

ELEMENT STEWARDSHIP ABSTRACT  
for

*Colubrina asiatica*

Asian Snakewood, Hoop Withe

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The Nature Conservancy  
Element Stewardship Abstract  
For *Colubrina asiatica*

## I. IDENTIFIERS

Common Name: ASIAN SNAKEWOOD, HOOP WITHE      Global Rank: G5

### General Description:

Scandent-scrambling, essentially glabrous shrub. The common name latherleaf denotes that *C. asiatica* leaves contain a useful saponin-like substance (Johnston 1971). Neal (1965) wrote that in Hawaii and elsewhere, the plant is used medicinally and its leaves have long been used for soap as they form a lather in water.

### Diagnostic Characteristics:

*C. asiatica* (Rhamnaceae) is characterized by its rambling growth over other vegetation; glossy, dark green, thin leaves; and small axillary clusters of minute greenish flowers and fruit (Godfrey and Wooten 1981, Langeland 1990). A line drawing is in Langeland (1990) and a color photo in Scurlock (1987).

## II. STEWARDSHIP SUMMARY

*C. asiatica asiatica* is an aggressive exotic invader of native coastal vegetation in South Florida, which has invaded TNC's Blowing Rocks Preserve and other natural areas. Its seeds are constantly being dispersed at a rapid rate by ocean currents. Other seed vectors may also exist. Plants grow rapidly in full sun; they can cover and even kill native flora. Current practices of herbicide and manual control of *C. asiatica* are very labor intensive and thus expensive. Research is needed on improving control methods of this noxious pest species.

## III. NATURAL HISTORY

### Range:

*C. asiatica* is native to tropical Asia, but is now pantropical in distribution and grows in coastal sites adjacent to the ocean (Johnston 1971). The species is regarded as native in Hawaii (J. Randall, pers. comm. 1992). *C. asiatica* is a relatively recent introduction to the Western Hemisphere, being first collected in Jamaica in about 1860 (Johnston 1971). Langeland (1990) reported that it was introduced into the Caribbean Islands from Asia where it escaped from cultivation.

The species was detected in Florida at Big Pine Key in the early 1950's (Dickson et al. 1953). It was not long before it spread as far north as Martin County (Alexander and Crook 1974, Austin 1978, Olmstead et al. 1981).

#### Habitat:

Alexander and Crook (1974) noted 20 years ago that *C. asiatica* could cause problems by overgrowing native vegetation near the seacoast. A report from the South Florida Research Center (Olmstead et al. 1981) nine years later noted that *C. asiatica* had been known to "locally engulf stands of buttonwood and has been regarded as a possible severe threat to native vegetation".

In Florida, it is naturalized in relatively frost-free coastal areas of the southern peninsula and the Florida Keys (Godfrey and Wooten 1981). The current northern boundary of the species is Sewell Point, Martin Co. (R. Roberts, pers. comm. 1992). In the very recent Exotic Woody Plant Control guide edited by Langeland (1990), *C. asiatica* is listed as one of the most aggressive exotic plants in Florida along with *Casuarina* spp., *Schinus terebinthifolius* and *Melaleuca quinquenervia*.

Natural communities where *C. asiatica* is found include beach dune (Long and Lakela 1976, Wunderlin 1982), coastal strand (Norma Jeanne Byrd pers. comm. 1992), maritime hammock (Wunderlin 1982, Myers and Ewel 1990), tidal marsh (Jim Duquesnel pers. comm. 1992), and tidal mangrove swamp (Godfrey and Wooten 1981, Olmstead et al. 1981, Byrd, 1992). It is most often found growing in the uplands - submerged lands interface (Langeland 1990) or between beach dune and maritime hammock (Duquesnel 1992). Duquesnel (1992) stated that, unlike some exotic pest plant species, *C. asiatica* can become established and grow in undisturbed sites of natural vegetation.

#### Ecology:

*Colubrina asiatica* has a rapid growth rate once the foliage reaches direct sunlight. Byrd (1992) and Duquesnel (1992) reported plants increasing 10 m or more in length in one year. Its climbing growth habit allows it to grow over the vegetative canopy thereby often effectively shading out the native flora; the resulting dense walls of *C. asiatica* stems can be virtually impenetrable (Langeland 1990). Snyder et al. (1990) wrote that this woody vine smothers hammocks in coastal areas. Byrd, Duquesnel and J.B. Miller (pers. comm. 1992) all reported that mature plants dominate native vegetation with stems as large as 10 cm diameter at the ground and 15+ m in length. Duquesnel added that *C. asiatica* has been seen smothering mature *Schinus terebinthifolius* in some locations.

Bob Doren (pers. comm. 1992) called latherleaf a seriously invasive exotic as adventitious roots develop wherever the stem contacts the ground. Miller (1992) stated that the stems may grow upwards (7 m or more) to the top of the canopy, fall back to the ground where they reroot and then grow upwards again. Duquesnel (1992) noted that the roots resprout following disturbance to the stems.

#### Reproduction:

Long and Lakela (1976) and Wunderlin (1982) stated that *C. asiatica* flowers and fruits all year. The seeds are highly dispersable via flotation in ocean currents and may remain viable after floating in saltwater for many months (Guppy 1906, Carlquist 1966). Severe spring and storm tides can push the seed far inland (Langeland 1990). An extreme case

reported by Duquesnel (1992) was a plant growing approximately 300 m from water in a coastal hammock at John Pennekamp State Park on Key Largo. Because this site is higher than storm tides normally reach, some other dispersal agent, such as a bird, may have distributed this plant. Seed germination does not seem to occur on exposed rock, but appears to require loose soil (Duquesnel 1992). Fillyaw (1986), Byrd (1992), and Duquesnel (1992), reported germination and growth rate of seedlings increases with the removal of the shading canopy. Duquesnel (1992) stated that seedlings reach sexual maturity in about 1 year; even young plants produce many seeds, so open areas around plant are rapidly colonized. Solitary individuals are found only under two conditions: if they are too young to fruit or growing in dense vegetation.

