

**DELTA GREEN GROUND
BEETLE**

ELAPHRUS VIRIDIS

FEDERAL STATUS: THREATENED

STATE STATUS: NONE

B I O L O G Y

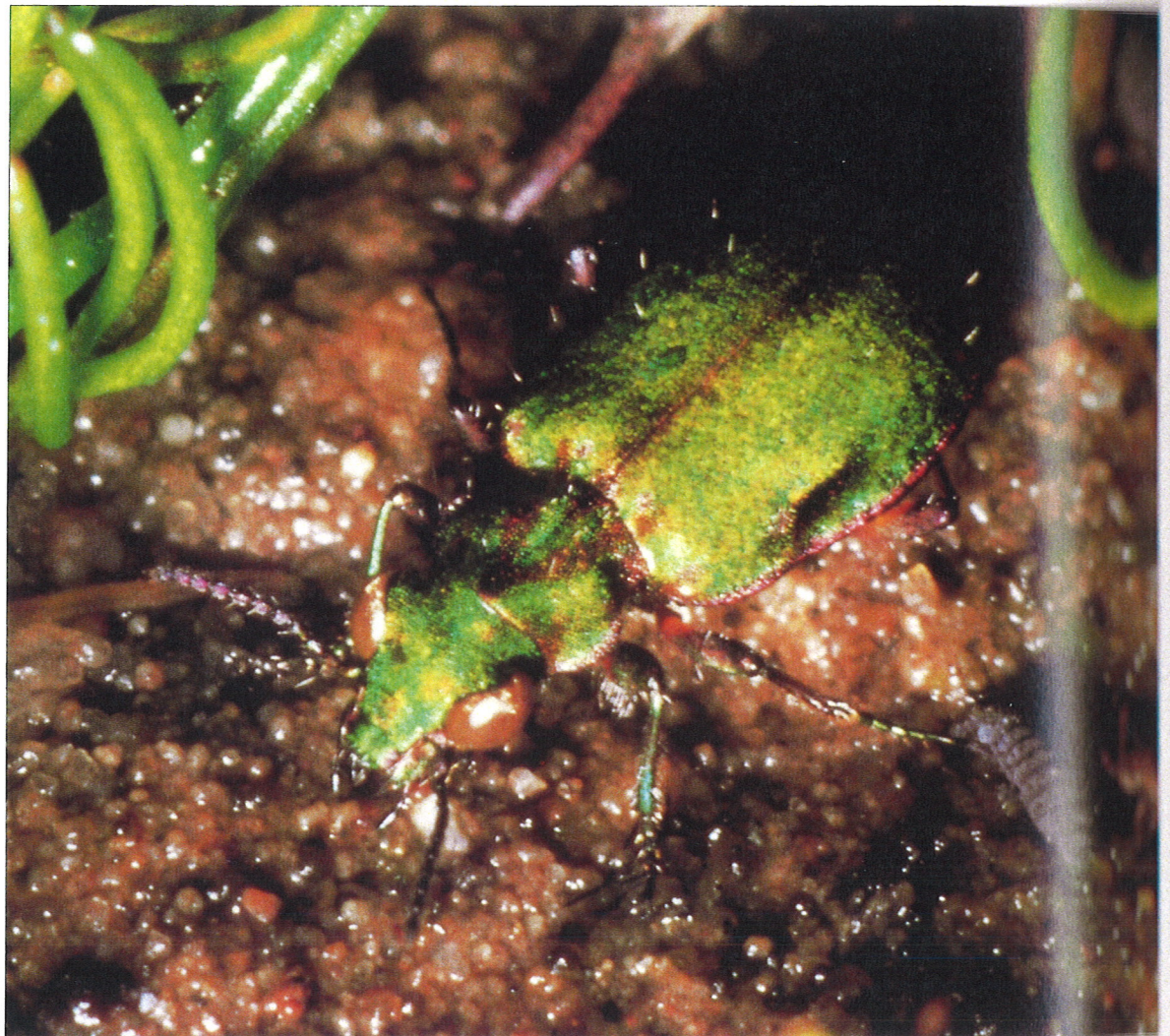
Lying in ambush inside a ring of young plant shoots, a Delta green ground beetle waits for a springtail to enter its trap. On open turf, the tiny springtails—smaller than fleas—snap their tails against the ground to vault away from predator beetles. Within the confining picket fence of plant growth, however, a fleeing springtail often

bounces back into the beetle's jaws. When not using a natural trap in this way, the beetle hunts through the herbs and grasses surrounding vernal pools, looking for soft-bodied insect prey.

