

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

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SCIENTIFIC NAME: *Dendrocopos noguchii*

COMMON NAME: Okinawa woodpecker

HQ CONTACT: Rachel London, Acting Chief, Branch of Delisting and Foreign Species, 703–358–2491, rachel\_london@fws.gov.

DATE INFORMATION CURRENT AS OF: July 2022

STATUS/ACTION

Species petitioned for listing which we have determined is not a listable entity

Species petitioned for listing which we have determined does not warrant listing (does not meet the definition of a threatened or endangered species)

Non-listed species for which we have not received a petition but for which we have undertaken a species status assessment on our own initiative and which we have determined does not warrant listing (does not meet the definition of a threatened or endangered species)

Listed species petitioned for delisting which we have determined does not warrant delisting

Listed species petitioned for downlisting which we have determined does not warrant downlisting

Listed species petitioned for uplisting for which we have made a warranted-but-precluded finding for uplisting (this is part of the annual resubmitted-petition finding)

Listed species petitioned for uplisting which we have determined does not warrant uplisting

New candidate

Continuing candidate

Date when the species first became a candidate (as currently defined): May 21, 2004

Listing priority number change

Former LPN:   2  

New LPN:   8

\_\_\_ Candidate removal: Former LPN: \_\_\_

\_\_\_ Taxon does not meet the Act's definition of "endangered species" or "threatened species" because it 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.

\_\_\_ Taxon does not meet the Act's definition of "endangered species" or "threatened species" because it is not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.

\_\_\_ Taxon does not meet the Act's definition of "species."

\_\_\_ Taxon mistakenly included in past notice of review.

\_\_\_ Taxon believed to be extinct.

#### Petition Information:

\_\_\_ Non-petitioned

X Petitioned; Date petition received: November 28, 1980

90-day "substantial" finding FR publication date; citation: May 12, 1981 (46 FR 26464)

12-month "warranted but precluded" finding FR publication date; citation: May 21, 2004 (69 FR 29353)

#### FOR PETITIONED CANDIDATE SPECIES

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. Why is listing precluded at this time? Higher-priority listing actions—including court-approved settlements, and court-ordered and statutory deadlines, for petition findings and listing determinations—continue to preclude the proposed and final listing rules for this species. We continue to monitor populations and, if necessary, will change the status of the species or implement an emergency listing. The "Progress on Revising the Lists" section of the current CNOR (<https://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

#### PREVIOUS FEDERAL ACTIONS:

On November 28, 1980, we received a petition from the International Council for Bird Preservation to list 79 bird species, of which 60 were foreign species and 19 were occurring on U.S. territory, including Okinawa woodpecker (*Sapheopipo noguchii*), as endangered or threatened species under the Act. On May 12, 1981, we published in the *Federal Register* (46 FR 26464) a 90-day finding in which we announced that the petition contained substantial

information indicating that listing may be warranted for 77 of the 79 bird species, including the Okinawa woodpecker. At the time of the petition, the Okinawa woodpecker (*Dendrocopos noguchii*) was classified as *Sapheopipo noguchii*. We recognized the Okinawa woodpecker in the genus *Dendrocopos* in 2009, and recognize the species as *D. noguchii* and treat *S. noguchii* as a synonym (74 FR 40540). This document constitutes our 12-month finding on the November 28, 1980, petition to list the Okinawa woodpecker under the Act.

[ANIMAL GROUP AND FAMILY/PLANT GROUP, ORDER AND FAMILY]: Birds,  
Woodpeckers (Aves: Picidae)

DISTINCT POPULATION SEGMENT (DPS)

N/A

#### BIOLOGICAL INFORMATION

To assess the Okinawa woodpecker's viability, we followed the species status assessment (SSA) framework and used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–311). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years, variation in demographic rates), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt to both near-term and long-term changes in its physical and biological environment (for example, climate change, disease). A species with a high degree of resiliency, representation, and redundancy is better able to adapt to novel changes and to tolerate environmental stochasticity and catastrophes. In general, species viability will increase with increases in resiliency, redundancy, and representation (Smith et al. 2018, p. 306). Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

We use the SSA framework to assemble the best scientific and commercial data available for this species. The SSA framework consists of three sequential stages. During the first stage, we evaluate the species' needs. The next stage involves an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition (i.e., how threats and conservation actions have influenced the species). The final stage of the SSA framework involves assessing the species' plausible range of future responses to positive and negative environmental and anthropogenic influences. The SSA framework uses the best available information to characterize viability as the ability of a species to sustain populations in the wild over time and is used to inform our regulatory decision.

### Species Description

The Okinawa woodpecker is a relatively large woodpecker that is 31–35 centimeters (cm; 12–14 inches (in)) in length. It has a dark red belly and vent, and some red on the breast and mantle (BLI 2016, p. 1, Brazil 2014, p. 284; Figure 1). The species is generally dark brown with red tips on all feathers and white spots on the primary feathers (BLI 2017, unpaginated). Males are brighter than females, with a deep-red crown and nape (Brazil 2014, p. 284). Females have a brown crown that contrasts with pale brown on the sides of their head (Brazil 2014, p. 284). The Okinawa woodpecker is highly vocal year-round (Brazil 2014, p. 284).



Figure 1: Image of the Okinawa woodpecker (Ambrosini 2008, unpaginated).

### Taxonomy

The Okinawa woodpecker (*Dendrocopos noguchii*) was first described as *Picus noguchii* in 1887, but was moved into the monotypic genus *Sapheopipo* in 1890, based on its distinct coloration (Winkler *et al.* 2005, p. 103 citing several sources; Short 1973, pp. 13–16). Genetic evidence, in combination with a reevaluation of its morphology, places the species within *Dendrocopos*, a polytypic genus (Winkler *et al.* 2005, pp. 103–109). The Checklist of Japanese Birds retains the species in the monotypic genus *Sapheopipo* (Ornithological Society of Japan 2012, online checklist). However, the Integrated Taxonomic Information System (ITIS 2021, unpaginated), International Union for Conservation of Nature (IUCN; BLI 2016 p. 1), and

Birdlife International (BLI 2017, unpaginated) all recognize this species as *Dendrocopos noguchii*, based on Winkler *et al.* (2005, pp. 103–109). Phylogenetic analysis has also suggested that the Okinawa woodpecker is a sister species to the White-backed Woodpecker *Dendrocopos leucotos* (Pons *et al.* 2021, pp. 15, 21). We consider Winkler *et al.* (2005, pp. 103–109) and Pons *et al.* (2021, pp 15, 21) to represent the best available science about the species' taxonomy; therefore, we recognize the taxon *D. noguchii* and will treat *S. noguchii* as a synonym. The species is also known by the common names Noguchigera, Noguchi Gera, Noguchi's woodpecker, and Pryer's woodpecker (Gorman 2014, p. 255; Short 1973, p. 5).