#### IV. CONDITION

##### Threats:

Not applicable. Sensitivity to cold temperatures may limit the northern expansion of this pest species. Miller (1992) stated that it has been found as far north as St. Lucie County.

#### V. MANAGEMENT/MONITORING

##### Preserve Selection & Design Considerations:

##### Management Requirements:

This element requires active management to prevent its spread and the resulting domination of natural communities.

Manual removal can be done on young plants in the beach dune or coastal strand where they are easily detected (Byrd, 1992). Removal by machinery is usually not practical due to latherleaf's habit of growing in and over desirable native species (Langeland 1990). At the Blowing Rocks Preserve, machinery removal was effective in an area where no native understory existed and where latherleaf and Australian pine removal could be coordinated (N.J. Byrd, pers. comm. 1992). Herbicide control is very labor intensive and difficult due to latherleaf's rambling habit and difficulty in identifying the main trunk (Langeland 1990). Herbicide on a stem will kill it only to where it is rerooted by ground layering (Miller 1992). Guidelines for a herbicide control program in Langeland (1990) recommend basal bark applications of Garlon 4 diluted to 2% concentration with diesel fuel. The herbicide is applied directly to the bark around the circumference of each vine up to 40 cm above the ground. Hand-held equipment or backpack sprayers are usually used.

Duquesnel (1992) recommended different herbicide treatments depending on the number of latherleaf plants. His general guidelines were: less than 20 - cut stump, more than 20 - basal bark, more than 100 - foliar, as *C. asiatica* would cover all other vegetation. The cut stump treatment consisted of one individual cutting the vines off near the ground with a machete (or loppers in areas of dense vegetation), followed by another individual spraying herbicide on the entire exposed cambium layer. He recommended using up to a 50% concentration of Garlon 3A diluted in water - the sooner the Garlon was applied after

cutting, the more effective the results and the less concentrated a solution necessary. Duquesnel (1992) used a 6% Garlon 4 solution in diesel fuel for basal bark treatment as described in Langeland (1990). The foliar spray application was of Garlon 3A diluted to a 6% solution in water with the addition of a surfactant to aid in sticking. The foliar spray technique is appropriate only where damage to non-target vegetation is not a concern. Areas may require re-treatment every 3-4 months to prevent regeneration. Initial treatment should be applied around the perimeter of a dense stand to prevent continued expansion on the far side of a treated population.

Both Duquesnel (1992) and Miller (1992) added that marker dyes are very useful for keeping track of the treated vegetation. Details on application methods (including color photographs) are given in Langeland (1990).

Byrd (1992) related a situation at TNC's Blowing Rocks Preserve where *C. asiatica* was growing in the shade of large *Casuarina equisetifolia*. Once these trees were removed from the site, *C. asiatica* flourished in the full sun. Byrd now recommends eradicating latherleaf prior to any canopy removal. Duquesnel (1992) cautioned against inadvertently spreading *C. asiatica* seed by hauling away cut branches. The seed pods easily shatter when dry and seeds can be disseminated along roadsides.

#### Management Programs:

Doren (1992) stated that no active management is currently being done at Everglades National Park. DNR is managing against *C. asiatica* spread in the Florida State Park system. Key contacts are Jim Duquesnel and J.B. Miller. TNC's Blowing Rocks Preserve is also working to eradicate *C. asiatica* (contact Norma Jeanne Byrd).

#### Monitoring Requirements:

Populations of *C. asiatica* are increasing and being dispersed readily by ocean currents. Their spread to new areas should be closely monitored, as should contraction or expansion of existing populations.

Ground surveys for new populations of this element should be conducted several times per year. Aerial surveys can detect large populations in relatively unaccessible areas such as in Everglades National Park and Biscayne National Park.

#### Monitoring Programs:

Everglades National Park is currently monitoring the spread of *C. asiatica* and has a map of its range available (contact Bob Doren). DNR is monitoring in the Florida State Park system. Key contacts are Jim Duquesnel and J.B. Miller. Jeff Weber, DNR biologist (pers. comm. 1992) relates that *C. asiatica* is not yet found in state parks along the Gulf of Mexico. The Nature Conservancy is currently monitoring distribution of *C. asiatica* at the Blowing Rocks Preserve (contact Norma Jeanne Byrd). Infestations of latherleaf in Biscayne National Park are under observation (C. Lippincott, pers. comm. 1992).

## VI. RESEARCH

#### Management Research Programs:

Karen Brown (pers. comm. March, 1992) at the Center for Aquatic Plants, IFAS, searched the Aquatic Plant Information Retrieval System data base for *C. asiatica* and found only Langeland (1990) as a published reference. None of the above identified research needs are being worked on at this time.

#### Management Research Needs:

Biological control of *C. asiatica* needs to be investigated. Apparently no research is currently underway or planned (Dan Austin, pers. comm. 1992, Langeland 1990). However, because other species within the genus and family are native in Florida, biocontrol efforts should be approached cautiously.

Factors affecting the susceptibility of *C. asiatica* to herbicides need study. These include identification of the best time of year and stage of plant development to apply and the frequency of application necessary to obtain optimal results. The exact times of flowering and fruiting needs to be determined: no information exists on whether latherleaf reproduces seasonally or all year round. Identification of seed dispersers other than water should be conducted. Research might also identify allelopathic properties of *C. asiatica* that suppress the growth of other plants.

## VII. ADDITIONAL TOPICS

## VIII. INFORMATION SOURCES

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## IX. DOCUMENT PREPARATION & MAINTENANCE

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