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Occurrence of *Vaucheria adela*, *V. lii* and *V. nasuta* (Xanthophyceae) in Brackish Marshes of the Northern Gulf of Mexico

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OCCURRENCE OF *Vaucheria adela*, *V. lili*, AND *V. nasuta* (XANTHOPHYCEAE) IN BRACKISH MARSHES OF THE NORTHERN GULF OF MEXICO.

Recent reports of algae from coastal regions of the Gulf of Mexico (Humm and Hamm, 1976; Kapraun, 1974; Pecora, 1976, 1977) indicate that species of *Vaucheria* are often a major component of the algal flora in the area studied. The low frequency of reports of these plants is due, in part, to the seasonal nature of their growth and to the frequent absence of fertile plants in field collections. My studies, conducted since 1974, indicate that maximum abundance of *Vaucheria*

species along the Northern Gulf coast occurs during the winter months. This report is based on field and laboratory studies of *Vaucheria* from two locations: brackish marshes of Marsh Island in the western portion of St. Louis Bay, Mississippi (17 Feb. 1978) and marsh areas and tidal flats of the Aransas River, Texas (3 March 1978). *Vaucheria adela* and *V. lili* are here reported from the Gulf coast for the first time. *Vaucheria nasuta* is reported for the first time from Texas.

Procedures for collection, maintenance of algal material, and documentation are as reported previously (Pecora, 1976, 1977) except that salinities were measured with a YSI Model R-33 SCT meter or an American Optical refractometer.

OBSERVATIONS AND DISCUSSION

Vaucheria adela Ott & Hommersand 1974. (Fig. 3)

Filaments 15-33 μm in diameter, branched; monoecious; androphores terminal or infrequently intercalary, 156-552 μm long; antheridia pedicellate, hooked or coiled, lanceolate, 17-31 x 59-113 μm , with a terminal pore, 1-3 per androphore; antheridial pedicels variable in size, 19-276 μm long at 22-31 μm broad; oogonia solitary on filaments, rarely on androphores, subsessile, 60-72 x 96-134 μm , with a small distal vertical beak; oogonial pedicels to 245 μm long; oospores 46-86 x 58-110 μm , bearing a red-brown spot at maturity.

Vaucheria adela was collected in February 1978 at five locations on Marsh Island in St. Louis Bay, Hancock County, Mississippi. Several bright-green mats of *Vaucheria* were found on moist soil in a *Juncus roemerianus* marsh. These were generally in shaded sites along the edge of the marsh or along

Figures 1-5. *Vaucheria* species from the northern coast of the Gulf of Mexico. Bar represents 50 μm . 1. *V. lili* - Filament bearing an antheridium and oogonium. 2. *V. lili* - Filament bearing an antheridium and two oogonia. 3. *V. adela* - Androphore with three antheridia and a portion of a filament with an oogonium. 4. *V. nasuta* - Filament bearing an oogonium and antheridium. 5. *V. nasuta* - Portion of a filament with two antheridia.

paths throughout the marsh. Large sterile filaments of other species of *Vaucheria* were also present. *Vaucheria litorea* grew along the banks of the island as well as on the bank of an adjacent tidal channel. *Vaucheria adela* usually grew in small pools of standing water where the salinity ranged from 5.5 to 8.0‰ and the temperature of the standing water was 9°C. Abundant sexual cells were observed at the time of collection. Sterile filaments produced sexual cells in the laboratory after incubation of 7-10 days.

Vaucheria adela was originally described from North Carolina, where it grew on mud in *Juncus* and *Spartina* marshes (Ott and Hommersand, 1974).

At the same time, Ott and Hommersand also described *V. acrandra* as a new species and placed both *V. adela* and *V. acrandra* in a new section, *Acrandrae*. I here report the first collection of *V. adela* from a site other than the type location. I have not identified this taxon from other locations along the Gulf of Mexico coast.

The Mississippi plants are similar in size and morphology to those collected at the type locality (Ott and Hommersand, 1974). In North Carolina, and in Mississippi, *V. adela* occurred as short, branched, non-rhizoidal plants. Androphores of plants from both locations were often terminal and only rarely intercalary. However, I found no androphores shorter than 156 μm whereas Ott and Hommersand reported androphores 50-450 μm long. Antheridia are usually borne singly on androphores and oogonia singly on the filaments. Occasional plants had two or more antheridia borne on a branched pedicel, while others had an oogonium borne on an androphore.

Vaucheria lili Rieth 1959 (Fig. 1-2)

Filaments 24-35 μm in diameter; monoecious; antheridia single, pedicellate, curved or coiled, 14-19 μm in diameter, with a single terminal pore; oogonia borne at the end of a filament or on a short lateral branch, solitary or in pairs, 41-53 x 52-91 μm , with a large circinate beak; oospores subspherical, filling the oogonium except for the beak; distal portion of fruiting branches separated from vegetative filaments by a cross wall.