#### Habitat/Life History

The Okinawa woodpecker prefers undisturbed and mature subtropical evergreen broadleaf forests, with trees that are at least 30 years old and greater than 20 cm (7.9 in) in diameter (Gorman 2014, p. 257; del Hoyo 2002, p. 550; Short 1982, p. 511). The Okinawa woodpecker's main breeding areas are thought to be located along the mountain ridges between Mt. Nishime-take (also known as Nishime-dake) and Mt. Iyu-take (or Iyu-dake), although it has also been observed nesting in well-forested coastal areas of Yambaru (Research Center, Wild Bird Society of Japan 1993, as cited in BLI 2001, p. 1879). Most of the broadleaf trees in the region are *Distylium racemosum* (oak) and *Schefflera octophylla* (chinquapin; Itō *et al.* 2000, p. 305). Areas with conifers (*Coniferae*; cone-bearing trees such as pines and firs) appear to be avoided by the woodpecker (Short 1973, p. 8). The species was also observed just south of Mt. Tano-dake in an area of entirely secondary forest that was too immature for woodpeckers to excavate nest cavities. Rather than resident breeders, these may have been birds displaced by the clearing of mature forests (Brazil 1991, p. 191).

Okinawa woodpeckers are a primary cavity-nesting species, meaning they can excavate their own tree cavities (Kobayashi *et al.* 2022, p. 2). A survey of tree cavities in Yambaru found one cavity excavated by an Okinawa woodpecker in a *Castanopsis sieboldii* tree, though most cavities were naturally formed (Takashima *et al.* 2021, p. 414). The number of fledglings per season ranges between one and three birds (BLI 2001, p. 1880). Age-at-first breeding has not been reported, but generation time is estimated at 5.2 years (BLI 2016, p. 10).

The Okinawa woodpecker feeds on large arthropods, notably beetle larvae, spiders, moths, and centipedes, as well as fruit, berries, seeds, acorns, and other nuts (del Hoyo 2002, pp. 549–550; Short 1982, p. 511). It forages in old-growth forests with large, dead or dying trees, accumulated fallen trees, rotting stumps, debris, and undergrowth (Brazil 1991, p. 192; Short 1982, p. 511). Okinawa woodpeckers have been observed entering tree cavities in mature forests more than 70 years old to forage for invertebrates (Kobayashi *et al.* 2022, p. 4-5). Cavities that are smaller in volume, higher off the ground, and with a greater entrance area correlate with more woodpecker foraging visits to the cavity (Kobayashi *et al.* 2022, p. 8). The sexes show significant differences in their foraging niche; both sexes search dead and live tree-trunks and bamboo, but males also forage on the ground, sweeping away leaf-litter and probing for soil-dwelling prey (Gorman 2014, p. 257). In the winter months, when food is scarce, the Okinawa woodpecker has been

known to feed on citrus fruits on fruit orchards (Kodaka 2018, as cited in Katayama *et al.* 2022, p. 101). The woodpeckers may nest in dead trees around the citrus orchards which have been intentionally girdled by farmers to increase light availability (Kodaka 2018, as cited in Katayama *et al.* 2022, p. 101).

The nesting season for the Okinawa woodpecker begins in April and runs through June (Kotaka *et al.* 2021, p. 193). Surveys found 213 active woodpecker nests between 1999 and 2019, utilizing 17 different tree species and one tree fern species (Kotaka *et al.* 2021, p. 194). The Okinawa woodpecker nests in large trees that are at least 25 cm (9.8 in) in diameter and 3-10 meters (m; 9.8-33 feet (ft)) off the ground (Short 1973, p. 8). The woodpeckers prefer nesting in trees with decaying heartwood (Kotaka *et al.* 2021, p. 196). Okinawa woodpeckers most frequently nest in *Castanopsis sieboldii* and *Melia azedarach* (Kotaka *et al.* 2021, p. 195). The minimum forest age for nesting in those two tree species were 44 years and 26 years, respectively (Kotaka *et al.* 2021, p. 194). *Castanopsis sieboldii* is the most used nesting tree and is also the dominant tree species in the Yambaru forest (Kotaka *et al.* 2021, p. 196). Nest cavities in *Melia azedarach*, a fast-growing pioneer species, were likely to be reused, as is common in younger forests which generally lack suitable trees for woodpeckers (Kotaka *et al.* 2021, p. 197).

#### Historical and Current Range/Distribution

The species is endemic to the island of Okinawa; however, the extent of its historical range is unknown. The species occurs only within mature forested areas in the northern part of Okinawa Island, generally known as the Yambaru (or Yanbaru) forest (Figure 2). The Yambaru region is relatively small with an area of approximately 300 square kilometers (km<sup>2</sup>), or 116 square miles (mi<sup>2</sup>), with rich diversity and many endemic animals, including the Okinawa woodpecker (Takahashi 2004, p. 6). The remaining undisturbed mature forests that the species prefers exist primarily in fragments on five mountains: Yonaha-dake Prefecture Protection Area, Mt. Ibu, Mt. Iyu, Mt. Nichime, and Mt. Hedo. There are also some mature forest fragments in small patches on steep slopes, with second-growth forests and cleared areas in between (Ogasawara and Ikehara 1977, pp. 17–18, 24–25; Short 1973, p. 5).

As of the mid 1990s, there were only 40 km<sup>2</sup>, or 15 mi<sup>2</sup>, of suitable habitat available for the Okinawa woodpecker (Azama 1995 as cited in BLI 2001, p. 1882) and much of it is part of the Jungle Warfare Training Center. The Jungle Warfare Training Center (formerly known as Camp Gonsalves) is part of the United States (U.S.) Marine Corps installation on Okinawa Island (USMC *in litt.* 2012; Itô 2003, p. 11; Short 1973, p. 16). It is operated by the U.S. Marine Corps and covers about 70 km<sup>2</sup>, or 27 mi<sup>2</sup> (MBCG 2017, unpaginated). The adjacent smaller installation at Fort Buckner is operated by the U.S. Army (MBFB 2017, unpaginated). A small portion of the species' habitat also occurs within Yambaru National Park, which was established by the Japanese Government in September 2016 and includes the villages of Kunigama, Higashi and Ogimi (Ryukyu Shimpo 2017a, unpaginated). Additionally, conservation organizations have purchased sites where the woodpecker occurs to establish private wildlife preserves (del Hoyo *et al.* 2002, p. 550; BLI 2016, p. 4).



Figure 2. Current distribution of the Okinawa woodpecker illustrated by the shaded area in the north of Okinawa Island. (BLI 2017, unpaginated).

### Population and Species Needs

The Okinawa woodpecker needs undisturbed and mature subtropical evergreen broadleaf forests, to breed and forage, including trees that are at least 30 years old and greater than 20 cm in

diameter. Additionally, the species' breeding areas include well-forested mountain ridges. The population size is estimated between 50 and 249 individuals and appears to have stabilized in recent years due to conservation measures. To increase redundancy and representation, this species would benefit from increased suitable habitat for breeding and foraging to increase its population numbers, as well as further eradication efforts to control nonnative mongoose populations in its habitat.

