Draft Compatibility Determination

Title

Draft Compatibility Determination for Amateur Radio Operation, Desecheo National Wildlife Refuge

Refuge Use Category

Outdoor Recreation (General)

Refuge Use Type(s)

Remote Amateur Radio Expedition

Refuge

Desecheo National Wildlife Refuge, Puerto Rico

Refuge Purpose(s) and Establishing and Acquisition Authority(ies)

The official purpose of Desecheo National Wildlife Refuge (NWR) is derived from land acquisition documents, the authorities for national wildlife refuges, and the original designation of the Island as a refuge and breeding ground for native birds. The National Wildlife Refuge System Administration Act authorizing the transfer of real property for wildlife management or other purposes identifies lands that are of value in carrying out the national migratory bird management program, and the Island of Desecheo was determined to be appropriate for transfer to the U.S. Fish and Wildlife Service (Service) under that purpose (16 U.S.C. 667b).

Among other mandates, the National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(a)(2)] directs the Refuge System to conserve, manage, and restore fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans.

"…particular value in carrying out the national migratory bird management program."

16 U.S.C. 667b (an Act Authorizing the Transfer of Certain Real Property for Wildlife and 16 USC 668dd (a)(2), the National Wildlife Refuge System Administration Act).

Other Applicable Laws, Regulations and Policies includes Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755), Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222), Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686), Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat.1119), Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653), Wilderness Act of 1964 (16 U.S.C. 1131; 78 Stat. 890), Land and Water Conservation Fund Act of 1965, National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915), National

Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927), National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq; 83 Stat. 852), and Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq; 87 Stat. 884).

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife,and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

No.

The proposed Amateur Radio Operation is not an existing approved use for Desecheo NWR. The existing uses approved in the Desecheo NWR Comprehensive Conservation Plan of 2012 include research, studies, and scientific collection.

What is the use?

The Compatibility Determination evaluates the issuance of a Special Use Permit for Amateur Radio Operation at Desecheo NWR, utilizing remote technology that would enable radio operators to achieve their goal of transmitting from Desecheo NWR, while also conducting the activity in alignment with the ongoing conservation efforts on the Island. This activity is not a priority public use of the National Wildlife Refuge System, and it requires a Special Use Permit in all instances.

Is the use a priority public use?

No

Where would the use be conducted?

Desecheo NWR is the site proposed to conduct the use requested. Desecheo is an uninhabited small island, 360 acres in size, located approximately 22 miles west of the municipality of Aguadilla in northwestern Puerto Rico (Figure 1). The closest point to Desecheo on the main island of Puerto Rico is Punta Higuero in the municipality of Rincón, about 12 miles away. The topography of the Island consists of a peak of volcanic rock with sharp limestone rock edges, and the highest point is 213 m above sea level. The vegetation consists of a subtropical dry forest composed of a mosaic of open grasslands, shrubs, cacti, and semi-deciduous forest. Beginning in 1940, the Air

Corps/Air Force utilized the Desecheo Island as a bombing range through 1964. In 1965, it was transferred to the National Institute of Health, which in 1966, introduced rhesus monkeys to the Island for medical research. Then, in 1976, the Desecheo Island was transferred to the Service to be managed as a National Wildlife Refuge.

Historically, Desecheo Island was an important habitat for seabirds in the Caribbean. It was once home to one of the largest colonies of Brown Boobies in the Caribbean; over 15,000 breeding individuals were reported during a nesting season in 1927. Other seabird species that have historically been present and/or nesting on the island include the Red-footed Booby, Brown Noddy, Bridled Tern, Magnificent Frigatebird, and Laughing Gulls. A combination of factors, including disturbance from bombing and invasive mammals on the Island (rhesus monkeys, rats, goats, and cats), resulted in significant habitat loss and the disappearance of five of the seven breeding seabird species. To address these issues, the Service initiated the removal of invasive mammal species from the Desecheo NWR in 2003 with a goat removal campaign. The removal efforts took several years, and the Island was declared free of invasive mammals in 2017. Following the eradication efforts, the Service, in collaboration with the non-profit organizations Island Conservation and Effective Environmental Restoration, Inc. (EER), established a biosecurity and bird social attraction projects to maintain the Island rat-free and to re-establish seabird colonies on Refuge.

