U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Psychotria hobdyi*

COMMON NAME: Kopiko

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: June 2004

STATUS/ACTION
___ Initial 12-month Petition Finding: ___ not warranted
___ warranted
___ warranted but precluded (also complete (c) and (d) in section on petitioned candidate species- why action is precluded)
___ Species assessment - determined species did not meet the definition of endangered or threatened under the Act and, therefore, was not elevated to Candidate status
___ New candidate
__X_ Continuing candidate
___ Non-petitioned
_X__ Petitioned - Date petition received: May 11, 2004 _____
__ 90-day positive - FR date: _____
__ 12-month warranted but precluded - FR date: _____
_N_ Is the petition requesting a reclassification of a listed species?
___ Listing priority change
Former LP: ___
New LP: ___
Latest Date species became a Candidate: 1997
___ Candidate removal: Former LP: __
___ A - Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.
___ F - Range is no longer a U.S. territory.
___ I - Insufficient information exists on biological vulnerability and threats to support listing.
___ M - Taxon mistakenly included in past notice of review.
___ N - Taxon may not meet the Act's definition of "species."
___ X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plants, Rubiaceae (Coffee family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Kauai

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Hawaii, island of Kauai

LEAD REGION CONTACT: Scott McCarthy, 503-231-6131

LEAD FIELD OFFICE CONTACT: Pacific Islands Fish & Wildlife Office, Christa Russell, 808-792-9451

BIOLOGICAL INFORMATION:

Species Description *Psychotria hobdyi* is a tree up to 8 meters (m) (26 feet (ft)) tall, with grayish brown branches. Leaves are membranous to leathery, oblanceolate, and pink or rose-colored on the lower surface. The lower leaf surface is glabrous to somewhat pubescent with small or absent domatia. Flowers are functionally unisexual. This species is distinguishable from *Psycohtria grandiflora*, to which it is closely related, by the nature of the inflorescence and leaves. The inflorescence of *P. hobdyi* has a very small peduncle compared to that of *P. grandiflora*, and the leaves are membranous and much larger than those usually found in the later (Wagner *et al*. 1999).

Taxonomy *Psychotria hobdyi* was described by Sohmer. This species is recognized as a distinct taxon in Wagner *et al*. 1999.

Habitat Typical habitat is mesic forest at an elevation of approximately 600 m (2,000 ft). This species is found on the western side of the island of Kauai (Wagner *et al*. 1999; Steve Perlman, National Tropical Botanical Garden, Robert Hobdy, Hawaii Division of Forestry and Wildlife, pers. comms. 1995; Ken Wood, National Tropical Botanical Garden, pers. comm. 1999).

Historical and Current Range/Current Status This species is known from three populations of approximately 85 individuals (S. Perlman, R. Hobdy, pers. comms. 1995; K. Wood pers. comms. 1999, 2000). We do not know of any recent surveys or long-term trends for this species, but it is reasonable to assume the populations have continued to decline, since not all of the threats are managed.

THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. This species is highly and imminently threatened by feral goats (*Capra hircus*) that degrade and destroy habitat (S. Perlman and R. Hobdy, pers. comms. 1995). The goat, a species originally native to the Middle East and India, was successfully introduced to the Hawaiian Islands in 1792. Currently populations exist on Kauai, Oahu, Maui, and Hawaii. Goats browse on introduced grasses and native plants, especially in drier and more open ecosystems. Feral goats eat native vegetation, trample roots and seedlings, cause erosion, and promote the invasion of alien plants. They are able to forage in extremely rugged terrain and have a high reproductive capacity (Clarke and Cuddihy 1980; van Riper and van Riper 1982; Scott *et al*. 1986; Tomich 1986; Culliney 1988; Cuddihy and Stone 1990).