## SUMMARY OF BIOLOGICAL INFORMATION

The Okinawa woodpecker is a relatively large woodpecker endemic to Okinawa Island, Japan, and one of the world's rarest woodpecker species. The species' main breeding areas lie in the northern part of the island, including well-forested coastal areas of Yambaru, an area of approximately 300 km<sup>2</sup> (116 mi<sup>2</sup>). Much of the mature forest that supports the species is located within the Jungle Warfare Training Center (formerly known as the Northern Training Area or Camp Gonsalves), part of the U.S. Marine Corps installation on Okinawa Island.

The Okinawa woodpecker prefers subtropical evergreen broadleaf forests that are mature and undisturbed. Population surveys have found that the number of Okinawa woodpeckers detected at Yambaru sites increases as the area of hardwood forest increases. The species feeds on large arthropods, notably beetle larvae, spiders, moths, and centipedes, as well as fruit, berries, seeds, acorns, and other nuts. Both males and females search dead and live tree-trunks and bamboo in old-growth forests, but males also forage on the ground, sweeping away leaf-litter and probing for soil-dwelling prey. The Okinawa woodpecker nests in the decaying heartwood of large trees that are at least 25 cm (9.8 in) in diameter and 3-10 m (9.8-33 ft) off the ground, which are typically found in mature forests that are at least 30 years old.

## FACTORS INFLUENCING THE STATUS

The Act directs us to determine whether any species is an endangered species or a threatened species because of any factors (or threats) affecting its continued existence (i.e., whether it meets the definition of a threatened species or an endangered species). We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals, as well as those that affect individuals through alteration of their habitat or required resources. The term "threat" may encompass—either together or separately—the source of the action or condition, or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species

level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and (if evaluating whether a species is a threatened species) in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as the Services can reasonably determine that both the future threats and the species’ responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. In some instances, defining foreseeable future as a particular number of years may even be confusing, since the time period within which we can make reliable predictions—that is, the foreseeable future—may vary by threat. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species’ likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species’ biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

### Threats

The Okinawa woodpecker is classified as critically endangered by the IUCN (BLI 2018, unpaginated). The main threat is thought to be habitat loss from deforestation in the Yambaru region, due to: (1) logging, (2) dam construction, (3) roadbuilding, (4) agricultural development, and (5) golf course construction (BLI 2017, unpaginated). Population surveys found that the number of woodpeckers detected at a site generally increased as the area of hardwood forest increased (Yagihashi *et al.* 2021, p. 2255). Deforestation is still occurring at a steady rate due to logging, dam and road construction and other forms of anthropogenic development (BLI 2017, unpaginated).

Although the United States returned sovereignty of Okinawa to the Japanese Government in 1972, it still maintains several large military bases in the region, including the Jungle Warfare Training Center, which occupies about 25% of the Yambaru region (Itō *et al.* 2000, p. 305).

Until recently, the Jungle Warfare Training Center was kept in a natural state for jungle training exercises, which has likely benefitted the Okinawa woodpecker (Short 1973, p. 16). In contrast, outside of the Jungle Warfare Training Center, nearly half of all Yambaru natural forests were clear cut (Itō *et al.* 2000, p. 14). Between 1979 and 1991, 2,443 hectares (ha; 6,037 acres (ac)) of Yambaru forest were cleared (Department of Agriculture, Okinawa Prefectural Government 1992, as cited in Itō *et al.* 2000, p. 311) and from 1972 to 1992 an additional 3,069 ha (7,584 ac) of Yambaru was affected by removal of the understory (Itō, 1995, 1997a as cited in Itō *et al.* 2000, p. 311). As of the mid 1990s, only 40 km<sup>2</sup> (15 mi<sup>2</sup>) of suitable habitat is available for the Okinawa woodpecker (Azama 1995 as cited in BLI 2001, p. 1882) and much of it is part of the Jungle Warfare Training Center. Logging has declined in recent decades in the larger Yambaru region, and mature forests are recovering; forest covers around 80 percent of the Yambaru region, and in 2008, 84 percent of the forests were over 40 years old (Department of Agriculture, Forestry, and Fisheries 2019, as cited in Yagihashi *et al.* 2021, p. 2258).

The Jungle Warfare Training Center is relatively undisturbed, although six new helipads for MV-22 Osprey aircraft were recently constructed. Two were completed in 2015 (Tanaka 2017, unpaginated) and the remaining four were completed in December 2016 (Nogami 2017a). The helipads are 75 m in diameter and access roads were built for their construction and maintenance (Nogami 2017b, unpaginated; Itō *et al.* 2000, p. 312). Noise from helicopters and trucks likely interrupts breeding activities and the movement of mammals, birds, and amphibians (Itō *et al.* 2000, p. 312). In 2015, following construction and use of one of these helipads in Takae, five Okinawa woodpeckers were found dead next to buildings in nearby Higashi Village (Japan Update 2014, p. 1). The cause of these mortalities was believed to be from collisions with the buildings, possibly related to noise disturbance from the operation of the MV-22 Ospreys over the area (Japan Update 2014, p. 1).

In addition to deforestation and military presence, the species is vulnerable to nonnative predators such as feral cats (*Felis catus*) and the small Indian mongoose (*Herpestes auropunctatus*; BLI 2017 unpaginated; MOE Japan 2012, pp. 42, 55). The Yambaru ecosystem once lacked carnivorous mammals, so the native species are not equipped to defend themselves against invasive predators (MOE Japan 2014, p. 2). For example, male Okinawa woodpeckers are susceptible to nonnative predators because they forage on the ground (BLI 2017, unpaginated; Kotaka *et al.* 2009, p. 28). Studies have confirmed that mongoose prey on the woodpecker (Kotaka *in litt.* as cited in BLI 2017, unpaginated; MOE Japan 2014, p. 4). Similarly, researchers have found remains from Okinawa woodpeckers in feral cat feces (Jogahara *et al.* 2003, abstract, p. 37).

Mongoose control efforts appear to be working and the number of mongooses captured each year since the program began in 2001 have measurably declined, indicating that its population has dramatically decreased (MOE Japan 2012, pp. 55, 94). Fences were erected in 2005 and 2006 to control mongoose access to the northern part of Okinawa Island, and eradication efforts have focused on this area (Figure 3; Yagihashi *et al.* 2021, p. 2250). The current Mongoose Control

Plan targets complete eradication of mongooses from the controlled area by March 2027 (MOE Japan 2019, p. 5-280). The mongoose control program appears to be important for woodpecker conservation, and population surveys found that there was a significant increase in the number of woodpeckers detected in 2010 and 2013 compared to 2007 (Figure 4; Yagihashi *et al.* 2021, p. 2253). Statistical analysis found that the number of woodpeckers at a given site is inversely proportional to the number of mongooses (Yagihashi *et al.* 2021, p. 2255).

