New record of *Eichhornia crassipes* (Water Hyacinth) from north of Iran

Received: 11.10.2015 / Accepted: 15.11.2015

**Valiollah Mozaffarian**: Research Associate Prof., Research Institute of Forests and Rangelands, P.O. Box 13185-116, Agriculture Research Education and Extension Organization (AREEO), Tehran, Iran

**Bijan Yaghoubi**: Research Assistant Prof., Rice Research Institute of Iran, Agriculture Research Education and Extension Organization (AREEO), Rasht, Iran (byaghoubi2002@yahoo.com)

In October 2012, in a survey in order to study the flora of paddy fields and aquatic ecosystems of Gilan province (N Iran), we encountered an unknown species in “Aynak lagoon” in southeast of Rasht, covered surface of about 12 ha pond densely. Comparing the flora of pond with previous years or adjacent ponds showed that, the new weed was dominant in interference with natural flora of aquatic ecosystems in the area and almost all indigenous flora of this pond were disappeared by the introduction of new weed. Studying weed morphology using scientific resources indicated that new plant was *Eichhornia crassipes* (Mart.) Solms. belonging to *Pontederiaceae* family (Holm *et al.* 1977) with common name Water Hyacinth. Some features makes it unique and easy to identify *E. crassipes* including: glossy green oval-shaped leaves have a waxy round 10–20 cm across, 50 to more than 100 cm height, floating above the water surface, bulbous spongy and inflated stalks, the feathery freely hanging roots and purple-black, erect stalk supports a single spike of 8–15 conspicuously attractive flowers, mostly lavender to pink in color with six petals. Water Hyacinth panicle is up to 30 cm long. The flowers have six stamens and fruit capsule containing the seeds are chambered (Langeland & Burks 1998).

Water Hyacinth is a free-floating perennial aquatic plant that is native to tropical and subtropical regions of South America, Amazon basin (Barret & Forno 1982, Zhang *et al.* 2010). This plant invades ponds, rivers, wetlands, marshy land and other types of aquatic habitats like rice fields (IRRI 1982). Water Hyacinth wastes tremendous amount of water by evapotranspiration, about 13 times higher than free water surface and its population doubles in less than two weeks and one plant reproduces more than 4,000 times each season (Mitchell 1976, Ausden 2007). The dense mass of weed limits light access to underwater for other aquatic submerge plants and vertebrates and depletes water oxygen content. Water Hyacinth propagation causes major conservation problems with considerable socioeconomic repercussions.

It is a species of great ornamental value used in gardening because of the beauty of its foliage and flowers but at the same time Water Hyacinth is the most important aquatic weed of the world (Lancar & Krake 2002). Most of the problems associated with *E. crassipes* are due to its rapid growth rate, its ability to successfully compete with other aquatic plants, and its ease of propagation. While the species was introduced to tropical and subtropical regions around the world as a flower (Langeland & Burks 1998), now it is the major treat in aquatic ecosystems in more than 50 countries as a noxious weed (McComas 2003), very problematic invasive species outside its native range.

No information about Water Hyacinth introduction to Iran is available, but the beauty of its flower led to the plant’s fast spread across Gilan province as a decorative plant, where it is bought and sold freely on the streets. The fast proliferation and easy maintenance makes it convenient for people raise it as an ornamental plant at home. While in first survey (Oct. 2012), Water Hyacinth was only recorded in “Aynak lagoon” about 12 ha, now (Jul. 2014) after two years it has been distributed to around 300 ha all across the province. Some ponds and water canals around Rasht, Fuman, Langrud and Anzali lagoons and also some rivers that flow into Anzali lagoon including...
Bahambar, Chekover, Siahkeshim and Morghak rivers have been invaded by Water Hyacinth. Our survey shows that in every place where the Water Hyacinth comes in, all native vegetation disappears. Also, evidence indicated that by the introduction of Water Hyacinth to “Aynak lagoon”, fishing and other animals native to area like snakes, frog, turtle, etc. are partly disappeared and breeding goose and ducks in the lagoon are also destroying. Since the plant is aggressively expanding its presence across area, it could be considered as an invasive aggressive plant in the north of Iran.

Gilan province has more than 10 thousand hectares of ponds and more than two thousand kilometers of terrestrial canals for paddy rice water supply. Water Hyacinth invasion to those places aggravates the water loss and will decline water transfer capacity and also it could damage the facilities and equipment in water pumping stations. Therefore, Water Hyacinth should be considered as a new threat, along with drought and water shortage for sustaining rice production in the North of Iran. Now that weed introduction to Anzali lagoon has been reported in past months, if established, fishing and boating traffic will be limited, a major threat for heartland of tourism in Gilan province.