Although many plant species survive on steep cliffs inaccessible to goats, the original range of these plants was probably much larger. These species are now vulnerable to the long-term, indirect effects of goats, such as large-scale erosion (Corn *et al*. 1979). The habitats of many of the plants were damaged in the past by goats, and these effects are still apparent in the form of alien vegetation and erosion. One or more populations are currently threatened by direct damage from feral goats, such as trampling of plants and seedlings and erosion of substrate (Clarke and Cuddihy 1980; van Riper and van Riper 1982; Scott *et al*. 1986; Culliney 1988).

B. Overutilization for commercial, recreational, scientific, or educational purposes.
None known.

C. Disease or predation.
Predation of Hawaii's native vegetation by goats and the extensive damage caused by them have been well documented (van Riper and van Riper 1982; Tomich 1986). Although there is no evidence of predation on *Psychotria hobdyi*, these plants are not known to be unpalatable. Direct predation by goats is a possible threat to this species.

D. The inadequacy of existing regulatory mechanisms.
Goats are managed in Hawaii as game animals, but many populate inaccessible areas where hunting is difficult, if not impossible, and therefore has little effect on their numbers. Goat hunting is allowed on all islands either year-round or during certain months, depending on the area (Hawaii Department of Lands and Natural Resources n.d.-a, n.d. b, n.d.-c, 1990).

E. Other natural or manmade factors affecting its continued existence.
This species is threatened by alien plant species (S. Perlman and R. Hobdy, pers. comms. 1995). Although the exact pest species that threaten this species have not been provided by the experts, alien pest plants are found throughout the areas where this species occurs. The native vascular flora of Hawaii consists of about 1,500 species, 89 percent of which were endemic. An additional 1,500 species have been introduced and nearly 100 of these species have become pests (Smith 1985; Wagner *et al.* 1999). Pest species compete with native plants for space, light, water, and nutrients (Cuddihy and Stone 1990). Some of these species were brought to Hawaii by various groups of people, including the Polynesian immigrants, for food or cultural reasons. Plantation owners, alarmed at the reduction of water resources for their crops caused by the destruction of native forest cover by grazing feral animals, supported the introduction of alien tree species for reforestation. Ranchers planted introduced pasture grasses and other species for agriculture, and sometimes inadvertently introduced weed seeds as well. Other plants were brought to Hawaii for their potential horticultural value (Wenkam 1969; Scott *et al*. 1986; Cuddihy and Stone 1990). While we do not have direct documentation of decline in this species due to presence of alien pest plants, numerous studies have shown that numerous alien pest plants can outcompete almost any native species that has been studied in both Hawaii and other tropical islands. In addition, they often radically alter the habitat to a point that it is no longer suitable for the native species (Meyer and Florence 1996, Medeiros and Loope 1997, Medeiros et al. 1992, Smith 1985, Loope and Medeiros 1992, Smather and Gardner 1978, Ellshoff *et al*. 1995, Loope *et al*. in press).

Additionally, with only three populations of 85 individuals remaining, reduced reproductive vigor and stochastic extinction due to naturally occurring events, such as hurricanes and landslides, are also threats. Species like *Psychotria hobdyi* that are endemic to single small islands are inherently more vulnerable to extinction than widespread species because of the higher risks posed to a few populations and individuals by random demographic fluctuations and localized catastrophes such as hurricanes and disease outbreaks. When considered on their own, the natural processes associated with being a single island endemic and the habitat perturbation caused by hurricanes do not affect *Psychotria hobdyi* to such a degree that it is threatened or endangered with extinction in the foreseeable future, but these natural processes can exacerbate the threat from anthropogenic factors, such as habitat loss for human development or predation by alien species.

SUMMARY OF REASONS FOR ADDITION, REMOVAL OR LISTING PRIORITY CHANGE:

____Is the removal based on a Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) finding? If "Yes", summarize the specific PECE evaluation criteria that were met in determining that the conservation effort is sufficiently certain to be implemented and effective so as to have contributed to the elimination or adequate reduction of one or more threats to the species identified through the section 4(a)(1) analysis.

FOR PETITIONED CANDIDATE SPECIES (also complete c and d for initial 12-month petition findings):

a. Is listing warranted? Yes ___
b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes ___
c. Is a proposal to list the species as threatened or endangered in preparation? No ___
d. If the answer to c. above is no, provide an explanation of why the action is precluded.

