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DITTRICHIA GRAVEOLENS (ASTERACEAE) IS NATURALIZED AND INVASIVE IN NEW YORK STATE

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ABSTRACT

Dittrichia graveolens (Asteraceae) is known from five populations widely scattered on Staten Island, Richmond Co, New York, indicating that the species is naturalized and well-established in New York City and New York state.

Dittrichia graveolens (L.) Greuter (stinkwort) was first collected in New York State in 1949 by Harold Moldenke and Joe Monachino in Bronx County (*Moldenke 20555* and *Monachino 529*). Monachino collected the species again in Brooklyn, Kings Co., in October 1959 (*Monachino 632*). The species was not collected or documented again in New York state until the present work and was thought to be historical (Weldy et al. 2019; Atha & Boom 2018; USDA NRCS 2018; Werier 2017).

Stinkwort is currently known from five populations on Staten Island, Richmond Co, New York (Figure 1): the one documented here with an herbarium specimen and four others documented by iNaturalist observations made in 2017 and 2018 (Lemon Creek Park, Heather Liljengren, iNaturalist observ. *18212895*; Brookfield Park, Catherine Barron, iNaturalist observ. *17291502*; Silver Lake Park, Catherine Barron, iNaturalist observ. *18439357*; Bridge Creek, Catherine Barron, iNaturalist observ. *8057953*).

Voucher specimen. New York. Richmond Co.: New York City, Staten Island, floodplain of Mill Creek, W of Arthur Kill Rd and E of the Arthur Kill, between Richmond Valley Rd and Bethel Ave. 40.520567, -74.240185 (WGS 84, ±5m), ca 2 m elev., 13 Oct 2018, *Atha et al. 16047* (NY).

The species was not collected or reported in New York state between 1959 and 2017. However, we know the species was in the area because Karl Anderson reported it as “fairly common” along roadsides at Liberty State Park, New Jersey (Anderson 1989). It is not known whether the

Staten Island plants documented here are new introductions or whether the species has been in New York state since 1959 but undetected.