One of the main reasons for fast spread of Water Hyacinth in Gilan province from 12 ha to around 300 ha is that, it is being sold as an ornamental flower in Gilan province and also in the neighboring provinces like Mazandaran, Gorgan, Ghazvin and Zanjan. Introduction of Water Hyacinth to the south of the country aquatic habitat could be more problematic due to the warm climate in those regions that favors fast proliferation of Water Hyacinth.

Water Hyacinth introduction to Khuzestan province aquatic ecosystems may cause an environmental disaster.

To combat the weed in areas where it is floated and not established in sediments, manual collection will prevent the rapid spread of Water Hyacinth. Mechanical collection of Water Hyacinth in “Aynak lagoon” was inefficient and regeneration occurred few months later because weed is naturalized there for some years and the seeds or vegetative organs are contained within the sediments. If drainage is possible, Water Hyacinth is sensitive to unsubmerged condition. Freezing, cold conditions and a saltwater all cause sharp decline in growth or death of Water Hyacinth. Glyphosate 2, 4-D and sulfonylurea herbicides have been recommended for Water Hyacinth control. More studies for Water Hyacinth chemical control is under consideration. Due to environmental concerns these herbicides recommending in aquatic habitat and Anzali lagoon should be done cautiously.

This plant considered as the most important aquatic weed of the world and here is reported as a new record for the Flora of Iran from Gilan province in the north of Iran. Until now, no species from Eichhornia genus has been reported from Iran, and thus, this species is a new record for Iran and for the area covered by Flora Iranica (Rechinger 1963–2015).

Specimen seen: Iran, Gilan province, Rasht to Fuman, Aynak lagoon, ca. 10 m a.s.l., 7.9.2012, V. Mozaffarian & B. Yaghoubi, 102062 (TARI).
گزارش جدیدی از گونه هرز آبی (Eichhornia crassipes) از شمال ایران

دریافت: 19/12/2014

ولیله مطفل‌دانی: دانشیار پژوهش، مؤسسه تحقیقات جنگل‌ها و منابع کشور، سازمان تحقیقات، آموزش و ترویج کشاورزی، تهران، ایران

پژوهی بی‌پیش: استاد پژوهش، مؤسسه تحقیقات برق کشور، سازمان تحقیقات، آموزش و ترویج کشاورزی، رشت، ایران

(byaghoubi2002@yahoo.com)

خلصه

در مهرماه 1391، در یک بررسی میدانی به منظور مطالعه فلور استان گیلان، در حاشیه جنوبی جنوبی شهر رشت در منطقه "نالاب عینک" گونه‌ای ناشناخته و دارای توده‌ای بزرگ مشاهده شد که با ایجاد یک لابه بوتشی شکم تمام سطح آبی ایندان حدود 12 هکتاری منطقه را پوشانده بود. نمونه‌ها جمع آوری و خصوصیات آنها با استفاده از منابع علمی بررسی شد. برخی از گیاه‌های جدید عبارت بودند از: برگ‌هایی به ابعاد 20-30 سانتی‌متر، برگ‌گردن برگ‌های بالاتر از سطح آب، ارتفاع 50 تا 100 سانتی‌متر، ساقه‌های استخوانی و دمکی متر مرا، یا بدون برهم‌گره، برش‌های پرماندن و آزاد شاور در بخش‌های عمیق‌تر آبی‌دان و یا فروفرفتی در رسوبات در قسمت‌های حمایتی، بخش‌ها به رنگ سیاه ارغوانی، ساقه راست که گل‌ذین سنبل در انتهای آن قرار گرفته بود و دارای 15-15 گل زیبا و جذاب به رنگ بنفش که رنگ با سنبل کرکر و اشکالات جانبی شکننده، به‌ویژه در آنها مشبع‌های شناسایی شد. مقایسه بوتشی گیاهی آبی‌دان فوق با سال‌های قبل و آبی‌دان‌های موجود در اختیاریانه روش‌های از آنها مشبع‌های فوق (Water Hyacinth (Eichhornia crassipes (Mart.) Solms نام شناخته شد. براساس ویژگی‌های فوق این گیاه تحت نام Pontederiaceae شناسایی شد. مقایسه بوتشی گیاهی آبی‌دان فوق با سال‌های قبل و آبی‌دان‌های موجود در اختیاریانه روش‌های ایندیکاسیون فوق نشده، بلکه تا حد زیادی باعث تغییراتی در آبی‌دان همانند بیشتر، لک‌پوشی، مار و یا به علت کامل تر تمام موجودات مردار نیز شده، به طوری که پرورش ارگک و گاز که توسط بومیان حاشیه آبی‌دان دارای قدمت

Fig. 1. Eichhornia crassipes (Water Hyacinth) habit.

Fig. 2. Leaves of Water Hyacinth with bulbous spongy and inflated stalks.
References


