

Blarina brevicauda and Cryptotis parva Do Not Damage Longleaf Pine Cotyledons

ABSTRACT: About 18,000 trap-nights were required to capture 104 shrews in central Louisiana. The ratio of captured *Blarina brevicauda* to *Cryptotis parva* was about 3:1. Sixty-four animals died in the traps and 12 others succumbed within 48 hrs. The 28 caged survivors did not damage juvenile seedlings of longleaf pine (*P. palustris*) in the distinctive manner of an unidentified predator(s) which can destroy up to 70% of a direct-seeded stand.

INTRODUCTION

A major problem in regenerating the southern pines, especially longleaf (*Pinus palustris*), by direct seeding is the destruction of newly germinated seedlings. An unidentified predator(s) clips the seedling near the groundline and eats the cotyledons without damaging the seed coat, if it is still attached. Losses average about 25%, but sometimes they reach 70%. Shrews were suspected, even though they are not primarily vegetarians (Derr and Mann, 1959). Two species of shrews are common in central Louisiana where the damage occurs—the short-tailed shrew (*Blarina brevicauda*) and the little short-tailed or least shrew (*Cryptotis parva*).

MATERIALS AND METHODS

Shrews were live-trapped in commercial, 7 X 7 X 22 cm wire traps that opened at both ends. Both species were found mainly on wet flats or in thick forest litter whose undersurface was moist most of the time. A few were trapped in relatively dry areas, but rotten logs, stumps, or other objects with ample moisture underneath were nearby. Most shrews were caught during the first three nights (and only at night), so traps were inspected daily at 8 AM for three days, then moved. The most effective bait was a 3:1 mixture of creamy peanut butter and rolled oats.

Live animals were transferred to individual cages that measured 19 X 23 X 34 cm. The cages were kept in a laboratory where temperature was maintained between 22 and 24 G, and relative humidity between 50 and 60%.

Newly germinated longleaf pine seedlings, about 4 cm tall and with the seed coats still attached, were transplanted in glazed porcelain feeding cups and exposed to the shrews. Ungerminated seeds were also provided in some of the tests.

RESULTS AND DISCUSSION

Approximately 18,000 trap-nights were required to catch 104 shrews. Sixty-four died before they were removed from the traps, and 12 others succumbed before they could be observed in the laboratory. High trap losses were also reported by Blair (1940), Getz (1961), and Shadowen (1963). They were probably caused by overexcitement rather than rapid starvation (Hamilton, 1930). The ratio of captured animals was about three *Blarina* to one *Cryptotis*.

Shrews rapidly became accustomed to the laboratory environment, and were not alarmed by the presence of humans. In fact, they were highly curious; most would emerge from their nest boxes and investigate any activity near their cages. Nothing seemed to deter them from feeding or drinking.

Twenty-eight shrews ate only 13 of 2350 cotyledon-stage seedlings available to them, and a single *Blarina* consumed nine of those. They damaged or destroyed 111 others—in most cases by pulling up a seedling, holding it between the forepaws, and eating the megagametophyte of the attached seed. In other instances they made great efforts to remove the entire plant from the soil, but if it was well anchored the needles were clipped near where they emerged from the seed. Cotyledon tissue removed in clipping was not ingested—shrews were observed ejecting that which fell into their mouths.

Ungerminated seeds were attacked and gnawed clean in attempts to get the



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megagametophyte. The hard, dry seeds were apparently too tough to open, and were seldom damaged sufficiently to prevent germination. However, after a seed coat had been cracked by an emerging radicle the seed was easy for the shrew to open.

These laboratory observations have removed all suspicion that the two local species of shrews are the damaging predator of direct-seeded longleaf pine.

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