Even though Delta green ground beetles are small, measuring about 0.6 cm ($\frac{1}{4}$ in) long, few larger creatures eat them. They exude defensive secretions when attacked, and their bright metallic green, often bronze-spotted coloring is an effective camouflage when they remain still.

A tiny Delta green ground beetle in its vernal pool habitat. Fully grown beetles reach about one-quarter inch in length.

For nearly a century, this beetle's description tantalized entomologists like a face on a "wanted" poster. California beetle specialist A. S. Fuller sent a single specimen to entomologist George Horn, who described it in 1878. For location of discovery, Fuller noted only that the beetle came from California. Then, in 1974, a student from the University of California at Davis discovered the elusive insect at a Nature Conservancy preserve in Solano County.
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The beetles rarely wander far from vernal pools, the short-lived, grassland water holes that form after winter rains and dry out in the heat of summer. In apparent harmony with this pattern of wet and dry, these terrestrial beetles roam the pool fringes from January to May and then probably become dormant for the rest of the year.

During their active season, adults hunt mainly during the mild, sunny, still hours of the day at temperatures between 15 and 21°C (60 and 70°F). They mate in February and March, and females lay eggs a few weeks later. The larvae are insect-eating predators like their parents, but hunt throughout the day and night.

CONSERVATION AND RECOVERY

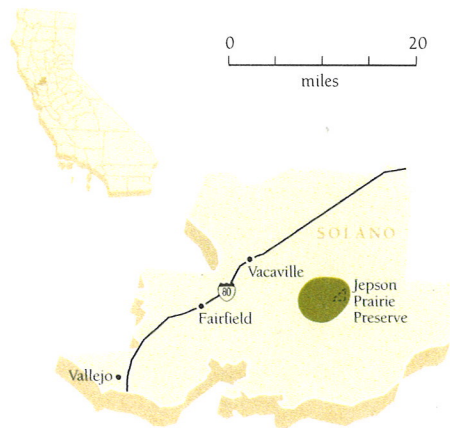
The Delta green ground beetle is known only from the vicinity of The Nature Conservancy's Jepson Prairie Preserve south of Dixon in Solano County. Although beetle habitat within the preserve is protected, habitat on surrounding private land is not. In 1980, landowners pumped water from and plowed around a large vernal pool just north of the preserve. This pool was known to support Delta green ground beetles. Plowing disrupted the pool's hardpan bottom, causing water to drain from the pool too quickly to sustain the beetles—which apparently no longer occur at the site.

Further threatening the beetles is garden lippia, an exotic, mat-forming plant that has invaded some of the vernal pools outside the preserve. The plant forms a dense ground-cover that makes it difficult for Delta green ground beetles to trap and pursue prey. This habitat change has already severely reduced the number of beetles at one vernal pool and possibly at others.

RANGE AND DISTRIBUTION

The historical range of the Delta green ground beetle is unknown. Today the beetle is found only around Olcott Lake, a large vernal pool lying within The Nature Conservancy's Jepson Prairie Preserve south of Dixon in Solano County, and at 14 of 28 vernal pools located on private land west of the Conservancy's preserve.

■ Current Range



The federal government listed the Delta green ground beetle as threatened in 1980. In 1985, the U.S. Fish and Wildlife Service (USFWS) issued a recovery plan calling for increased protection of the beetle's habitat. Since then, the agency has been in contact with private landowners in attempts to work out conservation arrangements for 15.5 km² (6 sq mi) of land west of the Jepson Prairie Preserve, where the beetles have been found at 14 of 28 vernal pools. Overgrazing, which occurs on parts of this land, is a detriment to the beetles.

Utility companies that recently constructed major natural gas and electrical transmission lines are required—as mitigation for habitat destroyed during construction—to purchase and protect vernal pool habitat, some of which is Delta green ground beetle habitat. Ownership of this land will ultimately be transferred to a government agency or a private conservation group.

REFERENCES

- Arnold, R. A. 1983a.
- Goulet, H. 1982.