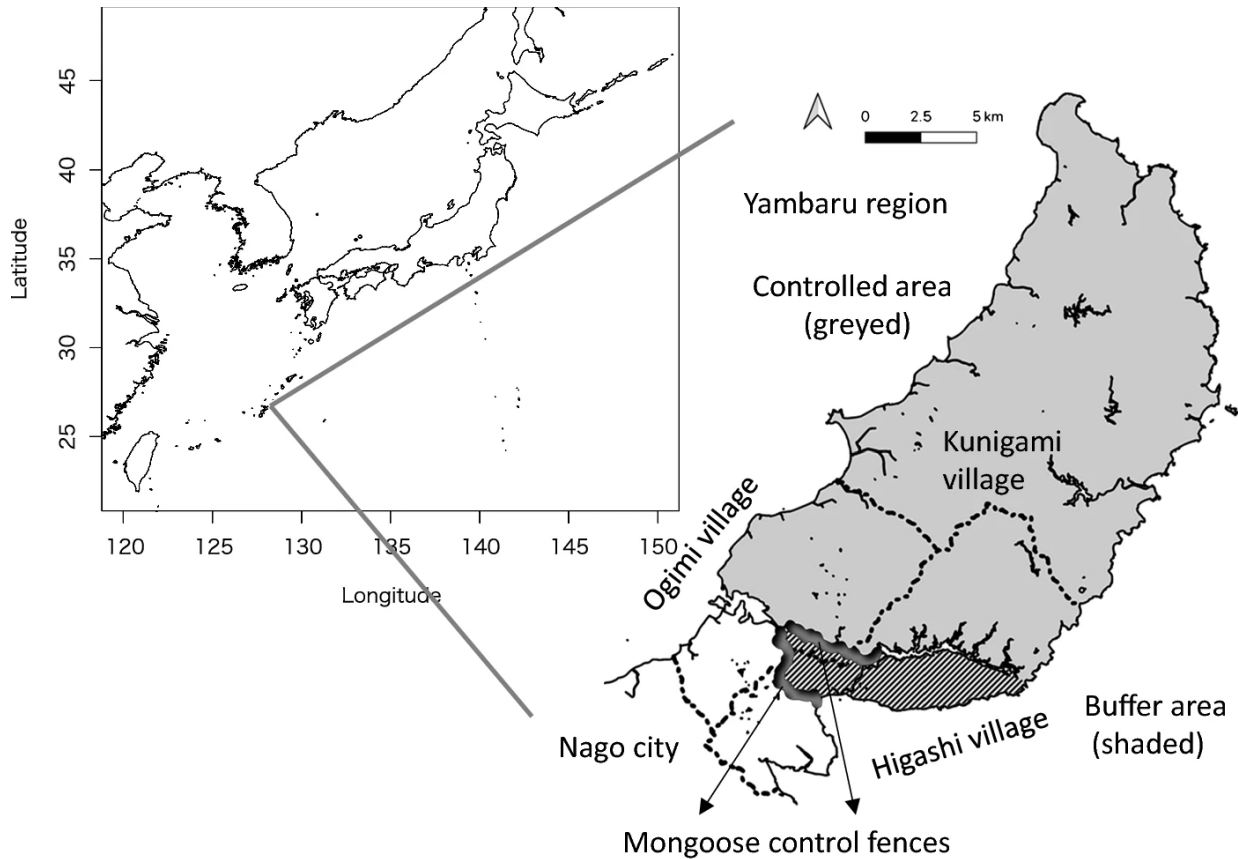


Figure 3: Map of mongoose control area on Okinawa Island. The buffer area lies between two mongoose control fences. (Yagihashi *et al.* 2021, p. 2252).

### (c) Numbers of *Dendrocopos noguchii*

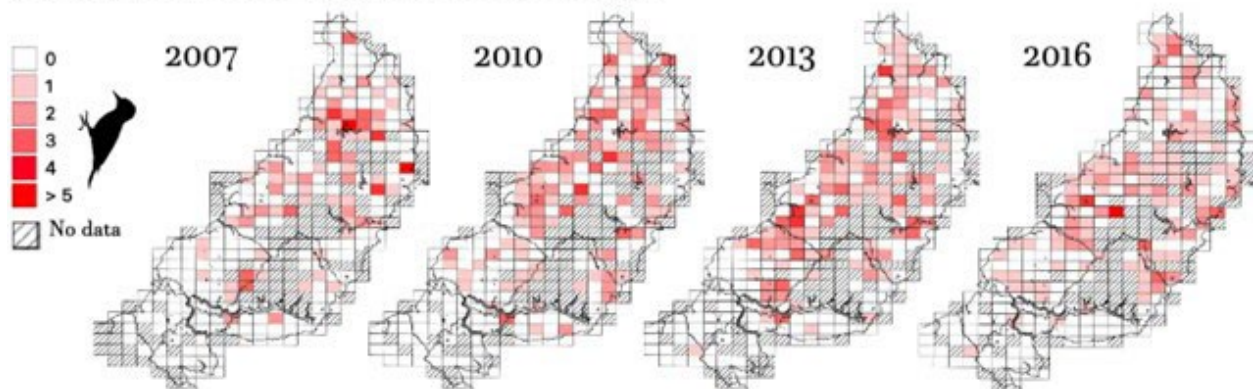


Figure 4: Numbers of Okinawa woodpeckers detected during playback surveys between 2007 and 2016. Each grid cell represents one of 281 survey sites. The number of sites at which woodpeckers were detected was 67, 96, 104, and 100 in each year, respectively, showing an increasing trend over time. (Yagihashi *et al.* 2021, pp. 2254 – 2255).

Control programs for feral cats have proven less successful. Considerable opposition from animal welfare groups exists regarding lethal removal of cats from Yambaru, despite the threat that cats pose to the Okinawa woodpecker and other sensitive species such as the Okinawa rail (*Hypotaenidia okinawae*; Takahashi 2004, p. 140). The threat from cats may be growing because people abandon domestic cats in vulnerable habitats on Okinawa, including the Yambaru Forest (Japan Bureau of Statistics 2015 as cited in Sbeghen 2017, p. 12; Takahashi 2004, p. 138).

The limited distribution and small population size of the Okinawa woodpecker make the species vulnerable to extinction from habitat loss, predation, disease, loss of genetic diversity, and stochastic (random) environmental events such as typhoons (Davies *et al.* 2004, pp. 265–271). We considered specific stressors that may affect small population size for the Okinawa woodpecker and conclude that the stressors we identified above (deforestation, military presence, and predation) can exacerbate risks to this small population of Okinawa woodpeckers.

#### Conservation Measures and Existing Regulatory Mechanisms

The logging industry appears to be moving toward more sustainable practices, which has reduced the threat of deforestation (Yamamoto *in litt.* 2015). Conservation organizations have purchased sites where the woodpecker occurs in order to establish private wildlife preserves (del Hoyo *et al.* 2002, p. 550; BLI 2016, p. 4). Even though threats from logging have been reduced, it will take many years for secondary and clear-cut forest habitat to mature such that it is suitable for the woodpecker.