Since the eradications, a noticeable change has occurred to the habitat structure and composition, including an increase in the population of the endangered cactus Higo Chumbo (*Harrisia portoricensis*) and the resurgence of other native cactus species. The Island also has a high degree of herpetofauna endemism, with three endemic reptile species that have benefited from removing invasive mammal species. These findings are encouraging signs of the Island's recovery, and the expectation is that it would become again an important refugia for seabirds in the Caribbean. Thus, would continue implementing a strict biosecurity protocol to avoid/minimize a re-invasion of invasive mammals on the Island.

When would the use be conducted?

The project is expected to occur in 2025. The Remote Amateur Radio Operation proposes to conduct a one-day trip by 2 people to the Desecheo NWR to deploy a communication equipment at the helipad, located on the west side of the Island (Figure 1). The equipment would remain on the Refuge for about a month, after which they would conduct another one-day trip to retrieve the equipment.

How would the use be conducted?

The activity was reduced from the original request of a team of 12-14 people camping in the Refuge for two weeks, to a one-day expedition of two people to install the equipment utilizing existing trail. The instruments would be located at the helipad where it would remain for approximately a month, then, retrieved by the same team.

Biosecurity protocols established for the Desecheo NWR must be followed by the personnel at all times. This new remote communication approach would provide an opportunity to achieve the petitioners' goal while aligning with the conservation efforts on the Refuge.

All the activities would be restricted to the immediate area of the helipad. Permit conditions necessary to avoid impacts on Refuge resources would be included in the Special Use Permit.

The communication device includes the following components (Figure 2):

1. Equipment would be powered by solar energy (flexible panels: 63" X 29" X 0.2").

2. Battery bank that would be enclosed in a hard case similar to a Pelican case (21" x 12" x 9").

3. HF vertical antenna drilled into helipad, three stakes in a triangular arrangement (maximum 6 meter).

4. Starlink Gen 3 antenna (20" 17" X 14").

5. Remote Deployable Unit (RDU) in a pelican case (19.6" X 11.3" X 24.83") to house the radio, tuner, filters, internet router, power supply, and additional accessories.

Why is this use being proposed or reevaluated?

The original proposal was similar to the one conducted in 2009, before the invasive mammal removal efforts to restore the Refuge's ecosystem. That proposal consisted of a two-week camping expedition of 12-14 people and transmit with portable equipment from the Island for 14 days. Due to ongoing restoration projects and removal of invasive species off the Refuge, a reconsideration was submitted changing the scope of the project to a one-day-two person trip to install the RDU system, which significantly reduces the potential impacts to the Refuge and associated risks, including safety concerns. Furthermore, the Desecheo NWR remains closed to the public for safety reasons, including the presence of unexploded ordnance, the presence of illegal immigrants, and drug trafficking, as well as for safety reasons to the difficult access to the Island.

Availability of Resources

Because the island is remote and closed to the public, the biosecurity protocols include that a Service Law Enforcement Officer (LEO) must accompany the visit, and activity would be exclusively limited to the helipad area in the west corner of the island. Therefore, the activity would require the presence of a Law Enforcement Officer to join the team of amateur radio expeditions to monitor the installation and removal of the remote equipment. The trip would be coordinated and funded by the Petitioner. The cost associated to the Refuge is for the LEO which is estimated at $800 and is available in the existing Refuge budget.

Anticipated Impacts of the Use

Potential impacts of a proposed use on the refuge's purpose(s) and the Refuge System mission

Participants in the Amateur Radio Operation would be subjected to a Special Use permit and Special Conditions. It is anticipated that the operation would have minimal impacts on plant and wildlife resources on the Refuge. No vegetation would be cut or trimmed. The activity was reduced from the original request (a team of 12-14 people to conduct a two-week activity, camping in the Refuge) to a remote radio expedition that would consist of one day to deploy the equipment that would stay on the island for a month, and one day to retrieve the equipment. All the activities would be restricted to the immediate area of the helipad. Permit conditions necessary to avoid impacts on the Island resources would be included in the Special Use Permit.

