Water chestnut biomass estimates using
density as a proxy: Facilitating multiyear
comparisons with a streamlined approach

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ABSTRACT

Water chestnut (*Trapa natans*) is an invasive macrophyte
negatively impacting native aquatic communities in the
United States. In New York state, water chestnut occurrence
is monitored through iMapInvasives, a public database that
includes several data fields for all records, such as
distribution type (or categorical density). Biomass is not
regularly recorded in iMapInvasives but is important as a
secondary measurement to gauge primary production,
nutrient uptake, and invasive impact. Lack of biomass data
in iMapInvasives may be addressed with alternative methods
of acquiring biomass information from records. The
primary goal of this project was to develop methods that
allow comparable biomass estimates to be made using a
measured area and an observed distribution type in the
iMapInvasives database. Nine locations were sampled for
water chestnut in June and July 2021. Areas of sparse, dense,
and monoculture growth were recorded along with trace
points. Collected plants were cleaned, measured, and dried
to obtain final dry biomass density values for each
distribution type. Density values were highest in monocul-
ture and lowest in sparse but also varied based on location
and date. ANOVA testing indicated that plant density,
rosette growth, and rosette width varied among distribution
types. Our water chestnut measurements were used to
create formulas that can estimate biomass using presence-
and distribution-type data in iMapInvasives. These formulas
may be useful for stakeholders and managers seeking to
understand the invasive impact of water chestnut and assess
its change in abundance over time.

Key words: iMapInvasives online database, invasive
species, macrophyte management, monoculture, *Trapa
natans*.

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