The Japanese Government established Yambaru National Park in September 2016. It contains

16,300 ha (40,278 ac) of forested area in the northern part of Okinawa, including the villages of Kunigama, Higashi and Ogimi (Ryukyu Shimpo 2017a, unpaginated). The goal of the park is to protect one of the largest subtropical evergreen forests within Japan, along with the many rare species that inhabit it (Ryukyu Shimpo 2016a, unpaginated). The Park Plan for Yambaru National Park sets a policy to ensure that no species within the park becomes extinct and designates 2,888 ha (7,136 ac) of old-growth forest (>70 years old) as Special Protection Zones for Okinawa woodpecker habitat (MOE Japan 2019, pp. 5-39, 5-43). The plan also designates an additional 4,811 ha (11,888 ac) of Okinawa woodpecker habitat as Class I Special Zones, which contain forests that are 30-60 years old (MOE Japan 2019, p. 5-45).

The Okinawa woodpecker is listed in the U.S. Marine Corps' Integrated Natural and Cultural Resources Management Plan (INCRMP) and the Corps must first evaluate impacts from a proposed project on the species, and then take actions to minimize or mitigate the impacts (e.g., planning projects outside of the species' breeding season; USMC *in litt.* 2012, unpaginated). Additionally, in 2016, the U.S. Government returned approximately 17% of U.S.-held land in the region in exchange for construction of the helipads (Tanaka 2017 unpaginated). Initially, it was not clear how the lands returned from the Jungle Warfare Training Center would be used and if they would become part of the Yambaru National Park in the future (Ryukyu Shimpo 2016c, unpaginated). This returned land now appears to be destined for environmental conservation (Pon 2017, unpaginated).

In 2016 and 2019, the Japanese Government nominated the Amami-Ryukyu Islands as a World Natural Heritage site with the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Centre (UNESCO 2016, unpaginated) both nominations were denied, mainly due to the U.S. military's close presence (Yoshikawa and Kawamura 2019, p. 1-4). However, in May of 2021, A UNESCO advisory panel recommended that Amami-Oshima Island, Tokunoshima Island, the northern part of the main Okinawa Island, which contains Yambaru National Park, and Iriomote Island be added to the list of natural World Heritage sites. The listing was approved in July 2021 (UNESCO World Heritage Committee 2021, unpaginated). While listing does not automatically lead to funding for the protection of listed sites, UNESCO World Heritage listing confers prestige and further attention and recognition (Maurel, 2017, unpaginated).

Mongoose and feral cat predation continue to be a threat. However, concerted efforts to eradicate the mongoose from the Yambaru forest are ongoing and appear to be effective (MEO Naha 2014, entire). The Japanese Government listed the mongoose as an "invasive alien species" under the Invasive Alien Species Act, and an eradication plan was created in 2005 with a second plan created in 2013 (MEO Nah 201, p. 5) and a third in 2017 (MOE Japan 2017d, p. 5). Additionally, the Yambaru Mongoose Busters, a volunteer organization formed in 2008, works diligently to eradicate mongoose using a variety of techniques such as traps and sniffing dogs (MOE Japan 2017b, unpaginated; MOE Japan 2014, p. 6). Since 2008, there has been a steep decline in the mongoose population in Yambaru and eradication efforts will continue until the population

reaches zero, targeted for achievement by 2027 (MOE Japan 2017d, p. 7-11; MOE Japan 2019, p. 5-280).

### Cumulative Effects

Interactions between small population size and a limited geographic range (e.g., low genetic diversity), continued habitat loss (due to logging, dam construction, roadbuilding, agricultural development, and golf course construction), collisions with helipad buildings, possibly related to noise disturbance from operation of MV-22 Ospreys, and predation from nonnative predators (feral cats and Indian mongoose) will lead to further declines of the Okinawa woodpecker throughout its range. Conservation measures include exclusion and eradication programs for mongoose supported by Japanese legislation. Additionally, the Okinawa woodpecker benefits from habitat protections within Yambaru National Park. The northern part of Okinawa Island has also been named a natural World Heritage site by UNESCO, which may bring more attention to conservation of endemic species in the region, including the Okinawa woodpecker. After analyzing the factors that affect the species, including the ongoing conservation measures, we have determined that the interactions and combinations of factors decrease the viability of this species and further warrant listing.

### CURRENT CONDITION

**Resiliency:** The Okinawa woodpecker's population is estimated at 50 to 249 individuals and is restricted to the northern part of Okinawa Island. However, ongoing measures to control the nonnative mongoose population in that section of the island have appeared to stabilize the woodpecker population. Additionally, improved logging practices and designation of protected areas opened up new habitat for the species and likely increases the ability of the species to be more resilient to ongoing stressors. Therefore, we consider the Okinawa woodpecker to have low to moderate resiliency.

**Redundancy:** The small range of the Okinawa woodpecker and preference for mature and undisturbed forests limits suitable habitat availability. Trees must meet certain size criteria before they become suitable for nesting cavities. Logging in the species' range has greatly decreased, and secondary-growth forests are now reaching ages that meet minimum suitability requirements for Okinawa woodpeckers. Protected areas and private reserves have opened up/improved suitable habitat for the species. A handful of mountains provide suitable habitat for the species within its very small range, although the suitable habitat is fragmented. Therefore, because the species has a limited range in fragmented habitat, the species has low redundancy. Further studies are necessary to determine whether new populations will become established in areas that have active conservation.

**Representation:** The Okinawa woodpecker likely has low representation. The species has a small range of occupancy and is restricted to the northern part of Okinawa Island. The species requires undisturbed and mature subtropical evergreen broadleaf forests for their nesting cavities and they

forage in old-growth forests. Therefore, the species likely does not have a high capacity to adapt to other types of forests that do not have trees adequate for nesting. There is no information to date on genetic diversity of the Okinawa woodpecker.

## FUTURE CONDITION

The condition of the Okinawa woodpecker in the future is anticipated to remain precarious because the species occurs in a small area. The total population is very small and suitable habitat is minimal. However, Japan has implemented conservation measures with varying success to help mitigate the threats, such as protecting much of the species' remaining suitable habitat and working to eradicate mongooses in the northern part of the island. Additionally, the Okinawa woodpecker will benefit from habitat protections within Yambaru National Park, which is part of a UNESCO World Heritage site, as well as regeneration of formerly logged forests.

## FINDING

### Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an “endangered species” or a “threatened species.” The Act defines an endangered species as a species that is “in danger of extinction throughout all or a significant portion of its range,” and a threatened species as a species that is “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” The Act requires that we determine whether any species is an “endangered species” or a “threatened species” because of any one or a combination of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

### Status Assessment

After evaluating threats to the species and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we determine that the Okinawa woodpecker experiences stressors associated with small populations (e.g., low genetic diversity), habitat loss (due to logging, dam

construction, roadbuilding, agricultural development, and golf course construction), collisions with helipad buildings, possibly related to noise disturbance from military operations, and predation from nonnative predators (feral cats and Indian mongoose). Japan has implemented conservation measures to increase the population and habitat of the Okinawa woodpecker with varying success. Thus, after assessing the best available information, we conclude that listing the Okinawa woodpecker is warranted, but precluded by other higher-priority actions.

