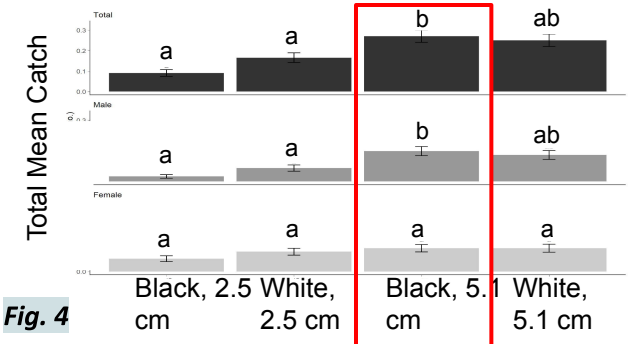


Fig. 4