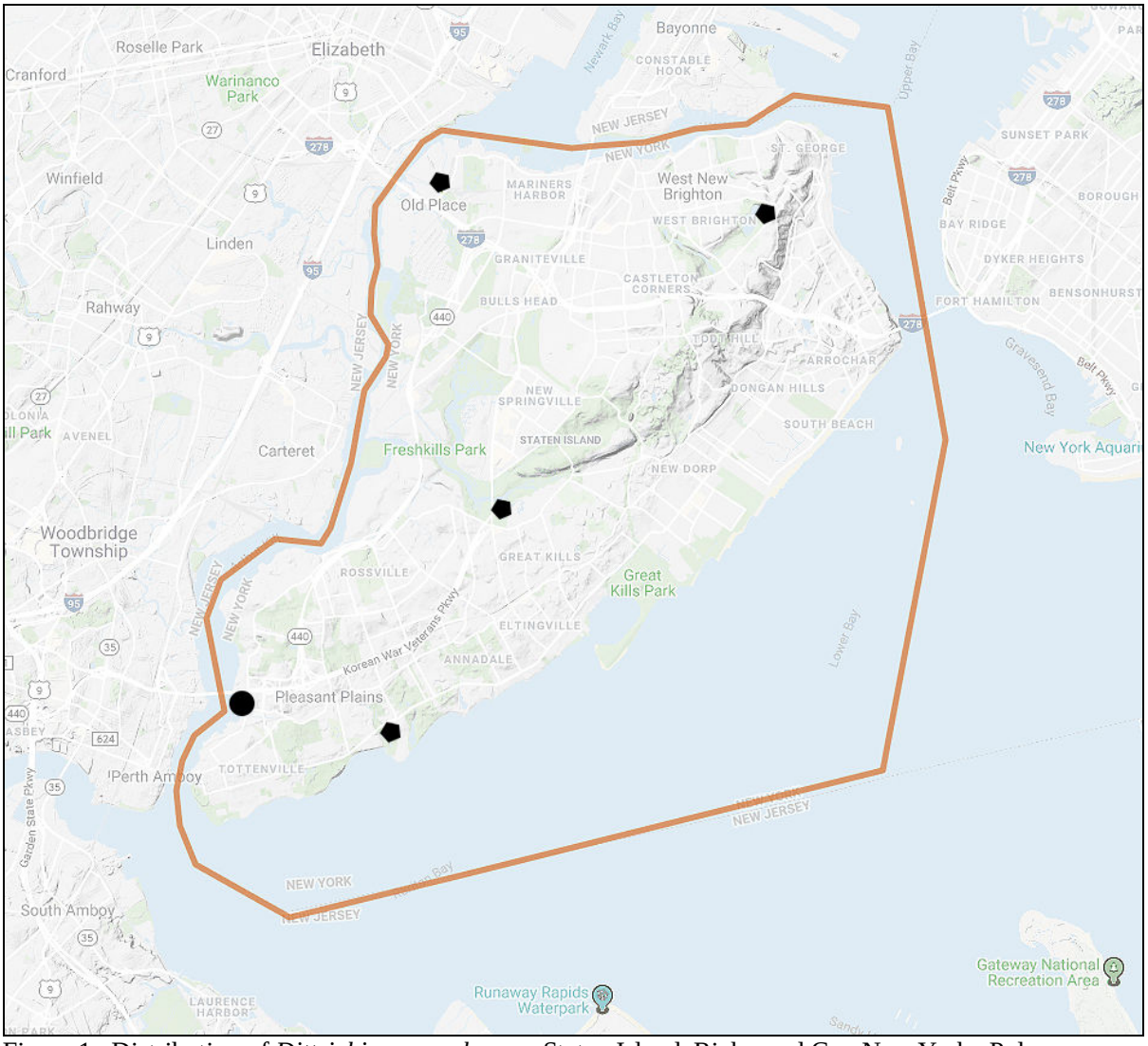

Figure 1. Distribution of *Dittrichia graveolens* on Staten Island, Richmond Co., New York. Polygons are iNaturalist observations and the circle is the herbarium specimen *Atha et al. 16047*. Map adapted from iNaturalist.org.

Dittrichia graveolens is a fall-flowering annual (Fig. 2) native to the Mediterranean region from Spain, Morocco, and North Africa east to southwest Asia through Turkey, Iran, Pakistan and India (Brullo & de Marco 2000). It is the most widespread of the five species in the genus and occurs primarily in anthropogenic habitats such as roadsides, cultivated land, and abandoned fields, especially those high in nitrogen (Brullo & de Marco 2000). The epithet *graveolens* and the common name stinkwort refer to the abundant aromatic glands that occur throughout the plant. The plant contains sesquiterpene lactones which are widespread in the Asteraceae and are known to produce allergic reactions in humans (Preston 1997). Some individuals may exhibit severe dermatological allergic reactions to *Dittrichia graveolens* (Thong et al. 2008).

Figure 2. *Dittrichia graveolens* at 721 Arthur Kill Road, Staten Island, Richmond Co., New York, 7 October 2018 (cbarron, iNaturalist observ. *17291502*).

The species is an aggressive colonizer and in recent years has been spreading rapidly beyond its native range into northern Europe, Australia, and South Africa (Brownsey et al. 2013a; USDA APHIS 2018). It was first detected in Santa Clara Co., California, in 1984 (Preston 1997) and by 2012 had expanded exponentially to 36 counties in the state (Brownsey et al. 2013a). It produces up to 71,000 seeds per plant with a germination rate up to 90% (Brownsey et al. 2013b). Seeds are dispersed by wind, water, animals, and machinery (Brownsey et al. 2013b; USDA APHIS 2018). The seemingly recent and widespread distribution of the plants on Staten Island suggest that they may be spread locally by the movement of contaminated soil, machinery, or both. Researchers at Stanford University's Jasper Ridge Biological Preserve found that cutting and hand-pulling before the plants set seed was nearly 100 percent effective at controlling the species within the preserve (Stanford 2019).

The infestations documented here will be uploaded to the New York State invasive species mapping program iMapInvasives where they will be tracked by city and state authorities including the New York City Department of Parks and Recreation (NYC Parks), Lower Hudson Partnership for Regional Invasive Species Management (LHPRISM), Long Island Invasive Species Management Area (LIISMA) and the New York State Department of Environmental Conservation (NYS DEC). Based on the management success demonstrated at the Jasper Ridge Preserve and because the species currently occurs in isolated populations in low numbers from only one county in the state, we suggest that a rapid response by relevant stakeholders could succeed in eradicating this noxious invasive species from New York State.

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