Hard Times for Nesting Ducks on Grizzly Island

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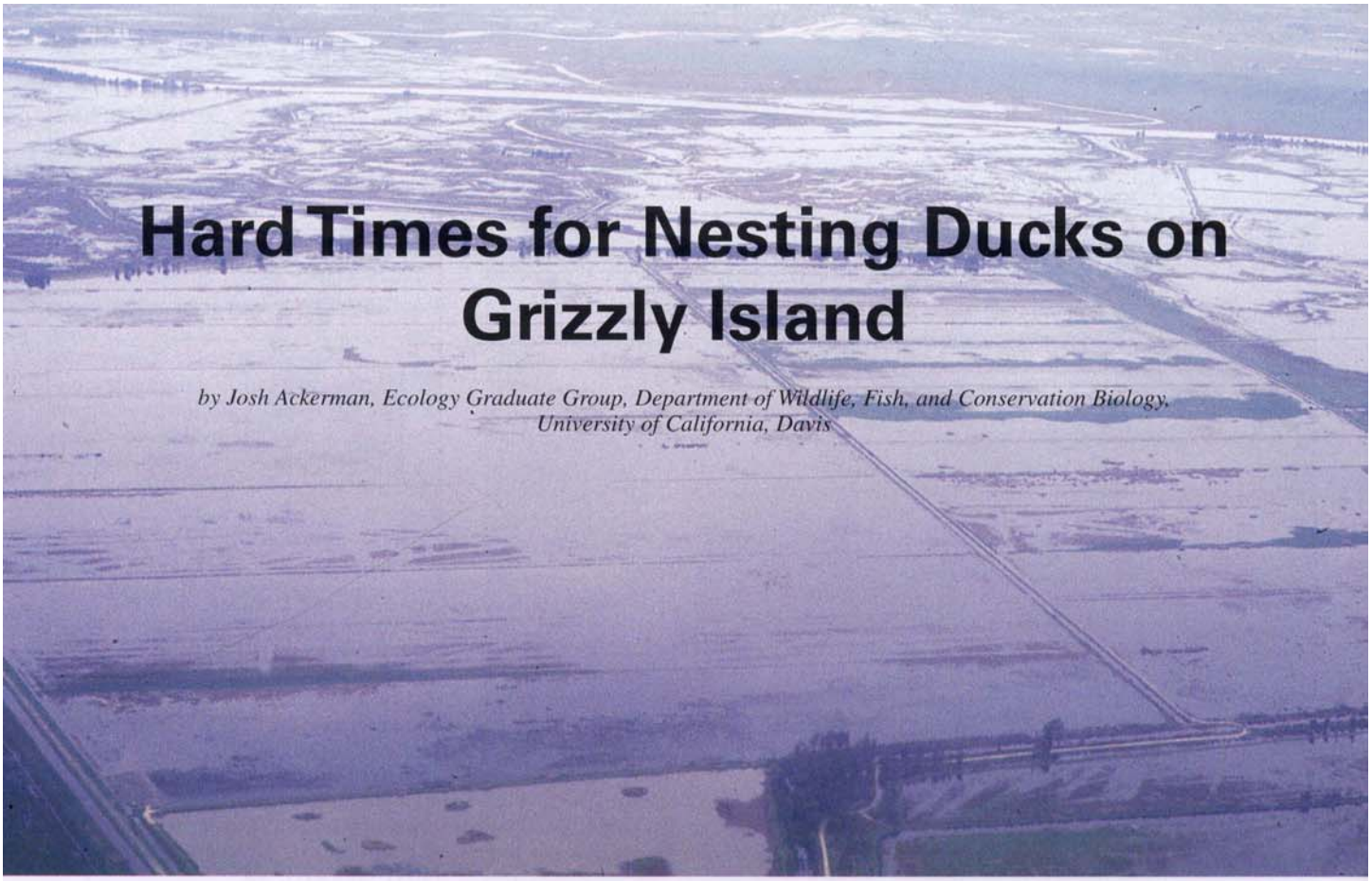
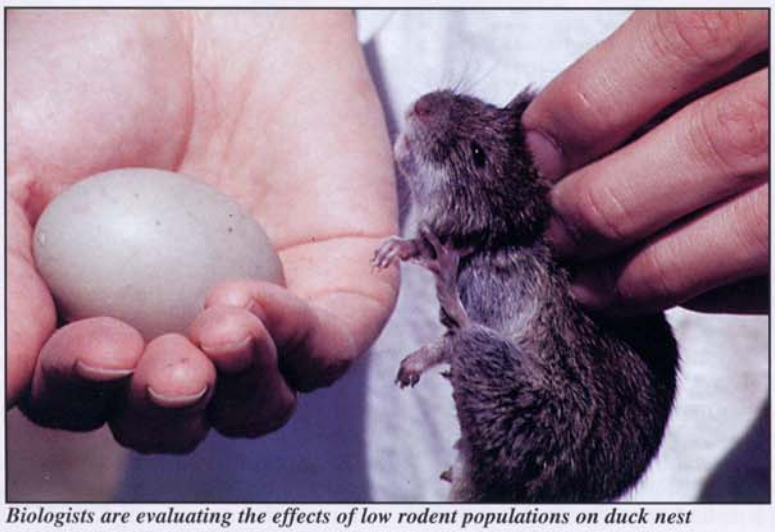


Flooded nesting fields on Grizzly Island Wildlife Area.