#### RECOMMENDED CONSERVATION MEASURES

- Extend Yambaru National Park, including the area returned by U.S. military in 2016.
- Strictly control deforestation in and around Yambaru National Park.
- Extend the mongoose control area.
- Conserve forest stands greater than 60 years old.
- Retain living *Castanopsis sieboldii* trees in logged stands and retain living *Melia azedarach* trees during forest thinning in younger stands.
- Experiment with creating artificial snags in non-native trees to increase available nest trees.
- Seek funding to restore degraded habitat vital to Okinawa woodpecker’s survival.
- Partner with northern island villages to restore forest.
- Acquire more privately-owned land through strategic land acquisition processes in order to protect Okinawa woodpecker habitat.
- Establish a stronger partnership and create more strict management plan with the U.S. military.
- Encourage more help with conservation and restoration from the U.S. military.
- Continue eradicating invasive mongoose and push for feral cat eradication program.
- Partner with northern island villages, increase public education, and increase accessibility to information about the importance of keeping pet cats and dogs indoors.
- Partner with other organizations such as non-profits to generate further attention to the Okinawa woodpecker on and off Okinawa Island.

#### 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
<b>Moderate to Low</b>	<b>Imminent</b>	Monotypic genus	7
		<b>Species</b>	<b>8*</b>
	Non-imminent	Subspecies/population	9
		Monotypic genus	10
		Species	11
Subspecies/population	12		

Rationale for listing priority number:

*Magnitude:* The scarcity of its old-growth forest and predation by nonnative mongooses pose threats to the species, but conservation measures including habitat protection by Japanese legislation and mongoose eradication efforts make these threats moderate to low in magnitude. Threats from logging have been reduced in recent decades, and forest regrowth appears to be reaching ages that can support the species. Where mongoose and Okinawa woodpeckers co-exist, predation is a threat, although mongoose eradication in the Yambaru region is targeted for 2027, and numbers of mongooses in the region have already declined significantly.

*Imminence:* Stressors associated with small populations size combined with other stressors (e.g., logging, dam and road construction, other forms of anthropogenic development, and predation from nonnative mammals) are currently affecting the species and are expected to continue to occur in the future. Therefore, threats to the Okinawa woodpecker are considered imminent.

In the previous Assessment (87 FR 26165), the Okinawa woodpecker was assigned an LPN of 2. After reevaluating the available information, we find that an LPN of 8 is warranted. The Okinawa woodpecker does not represent a monotypic genus. It is considered one of the world’s rarest living woodpecker species. The scarcity of its old-growth forest and predation by nonnative mongooses pose threats to the species, but conservation measures including habitat protection by Japanese legislation and mongoose eradication efforts make these threats moderate to low in magnitude.

The Okinawa woodpecker population is very small. New protected areas of mature forest have been established in Yambaru National Park, which is also part of a natural World Heritage site, that will likely benefit the Okinawa woodpecker. Mongoose control fences constructed in 2005 and 2006 appear to have prevented further decline in the woodpecker population due to predation by mongooses. The threats to the species are ongoing, imminent, and but moderate to low in magnitude due to conservation measures. The LPN for this species is 8 to reflect imminent threats of moderate to low magnitude.

Rationale for Change in Listing Priority Number

The listing priority number was previously assessed as a 2 (high magnitude, imminent threats). Our analysis of the five listing factors revealed that factors A (habitat loss) and C (predation by nonnative mammals) are applicable to the Okinawa woodpecker. Although old-growth forest is scarce in the species' range, much of the remaining habitat is protected by Yambaru National Park, which was established in 2016. Additionally, logging has decreased in recent decades, and forest regrowth is reaching ages that are suitable for Okinawa woodpeckers. The northern part of Okinawa Island was listed as a natural World Heritage site in 2021, which could bring more attention to the endemic species which live there, including the Okinawa woodpecker.

The threat of predation by nonnative mongooses has also been mitigated substantially. Fences were erected in 2005 and 2006 to control mongoose access to the northern part of Okinawa Island, and elimination efforts have focused on this area. The current Mongoose Control Plan targets complete eradication of mongooses from the controlled area by March 2027. Surveys in the mongoose-controlled area indicate that there has been a statistically significant increase in the number of detection sites for the Okinawa woodpecker following the start of the eradication efforts. Future study will be needed after the anticipated completion of the eradication program in 2027 to understand the full implications of mongoose eradication for the Okinawa woodpecker.

Based on the conservation measures described above, we determined that the magnitude of the threats is moderate to low. As a result, we have decreased the LPN from a 2 to an 8 (moderate to low magnitude, imminent threats).

**Is Emergency Listing Warranted?**

No; There is currently no emergency posing a significant risk to the conservation of the Okinawa woodpecker.

**DESCRIPTION OF MONITORING**

The candidate notice of review (CNOR) and accompanying species assessment forms constitute the Service's system for monitoring and making annual findings on the status of petitioned species under sections 4(b)(3)(c)(i) and 4(b)(3)(c)(ii) of the Act. We review all new information on candidate species as it becomes available, prepare annual species assessments that reflect monitoring and research results and any other new information.

Ongoing habitat surveys are conducted for the Okinawa woodpecker under the Japanese Programs for the Rehabilitation of Natural Habitats and Maintenance of Viable Populations (MOE Japan 2017c, unpaginated). Likewise, a 10-year action plan developed for the species from 2017 through 2026 includes steps to monitor the woodpecker and its habitat (MOE Japan 2019, 5-235).

**COORDINATION WITH STATES**

No countries provided information or comments on the species or latest assessment.  
The range country, **Japan**, did not provide information or comments.

#### LITERATURE CITED

- Ambrosini, F. (2008). Okinawa Woodpecker. Oiseaux.net. Retrieved from <https://www.oiseaux.net/birds/okinawa.woodpecker.html>. Accessed July 11, 2022.
- BirdLife International. 2018. *Dendrocopos noguchii* (amended version of 2016 assessment). *The IUCN Red List of Threatened Species* 2018: e.T22681531A125513230. <https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22681531A125513230.en>. Downloaded on 07 July 2020.
- BirdLife International. (2017). Species factsheet: *Dendrocopos noguchii*. Retrieved from <http://www.birdlife.org> on 10/04/2017. Accessed on April 10, 2017.
- BirdLife International. (2016). *Dendrocopos noguchii*. The IUCN Red List of Threatened Species 2016: e.T22681531A92909943. Retrieved from <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T22681531A92909943.en>. Accessed on April 3, 2017.
- BirdLife International. (2012). *Dendrocopos noguchii*. The IUCN Red List of Threatened Species 2012: e.T22681531A38016502. Retrieved from <http://dx.doi.org/10.2305/IUCN.UK.2012-1.RLTS.T22681531A38016502.en>. Accessed September 22, 2015.
- BirdLife International. (2001). Pages 1,879- 1,883 in *Threatened Birds of Asia: The BirdLife International Red Data Book*. BirdLife International, Cambridge, UK.
- Brazil, M.A. (2014). *Birds of East Asia: Eastern China, Taiwan, Korea, Japan, Eastern Russia*. Christopher Helm, an imprint of Bloomsbury Publishing, London.
- Brazil, M. A. (1991). *The Birds of Japan*. A. & C. Black/Christopher Helm, London.
- Browne, R. (2016). US returning land to Japan it's controlled since World War II. Retrieved from <http://www.cnn.com/2016/12/06/politics/us-japan-okinawa-land-return/>. Accessed July 27, 2017.
- CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). (2017). Appendices I, II and III, valid from 25 January 2017. Retrieved from: <https://www.cites.org/eng/app/appendices.php>. Accessed March 30, 2017.