Short-term impacts

The Service believes that no federal trust resources would be negatively affected by the new proposed methodology. However, environmental compliances (e.g., ESA-Section 7 consultation, 106 of the National Historic Preservation Act) were completed for the proposed action.

As referenced above, no significant beneficial or adverse short-term impacts are associated with Amateur Radio Operation on the refuge. However, minor short-term impacts may occur, including impacts on wildlife, habitats, and vegetation. Human presence alone can negatively affect wildlife by causing animals to alter behaviors necessary for survival. The adverse impacts associated with Amateur Radio Operation depend on the species, the time of year, the activities occurring, and the activities' frequency, size, and duration. Species' ability to tolerate humans varies based on multiple factors, such as adaptation to urbanization and body mass (Samia et al. 2015).

Birds, a group of animals frequently impacted by people, exhibit various behavioral and physiological responses to human disturbance (Burger 1981). Physiological responses include the release of stress hormones (Müllner et al. 2004; Thiel et al. 2008) and increased heart rate (Weimerskirch et al. 2002). Behavioral responses include increased vigilance (Frid and Dill 2002), altered singing behavior (Gutzwiller et al. 1994), and flushing (Ikuta and Blumstein 2003; Beale and Monaghan 2004a; Livezey et al. 2016; Pease et al. 2005). Human disturbance can also cause birds to discontinue or avoid foraging (Burger and Gochfield 1998; Klein et al., 1995; Martín et al. 2015; Thomas et al. 2003, Yasue 2005) and instead spend more time displaying avoidance behaviors. Further, McNeil et al. (1992) suggested that some waterfowl and shorebird species may forage at night instead of during the day to avoid humans.

Like birds, mammals also exhibit avoidance behaviors in response to human activity (Hammitt and Cole 1998). Bats expend more energy when disturbed by humans (Speakman et al. 1991), and mammalian species across the globe are becoming more

nocturnal to avoid people (Gaynor et al. 2018). Mammals likely to experience adverse impacts from human disturbance are those with limited available habitat; animals may be forced to remain in the disturbed habitat due to a lack of suitable alternatives, dispersal ability, and underlying landscape, and suffer the consequences of human disturbance. Leblond et al. 2013 found changes in behavior, distribution and abundance of large prey species due to human activities.

Consistent with other classes, reptiles, amphibians, and insects or invertebrates engage in avoidance behaviors when encountering human disturbance (Frid and Dill 2002; Huang et al. 2011; Selman et al. 2013). Northern watersnakes (Nerodia sipedon) and common gartersnakes (Thamnophis sirtalis) individuals fled rapidly when humans stopped to watch snakes instead of walking past snake locations (Burger 2001). Anderson (2019) found for California Red-legged frogs presence the overland distance to hiking trails, dirt and paved roads were some of the most powerful predictors, indicating that human foot and vehicle traffic may be a significant detriment to these frogs along with other human use impacts.

In addition to wildlife, Amateur Radio Operation can impact vegetation. Refuge visitors can trample vegetation on- and off-trail, which can lead to damage to large areas of vegetation through the creation of informal trails and off-trail use (Barros and Pickering 2017). A plant's response to trampling is heavily influenced by its morphological characteristics (Marion et al. 2016; Pescott and Stewart 2014). The brittle woody stems of shrubs and small trees and rigid stems of tall forbs are susceptible to trampling, which damages buds and flowers and reduces seed production (Cole 1995; Cole and Monz 2002; Marion et al. 2016). Grasses, sedges, and low-growing herbs are more resistant due to flexible stems and underground perennating buds (Hill and Pickering 2009, Striker et al. 2011).

Visitors can also be vectors for invasive plants. Seeds or other propagules can be transferred from one area to another via clothing or personal belongings and spread to nearby areas through self-propagation (Pickering and Hill 2007). Once established, invasive plants can out-compete native plants, altering habitats and indirectly impacting wildlife.