We find that the immediate issuance of a proposed rule and timely promulgation of a final rule for this species has been, for the preceding 12 months, and continues to be, precluded by higher priority listing actions (including candidate species with lower LPNs). During the past 12 months, almost our entire national listing budget has been consumed by work on various listing actions to comply with court orders and court-approved settlement agreements, emergency listings, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of this species as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures. For information on listing actions taken over the 12 months, see the discussion of "Progress on Revising the Lists," in the current CNOR which can be viewed on our Internet website (http://endangered.fws.gov/).

LAND OWNERSHIP:
State of Hawaii.

PRELISTING:
The Service has been working with an informal group to protect those species on Kauai on the brink of extinction, including *Psychotria*. The group is just beginning to compile information on needed actions, and then will seek funds to conduct the highest priority actions.

Based on the International Union for Conservation of Nature and Natural Resources Red Plant Data Book rarity categories, this species is recognized as Rare (could be considered at risk) by Wagner, Herbst, and Sohmer in the 1999 *Manual of the Flowering Plants of Hawaii.*

DESCRIPTION OF MONITORING:
Much of the information in this form is based on the results of a meeting of 20 botanical experts held by the Center for Plant Conservation in December of 1995, and has been updated by personal communication with Steve Perlman and Ken Wood of the National Tropical Botanical Garden and Robert Hobdy of Hawaii's Division of Forestry and Wildlife.

We have incorporated updated and new information on this species from our files and the most recent supplement to the *Manual of the Flowering Plants of Hawaii* (Wagner and Herbst 2003). In addition, in 2004, the Pacific Islands office contacted the following species experts: Bob Hobdy, retired from Hawaii Division of Forestry and Wildlife; Joel Lau, Hawaii Natural Heritage Program; Art Medeiros, USGS Biological Resources Discipline; Hank Oppenheimer, resource manager for Maui Land and Pineapple Company; and Steve Perlman and Ken Wood, National Tropical Botanical Garden. No new information on status or range was provided.

On May 11, 2004, we received a petition dated May 4 from the Center for Biological Diversity (CBD) and others to list this species. This petition was thoroughly reviewed but did not provide any new information on this species (CBD *et al*. 2004).

REFERENCES :

Center for Biological Diversity, Dr. Jane Goodall, Dr. E.O. Wilson, Dr. Paul Ehrlich, Dr. John Terborgh, Dr. Niles Eldridge, Dr. Thomas Eisner, Dr. Robert Hass, Barbara Kingsolver, Charles Bowden, Martin Sheen, the Xerces Society, and the Biodiversity Conservation Alliance. 2004. Hawaiian Plants: petitions to list as federally endangered species. May 4, 2004.

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Natural Resources, Endangered Species Program, Honolulu. 14 pp.

Cuddihy, L.W., and C.P. Stone. 1990. Alteration of native Hawaiian vegetation; effects of humans, their activities and introductions. Coop. Natl. Park Resources Stud. Unit, Hawaii. 138 pp.

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Ellshoff, Z.E., D.E. Gardner, C. Wikler, and C.W. Smith. 1995. Annotated bibliography of the genus *Psidium*, with emphasis on *P. cattleianum* (strawberry guava) and *P. guajava* (common guava), forest weeds in Hawai`i. Cooperative National Park Resources Studies Unit, University of Hawaii. Technical Report 95.

Hawaii, Department of Land and Natural Resources. N.d.-a. Summary of Title 13, Chapter 123, Game mammal hunting rules, island of Oahu. Division of Forestry and Wildlife, Honolulu. 2 pp.

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Hawaii, Department of Land and Natural Resources. N.d.-c. Summary of Title 13, Chapter 123, Game mammal hunting rules, island of Maui. Division of Forestry and Wildlife, Honolulu. 2 pp.

Hawaii Heritage Program, The Nature Conservancy of Hawaii. 1990c. Management recommendations for Na Pali Coast State Park, island of Kauai. Unpublished report prepared for Hawaii, Department of Land and Natural Resources, Division of State Parks, Honolulu. 18 pp.