- Davies, K. F., Margules, C. R., & Lawrence, J. F. (2004). A synergistic effect puts rare, specialized species at greater risk of extinction. *Ecology*, 85(1), 265-271.
- del Hoyo, J., Elliot, A. & Sargatal J., eds. (2002). Handbook of the Birds of the World. Vol. VII: Jacamars to Woodpeckers. Barcelona: Lynx Edicions.
- Department of Agriculture, Forestry and Fisheries (2019) Promotion of Yambaru-style forestry (revised version). Okinawa prefecture Web.  
[https://www.pref.okinawa.jp/site/norin/shinrin/kikaku/documents/sesakuhoushin\\_r0109syuusei.pdf](https://www.pref.okinawa.jp/site/norin/shinrin/kikaku/documents/sesakuhoushin_r0109syuusei.pdf). Accessed 3 September 2020 (in Japanese)
- Gorman, G. (2014). *Woodpeckers of the world: the complete guide*. A&C Black.
- ITIS. (2017). Integrated Taxonomic Information System. *Sapheopipo noguchii*. Retrieved from [https://www.itis.gov/servlet/SingleRpt/SingleRpt?search\\_topic=TSN&search\\_value=554156#null](https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=554156#null). Accessed July 27, 2017.
- Itō, Y. (2003). Rich biota in the forests of Yanbaru, northern montane part of Okinawa Island, Japan, and imminent extinction crisis of the endangered species. Pages 11-15 in Kamata, N., A.M. Liebhold, D.T. Quiring, and K.M. Clancy (eds.). Proceedings: IUFRO Kanazawa 14-19 September 2003 “Forest Insect Population Dynamics and Host Influences.” Available online at: [http://www.uf.a.u-tokyo.ac.jp/~kamatan/symp/iufro2003kanazawa/proceedings/17\\_0855\\_Ito\\_Yoshiaki.pdf](http://www.uf.a.u-tokyo.ac.jp/~kamatan/symp/iufro2003kanazawa/proceedings/17_0855_Ito_Yoshiaki.pdf)
- Itō, Y., Miyagi, K., & Ota, H. (2000). Imminent extinction crisis among the endemic species of the forests of Yanbaru, Okinawa, Japan. *Oryx*, 34(04), 305-316.
- IUCN (International Union for Conservation of Nature). (2017). Request concerning the IUCN field mission of proposed World Heritage sites in Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island, and Iriomote Island.
- Japan Update. (2014). Osprey flights faulted for death of noguchigera in Takae. November 10, 2014. Retrieved from <http://www.japanupdate.com/2014/11/osprey-flights-faulted-for-death-of-noguchigera-in-takae>. Accessed September 24, 2015.
- Jogahara, T., Ogura, G., Sasaki, T., Takehara, K., & Kawashima, Y. (2003). Food habits of cats (*Felis catus*) in forests and villages and their impacts on native animals in the Yambaru area, northern part of Okinawa Island, Japan. *Mamm Science*, 43, 29-37.
- Katayama, N., Uchida, H., Kusumoto, Y., & Iida, T. (2022). Bird use of fruit orchards and vineyards in Japan: Mitigating a knowledge gap with a systematic review of published and grey literature. *Ornithological Science*, 21(1), 93-114.

- Knight, C. (2010). Natural Environments, Wildlife, and Conservation in Japan. *The Asia-Pacific Journal*, 4(2), 1-11.
- Kobayashi, S., Kotaka, N., Nakata, K., & Takashima, A. (2022). Mammal and bird species using cavities among forests of different ages on Okinawajima Island in the Ryukyu Archipelago, Japan. *Journal of Forest Research*, 1-11.
- Kodaka, N. (2018). Minami no shima no kisho na kitsutsuki — noguchigera no suana wo meguru seibutsu no tsunagari (A rare woodpecker in the southern islands: The biological connection of the nesting hole of the Okinawa Woodpecker) In: Mizuta, T. & Takagi, M. (eds) *Shima no chorui gaku*. pp 271–285. Kaiyusha, Tokyo (in Japanese).
- Kotaka, N., Kudaka, M., Takehara, K., & Sato, H. (2009). Ground use pattern by forest animals and vulnerability toward invasion by *Herpestes javanicus* into Yambaru, northern Okinawa Island, southern Japan. *Japanese Journal of Ornithology*, 58(1), 28-45.
- Kotaka, N., Preble, J., Saito, K., Toguchi, Y., Kudaka, M., Sakoda, T., & Yagihashi, T. (2021). Recent nest tree use by the critically endangered Okinawa woodpecker in relation to forest age and two exotic forest pests. *Journal of Forest Research*, 26(3), 192-200.
- Maurel, C. (2017). “The unintended consequences of UNESCO world heritage listing”. The Conversation. Retrieved from: <https://theconversation.com/the-unintended-consequences-of-unesco-world-heritage-listing-71047>. Accessed July 9, 2020.
- MBCG (Military Bases Camp Gonslaves). (2017). Retrieved from: <https://militarybases.com/camp-gonsalves-marine-corps-base-in-northern-okinawa-japan/>. Accessed April 10, 2017.
- MBFB (Military Bases Fort Buckner). (2017). Retrieved from: <https://militarybases.com/fort-buckner-army-base-in-okinawa-japan/>. Accessed April 10, 2017.
- MOE (Ministry of the Environment) Japan. (2019). Nomination of Amami-Oshima Island, Tokunoshima Island, Northern Part of Okinawa Island, and Iriomote Island for Inscription on the World Heritage List – Annexes. *Government of Japan*. <https://www.env.go.jp/press/files/jp/110738.pdf>. Issued January 2019.
- MOE (Ministry of the Environment) Japan. (2017a). State of Japan's Environment at a Glance: Extinct and Endangered Species Listed in the Red Data Book. Retrieved from: <https://www.env.go.jp/en/nature/biodiv/reddata.html>. Accessed April 24, 2017.
- MOE (Ministry of the Environment) Japan. (2017b). Nature Conservation in Japan -Section 5.

Classification of Zones in National Parks, and Regulation on Activities.