Vaucheria lili was collected in February 1978 on soil of a *Spartina cynosuroides* marsh on Marsh Island in St. Louis Bay, Hancock County, Mississippi. It occurred in small colonies (2-10 cm²) on well

shaded soil among dense stands of *Spartina*. At the time of collection there was no standing water in the collection site; the salinity of soil water at the site averaged 4.5‰. This alga was not observed on the banks of the island in the intertidal zone. *Vaucheria lii* was sexual when collected and grew tangled among filaments of *V. adela* and of a sterile *Vaucheria* species with large diameter filaments. The sterile *Vaucheria* filaments failed to produce sexual cells during incubation in the laboratory and thus could not be identified to species.

The dimensions of the vegetative filaments and sexual cells of the Mississippi material correspond well to the size range of both the type material (Rieth, 1958) and plants collected in Europe (Rieth, 1963). This first report of *V. lii* in the continental U. S. greatly expands the known range of this rarely collected alga since *V. lii* has been reported previously from only freshwater sites in Asia (Rieth, 1958), Europe (Rieth, 1963), and New Brunswick (see Blum, 1972).

Species of *Vaucheria* in the section *Corniculatae* are primarily freshwater plants although three taxa in this section -- *V. dillwynii*, *V. erythrospora*, and *V. pseudogeminata* -- have been reported from brackish water sites (see Blum, 1972). Although *V. lii* was confined to moderately elevated areas within the Mississippi marsh, it clearly grew on soil which was periodically submerged by brackish water. Thus brackish water habitats must be included within the known ecological tolerance of this taxon.

Vaucheria nasuta Taylor & Bernatowicz 1952 (Fig. 4-5)

Filaments 36-48 μm in diameter; mostly monoecious, a few with only antheridia; antheridia, 1-several, scattered

near the oogonium, separated from the filaments by short (to 60 μm) empty cells, tubular and curved, 17-24 x 60-120 μm , with a terminal pore and 1-3 lateral pores; oogonia usually solitary and sessile on vegetative filaments, 84-132 x 79-101 μm , with a large deflexed beak; oospores subspherical, almost filling the oogonium, mature oospores often with large plate-like lipid bodies.

Vaucheria nasuta was collected in March, 1978 from a tidal mud flat and from *Spartina patens* marshes along the Aransas River, Aransas County, Texas. Sexual cells were observed at the time of collection. Salinity of the standing water at the collection site was 9.0‰.

Vaucheria nasuta was described from salt marshes in Bermuda (Taylor and Bernatowicz, 1952) and has subsequently been identified from Massachusetts (Bernatowicz, 1958; Webber, 1976), North Carolina (Ott and Hommersand, 1974), and California (Blum, 1971). In the Gulf of Mexico coastal area it was reported as common in Vermilion Bay, and the Calcasieu River estuary of Louisiana (Kapraun, 1974). I have not identified *V. nasuta* from other locations along the Gulf coast from Alabama to Texas.

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- FIRST NORTH AMERICAN CONTINENTAL RECORDS OF *Gobionellus pseudofasciatus* (PISCES: GOBIIDAE)¹**
- Recent studies have shown the Indian River region of east-central Florida to contain a rich and diverse assemblage of fishes, with a total of 609 species having been recorded from the area (Gilmore, 1977a). Subsequent collections, further examination of the material obtained in the above survey, and examination of the fishes collected from the area in the mid 1950's by the late Dr. Robert W. Harrington, have revealed the presence of several additional species to be included in the overall faunal list of the region (Gilmore, 1977a). These additional records include the first North American continental records of *Gobionellus pseudofasciatus* Gilbert and Randall, in Gilbert and Kelso (1971), a species previously recorded from Trinidad westward to Costa Rica and northward to Belize (Gilbert and Kelso, 1971; Thomerson and Greenfield, 1975). The record of *Gobionellus shufeldti* from the Indian River region (Gilmore, 1977a) was based on a misidentification of *G. pseudofasciatus*. *G. shufeldti* occurs along the Atlantic coast from North Carolina southward to northeastern Florida (Daytona Beach area) and apparently does not occur in the Indian River region (C. R. Gilbert, pers. comm.).
- Standard length of all specimens was measured to the nearest mm. Abbreviations are as follows: RWH = Robert W. Harrington; UF = Florida State Museum, University of Florida.
- Four lots of *G. pseudofasciatus* have been taken from the following localities in Indian River County, Florida: RWH 55-13, 4 individuals (25-32 mm SL), 20 May 1955, South Relief Canal,

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