Hawaii Natural Heritage Program. 2001. Natural Heritage Program database, unpublished.

Loope, L.L. and A.C. Medeiros. 1992. A new and invasive grass on Maui. Newsletter of the Hawaiian Botanical Society 31: 7-8.

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Medeiros, A.C., L.L. Loope, T. Flynn, S.J. Anderson, L.W. Cuddihy, and K.A. Wilson. 1992. Notes on the status of an invasive Australian tree fern (*Cyathea cooperi*) in Hawaiian rain

forests. American Fern Journal 82: 27-33.

Scott, J.M., S. Mountainspring, F.L. Ramsey, and C.B. Kepler. 1986. Forest bird communities of the Hawaiian Islands: Their dynamics, ecology, and conservation. Studies in Avian Biology 9:1-429. Cooper Ornithological Society, Los Angeles.

Smather, G.A. and D.E. Gardner. 1978. Stand analysis of an invading firetree (*Myrica faya* Aiton) population, Hawai`i. Proceeding of the Second Conference on Natural Science, Hawaii Volcanoes National Park, pp. 274-288.

Smith, C.W. 1985. Impact of alien plants on Hawai`I's native biota: in Stone, C.P., and J.M. Scott (eds.), Hawai`I's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, pp. 180-250.

Stone, C.P. 1985. Alien animals in Hawai`I's native ecosystems: toward controlling the adverse effects of introduced vertebrates: in Stone, C.P., and J.M. Scott (eds.), Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, pp. 251-297.

Tomich, P.Q. 1986. Mammals in Hawai`I; a synopsis and notational bibliography. Bishop Museum Press, Honolulu. 375 pp.

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Wagner, W.L. and D.R. Herbst. 2003. Electronic supplement to the manual of flowering plants of Hawai‘i, version 3.1. December 12, 2003. Available from the Internet. URL: http://rathbun.si.edu/botany/pacificislandbiodiversity/hawaiianflora/supplement.htm.

Wenkam, R. 1969. Kauai and the park country of Hawaii. Sierra Club, San Francisco. 160 pp.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	**Imminent**	Monotypic genus	1
		Species	**2***
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Rationale for listing priority number:

Magnitude:
This species is highly threatened by feral goats that directly prey upon it and degrade and destroy habitat, nonnative plants that compete for light and nutrients, and reduced reproductive vigor and stochastic extinction due to naturally occurring events. Threats to the mesic forest habitat of *Psychotria hobdyi* occur throughout its range and are expected to continue or increase without control or eradication. The low numbers of individuals and limited range also increase the risk of extinction risk to this species from the existing threats.

Imminence:
Threats to *Psychotria hobdyi* from feral goats, nonnative plants, and reduced reproductive vigor are imminent because they are ongoing.

Is Emergency Listing Warranted?
No. The species does not appear to be appropriate for emergency listing at this time because although the immediacy of the threats is great with only three populations of 85 individuals remaining, groups are taking action to avoid the extinction of the species. Therefore, it is unlikely to imperil a significant proportion of the taxon's range within the time frame of the routine listing process. If it becomes apparent that the routine listing process is not sufficient to prevent large losses that may result in this species' extinction, then the emergency rule process for this species will be initiated. We will continue to monitor the status of *Psychotria hobdyi* as new information becomes available. This review will determine if a change in status is

warranted, including the need to make prompt use of emergency listing procedures.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all 12-month petition findings, additions of species to the candidate list, removal of candidate species, and listing priority changes.

Approve: David B. Allen
7/19/04
Regional Director,
Fish and Wildlife Service
Date

Concur: Matt Hogan, Acting 5/2/05
Director, Fish and Wildlife Service Date

Do not concur: _____ _____
Director, Fish and Wildlife Service Date

Director's Remarks: _____

_____

_____

Date of annual review: June 2004
Conducted by: _____

Comments: _____

_____

_____

(rev. 4/22/04)