- MOE (Ministry of the Environment) Japan. (2017c). Yambaru National Park Efforts. Retrieved from: <http://www.env.go.jp/en/nature/nps/park/yambaru/effort.html>. Accessed April 24, 2017.
- MOE (Ministry of the Environment) Japan. (2017d). Mongoose Eradication Project in Yambaru, Okinawa. Pp. 11. Retrieved from: [http://kyushu.env.go.jp/okinawa/zutto%20yanbaru\\_English.pdf](http://kyushu.env.go.jp/okinawa/zutto%20yanbaru_English.pdf). Accessed July 7, 2020.
- MOE (Ministry of the Environment) Japan. (2014). *Mongoose eradication project in Yambaru, Okinawa: for restoring forest ecosystem and native animals in Yambaru*. Japan Ministry of Environment and Okinawa Prefecture Environmental Life Department. Issued August 2014.
- MOE (Ministry of the Environment) Japan. (2012). The National Biodiversity Strategy of Japan 2012-2020. Roadmap towards the Establishment of an Enriching Society in Harmony with Nature *Ministry of Environment, Government of Japan*.
- Nogami, T. (2017a). Okinawa's special, rare bird at the mercy of U.S. military. Retrieved <http://www.asahi.com/ajw/articles/AJ201702120005.html>. Accessed April 17, 2017.
- Nogami, T. (2017b). World Heritage listing eyed for Okinawa forest close to U.S. base. Retrieved from <http://www.asahi.com/ajw/articles/AJ201701120006.html>. Accessed July 28, 2017.
- Ogasawara, K., & Ikehara, S. (1977). Ecological and behavioral observations of Okinawa woodpecker *Sapheopipo noguchii*, with notes on conservation. *Miscellaneous Reports of the Yamashina Institute for Ornithology (Japan)*.
- Ornithological Society of Japan. (2012). Checklist of Japanese Birds, 7<sup>th</sup> Revised Edition. Retrieved from [http://ornithology.jp/osj/japanese/katsudo/Publications/Checklist7\\_e.html](http://ornithology.jp/osj/japanese/katsudo/Publications/Checklist7_e.html). Accessed September 22, 2015.
- Pon, J. (2016). U.S. Forces Japan returns 9,852 acres of Okinawan land. December 22, 2016. Retrieved from <http://www.marines.mil/News/News-Display/Article/1036517/us-forces-japan-returns-9852-acres-of-okinawan-land/>. Accessed April 10, 2017.
- Pons, J. M., Campión, D., Chiozzi, G., Ettwein, A., Grangé, J. L., Kajtoch, Ł., Mazgajski, T., Rakovic, M., Winkler, H. & Fuchs, J. (2021). Phylogeography of a widespread Palearctic forest bird species: The White-backed Woodpecker (Aves, Picidae).

*Zoologica Scripta*, 50(2), 155-172. HAL Id: hal-03064527

- Ryukyu Shimpo. (2017a). Yambaru National Park: Wild forest area in northern Okinawa designated national park. Retrieved from <http://english.ryukyushimpo.jp/2016/09/22/25771/>. Accessed July 28, 2017.
- Ryukyu Shimpo. (2017b). Biodiverse island areas in northern Okinawa nominated for UNESCO World Natural Heritage. Retrieved from <http://english.ryukyushimpo.jp/2017/01/26/26372/>. Accessed May 1, 2017.
- Ryukyu Shimpo. (2016a). US base issues cast doubt on World Natural Heritage Site designation for Yambaru National Park woodlands. Retrieved from <http://english.ryukyushimpo.jp/2016/09/22/25790/>. Accessed July 28, 2017.
- Ryukyu Shimpo. (2016b). Environmental groups say plan for Yambaru National Park conservation area falls short. Retrieved from <http://english.ryukyushimpo.jp/2016/03/30/24740/>. Accessed July 28, 2017.
- Ryukyu Shimpo. (2016c). Yambaru forest to be designated as national park, but not including US training area. Retrieved from. <http://english.ryukyushimpo.jp/2016/03/02/24611/>. Accessed July 28, 2017.
- Sbeghen, M. (2017). Community Engagement with Wildlife Conservation in Japan: A Case Study of an Endangered Bird, the Okinawa Rail (*Hypotaenidia okinawae*). The Japan Foundation, Sydney and Madeleine Sbeghen, 2017.
- Short, L.L. (1982). Woodpeckers of the World. Delaware Museum of Natural History (Monograph Series No.4). Greenville, Delaware.
- Short, L. L. (1973). Habits, relationships, and conservation of the Okinawa woodpecker. *Wilson Bull*, 85, 5-20.
- Takahashi, M. A. (2004). Cats v. birds in Japan: How to reconcile wildlife conservation and animal protection. *Geo. Int'l Env'tl. L. Rev.*, 17, 135.
- Takashima, A., Nakanishi, A., Morishita, M., Abe, S., Saito, K., & Kotaka, N. (2021). Tree-cavity formation in the mature subtropical forests of Yambaru, Okinawa Island. *Journal of Forest Research*, 26(6), 410-418.
- Tanaka, M. (2017, February 3). Okinawa base critics say helipad construction tactics a sign of things to come. Retrieved from <http://www.japantimes.co.jp/news/2017/02/03/national/okinawa-base-critics-say-helipad->

[contraction-tactics-sign-things-come/#.WOvSB01MTct](#). Accessed April 10, 2017.

UNESCO (2016). Amami-Oshima Island, Tokunoshima Island, the northern part of Okinawa Island and Iriomote Island Japan. 2017. Retrieved from <http://whc.unesco.org/en/tentativelists/6160/>. Accessed May 1, 2017.

UNESCO World Heritage Committee. (2021, July 26). Four natural and three cultural sites added to UNESCO's World Heritage List. Retrieved from <https://whc.unesco.org/en/news/2318/>. Accessed June 6, 2022.

USMC *in litt.* (2012). U.S. marine Corps Okinawa. Correspondence from Mitsugu Sugiyama ([mitsugu.sugiyama.ja@usmc.mil](mailto:mitsugu.sugiyama.ja@usmc.mil)) to Lew Gorman. July 12, 2012.

Winkler, H., Kotaka, N., Gamauf, A., Nittinger, F., & Haring, E. (2005). On the phylogenetic position of the Okinawa woodpecker (*Sapheopipo noguchii*). *Journal of Ornithology*, 146(2), 103-110.

Yamamoto, I. *in litt.* (2015). E-mail from Ichihito Yamamoto [Ichihito\\_yamamoto@env.go.jp](mailto:Ichihito_yamamoto@env.go.jp) (Yambaru Ranger Office, Ministry of Japan) to Jesse D'Elia regarding the status of *Dendrocopos noguchii*. October 2, 2015.

Yagihashi, T., Seki, S. I., Nakaya, T., Nakata, K., & Kotaka, N. (2021). Eradication of the mongoose is crucial for the conservation of three endemic bird species in Yambaru, Okinawa Island, Japan. *Biological Invasions*, 23(7), 2249-2260.

Yoshikawa, H. and Kawamura, M. (2019). "NGO Evaluation and Suggestions regarding The Nomination of NPOI for World Natural Heritage". Save the Dugong Campaign Center (IUCN NGO) and IUCN Commission on Ecosystem Management. Retrieved from <http://ipp.okinawa/wp-content/uploads/2019/10/Letter-to-IUCN-10-5-2019.pdf>. Accessed July 7, 2020.

All SAFs supporting 12-month findings or candidate notices of review will be signed by the Director. SAFs should continue to be surnamed by Regional and Headquarters staff and leadership.



Martha Williams, Director  
U.S. Fish and Wildlife Service

June 20, 2023  
Date