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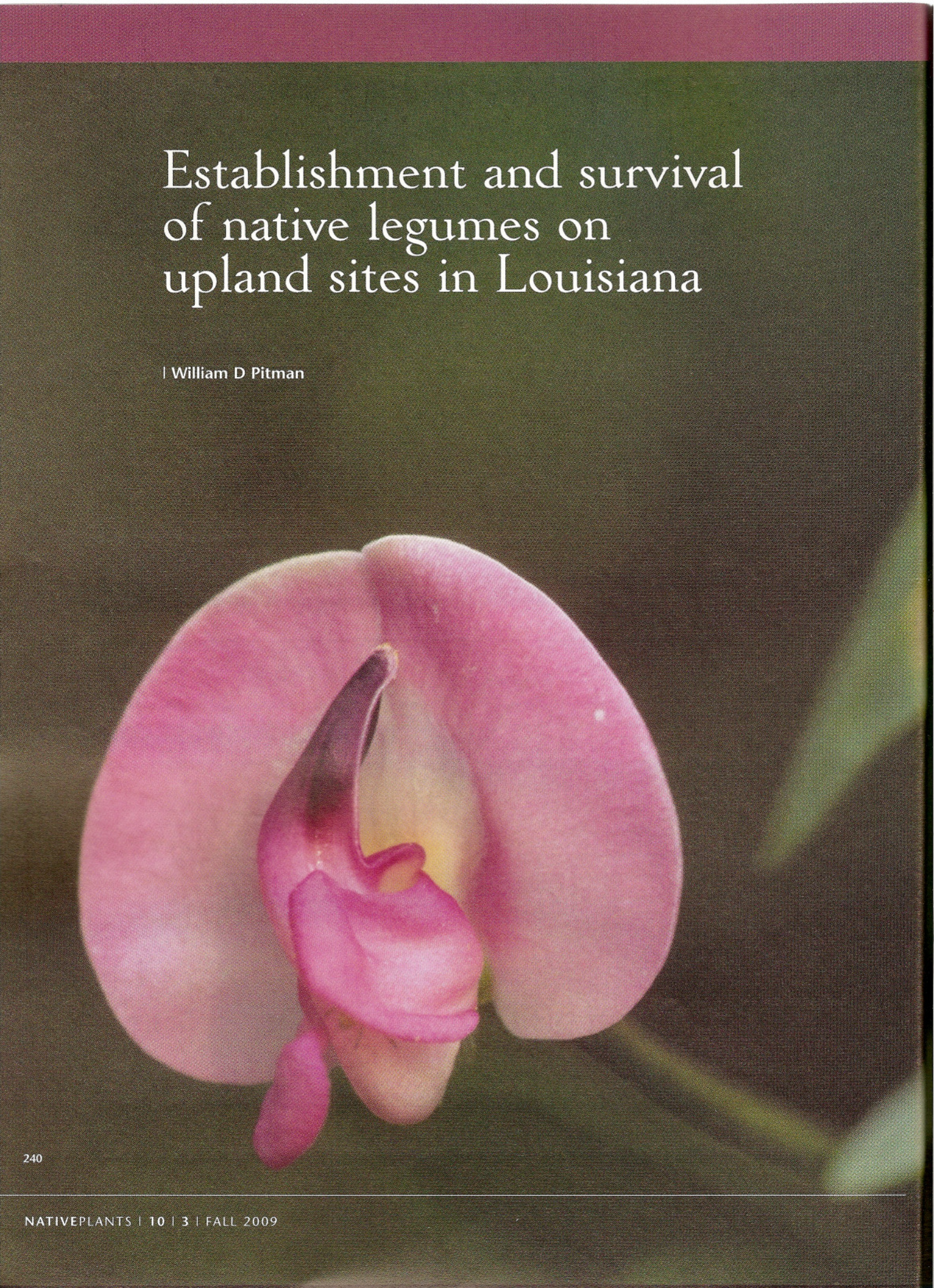
Establishment and survival of native legumes on upland sites in Louisiana

| William D Pitman



ABSTRACT

Field evaluations of perennial native legumes (Fabaceae) from Louisiana pineland ecosystems revealed differing colonization abilities among species under natural recolonization of disturbed sites. Initial establishment and growth of transplanted seedlings of 5 different species were good in an early field evaluation. In a subsequent evaluation initiated with scarified seeds, poor establishment of herbaceous mimosa (*Mimosa strigillosa* Torr. & A. Gray) indicated that populations of this species may be limited by lack of competitiveness of emerging seedlings. Virginia tephrosia (*Tephrosia virginiana* (L.) Pers.) produced vigorous upright seedling growth with population expansion in only one year of these evaluations. Initial establishment of prairie snoutbean (*Rhynchosia latifolia* Nutt. ex Torr. & A. Gray) was limited by inadequate rainfall in some instances, but under favorable conditions this species was superior in seed production and population expansion. Individual plants of these species were rather short-lived with long-term population survival dependent on seed production and seedling recruitment. Seed germination of these legumes was limited by hard seedcoats. Physical scarification readily overcame this limitation for all species evaluated. *Rhynchosia latifolia* appears to have potential value for use in reclamation and revegetation plantings because of potential for seed production and establishment of persistent populations under favorable conditions. *Mimosa strigillosa* has potential to provide superior ground cover and sustainable populations, but limited establishment from seeds indicates that selection from expanded germplasm collections for seedling vigor may be particularly important for successful use of this species.

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KEY WORDS

renovation, *Centrosema virginianum, Mimosa strigillosa, Neptunia lutea, Rhynchosia latifolia, Strophostyles umbellata, Tephrosia virginiana*

NOMENCLATURE

USDA NRCS (2006)

Extensive pineland ecosystems of the southeastern US include a highly variable herbaceous understory of grasses and forbs. Commercial use of these ecosystems has largely involved management and harvest of the high-value woody components or conversion of the natural vegetation to cropland and pastures of introduced species. The tremendous resource of native herbaceous plant species has received very limited attention. The numerous native legumes (Fabaceae) among the understory forbs are mostly perennial, warm-season species. Of these, only the annual partridge pea (*Chamaecrista fasciculata* (Michx.) Greene) has been commercialized, and the variety 'Commanche' commonly planted even in the humid southeast is from the subhumid to semiarid rolling plains of Texas. In a frequently burned longleaf pine (*Pinus palustris* Mill. [Pinaceae]) ecosystem in Georgia, Haines and others (1999) identified 43 legume species with most of the ground cover including a legume component. A total of 135 species of legumes have been listed as native to Louisiana (Thomas and Allen 1998) with a large proportion of these occurring in pineland ecosystems. Herbaceous legumes contribute to the

Photo of *Strophostyles umbellata* by Thomas G Barnes