Photos by the author

For the past 14 years, the California Waterfowl Association (CWA) and the California Department of Fish and Game (CDF&G) have conducted waterfowl nesting surveys on the Grizzly Island Wildlife Area in the Suisun Marsh. Two years ago, researchers at U.C. Davis became increasingly involved and began examining this long-term data set to evaluate upland and wetland management and long-term trends in mallard nesting ecology.

The El Niño-induced weather of 1997-98 resulted in levee breaches, unusually high tides, and late rains that caused extensive flooding within Grizzly Island and even led to the evacuation of local residents and CDF&G staff. Aerial flights by CWA staff in March documented expansive flooding at the wildlife area, including 2,000 acres of managed upland duck nesting habitat. These nesting fields remained flooded well into the usual spring nesting season. Areas that have historically provided habitat for one of the highest nesting densities of mallards in North America provided little nesting cover. Consequently, U.C. Davis and CWA field biologists expanded the historical search areas to find upland habitat with ample vegetation for nesting waterfowl.



Biologists are evaluating the effects of low rodent populations on duck nest success.

Although field crews searched more than 540 acres of upland habitats throughout the wildlife area, only 462 mallard nests were located. This was a dramatic decline from the 1997 tally (797 nests). Interestingly, nests of gadwall (216), northern pintail (35), and cinnamon teal (12) were comparable to previous years.

Why the decline in mallard nesting effort? Although mallard hens tend to return to nest in areas used in previous years, flooded nesting fields likely

forced them to nest elsewhere within the Suisun Marsh, where upland habitat was in better condition. This year, roughly 44 percent of mallard nests (and 41 percent of all duck nests) were found within habitat managed for the endangered salt marsh harvest mouse; this habitat is dominated by pickleweed, a salt-tolerant native plant that survived the flooding particularly well. Additionally, CWA summer banding crews caught almost 1,100 young mallards in the Suisun Marsh, indicating production occurred in locations other than the Grizzly Island nesting fields.

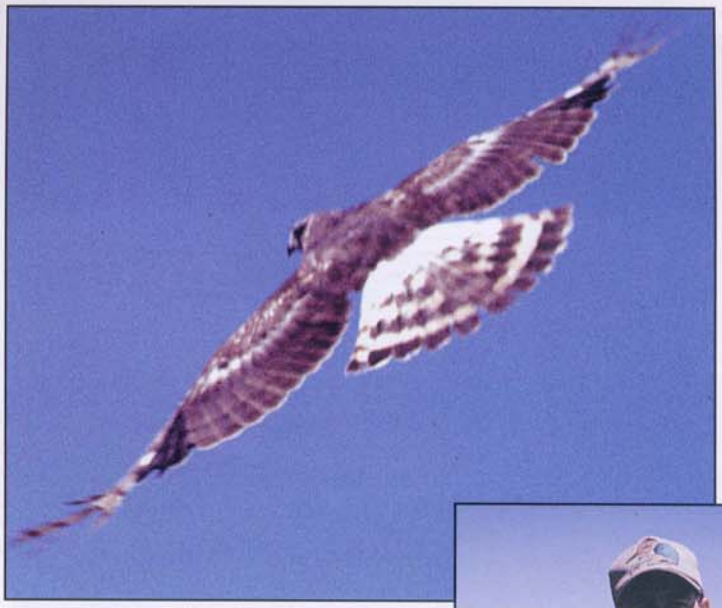
It is also possible that some mallards did not nest at all. Many long-lived species will skip poor breeding seasons in order to increase survival and/or future reproductive potential. This is an optimal lifetime strategy because breeding in poor years is often unsuccessful and/or increases the risk of death to breeders, which can be offset by the benefits of high survival and future reproduction.

Like nesting effort, mallard nest success was bleak at seven percent, showing little improvement over last year's record low nest success of five percent.

This is disconcerting since mallard populations require at least 15 percent nest success to sustain a viable population. Nesting success for gadwall (12 percent), northern pintail (12 percent), and cinnamon teal (14 percent) was also low. The low duck nest success in 1998 indicated that nest predators (predominantly striped skunks, raccoons, and gopher snakes) survived the flooding, while data from trapping indicated very low rodent densities following flooding. Because rodent numbers during the waterfowl nesting season were low, generalist predators may have switched their diets from rodents to duck eggs, contributing to the low waterfowl nest success.

Other upland nesting birds were also affected by the flooding on Grizzly Island Wildlife Area. For example, field biologists found only 15 harrier nests in 1998, while 26 nests were located in 1997. In addition, U.C. Davis/CWA field crews saw only two short-eared owls on the wildlife area. Typically, field crews locate a number of roosting and some nesting short-eared owls in upland nesting habitats. Short-eared owls are known to be highly nomadic in their breeding habits, with prey availability (predominantly rodents) being the key attractant to nesting areas. Low harrier and short-eared owl numbers correspond with the low rodent densities observed this season. Indeed, rodent populations may play an important part, albeit indirect, in the nest success of many upland nesting birds, including waterfowl.

Although El Niño caused poor conditions for nesting waterfowl on Grizzly Island and other low-lying areas, it had quite a different effect in much of the remainder of the state. Elsewhere, frequent spring rains promoted vegetation growth, enhancing nesting cover. Additionally, late rains improved wetland conditions, providing food resources for both nesting hens and ducklings and likely increased duckling production in the remainder of the state.



Harriers and other raptors that nest in uplands on Grizzly Island were also affected by the floods.

Photos by the author

Josh Ackerman holding mallards trapped and banded on Grizzly Island.

Photo by Tim Ackerman