Due to their short duration, infrequency, and limited area, this action would be expected to have only minor, temporary impacts on vegetation and wildlife. Refuge staff would monitor any impacts caused by these activities to identify necessary revisions to the permit. If an adverse impact is identified, the activity would be altered or terminated to prevent harm.

Long-term impacts

As referenced above, no significant beneficial or adverse long-term or cumulative impacts are associated with Amateur Radio Operation on Desecheo National Wildlife Refuge. Although long-term impacts could be possible, the Service does not expect the proposed uses to cause adverse long-term impacts due to the limited frequency

and duration of Amateur Radio Operation focused on one location and the small group size.

Visitors can introduce invasive plants, animals, and pathogens (Anderson et al. 2015; Davies and Sheley 2007; Marion et al. 2006) during environmental educational and interpretation activities. Once present, invasive species can out-compete native plants and animals, thereby altering habitats (Anderson et al. 2015; Marion et al. 2006). Invasive species can alter animal and plant composition, diversity, and abundance (Davies and Sheley 2007; Eiswerth et al. 2005). These changes may reduce native forage, cover, and water sources (Eiswerth et al. 2005). The Service would work to minimize this through strict biosecurity protocols.

Once vegetation and organic litter are lost, exposed soils are subject to compaction, leading to increased erosion and wetland sedimentation (Cooke and Xia 2020). The consequences of compacted soil include increased temperatures, reduced moisture (Marion et al. 2016), reduced soil biota (Liddle 1997), and resistance to seed germination and penetration by plant roots (Alessa and Earnhart 2000). The Service would minimize soil compaction by restricting this event to one day to install and one day to take equipment out, limiting the amount of people, and limiting to the existing trail.

Public Review and Comment

The draft Compatibility Determination would be available for public review and comment for 14 calendar days following the publication of the notice. Copies of all relevant documents would be made available online, and the public would be informed of this opportunity to comment through the Desecheo NWR website (Desecheo National Wildlife Refuge | U.S. Fish & Wildlife Service) and the Cabo Rojo NWR Facebook page. A hard copy of this document would be posted at the Cabo Rojo Salt Flats Visitor Center located at Road 301 Km 11, Cabo Rojo.

Comments should be sent to caribbeanisland@fws.gov, with the subject line "Comment on Radio Amateur Expedition Compatibility Determination, Desecheo NWR". Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period would be addressed in the final determination.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

To ensure compatibility with the National Wildlife Refuge System and the refuge

goals and objectives, the Refuge would implement the following stipulations to ensure that Amateur Radio Operation remains a compatible use:"

1. A Law Enforcement Officer must be present on each visit and would monitor the activity. Only the minimal number of personnel (2 persons) necessary to safely conduct the operation would be allowed to access the island.
2. All people accessing the Island must take a UXO awareness training.
3. An implementation plan of the proposed action would be prepared before the visit (purpose and expected results), and a report would be delivered within two weeks of the trip. The plan would be revised and approved by the Project Leader.
4. Biosecurity protocols would be strictly followed before and during the visit to the Refuge. All the equipment must be cleaned and thoroughly inspected, including clothes, boots, backpacks, etc., before arriving on the Island. A biosecurity protocol would be provided to avoid the introduction of seeds of weeds or invasive plants to the island.
5. It would not be allowed the take plants or animals from the Desecheo NWR or its surrounding waters, or the introduction of plants or animals. No fires are allowed, the removal of any object from the Island is prohibited, the disposal of property on the island is prohibited, as well as the disposal of any contaminant into any body of water.
6. Upon the completion of the operation, all the equipment should be removed from the island.

Justification

While this is not a wildlife-dependent public use according to the National Wildlife Refuge Administration Act of 1966, as amended, the stipulations outlined above would help ensure that the use is compatible at Desecheo NWR. The Remote Amateur Radio Expedition, as outlined in this Compatibility Determination, would not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the Refuge. Based on available science and best professional judgement, the Service has determined that the remote amateur radio expedition at Desecheo NWR, in accordance with the stipulations provided here, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose of the Desecheo NWR.

Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date

2035

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Figure(s)

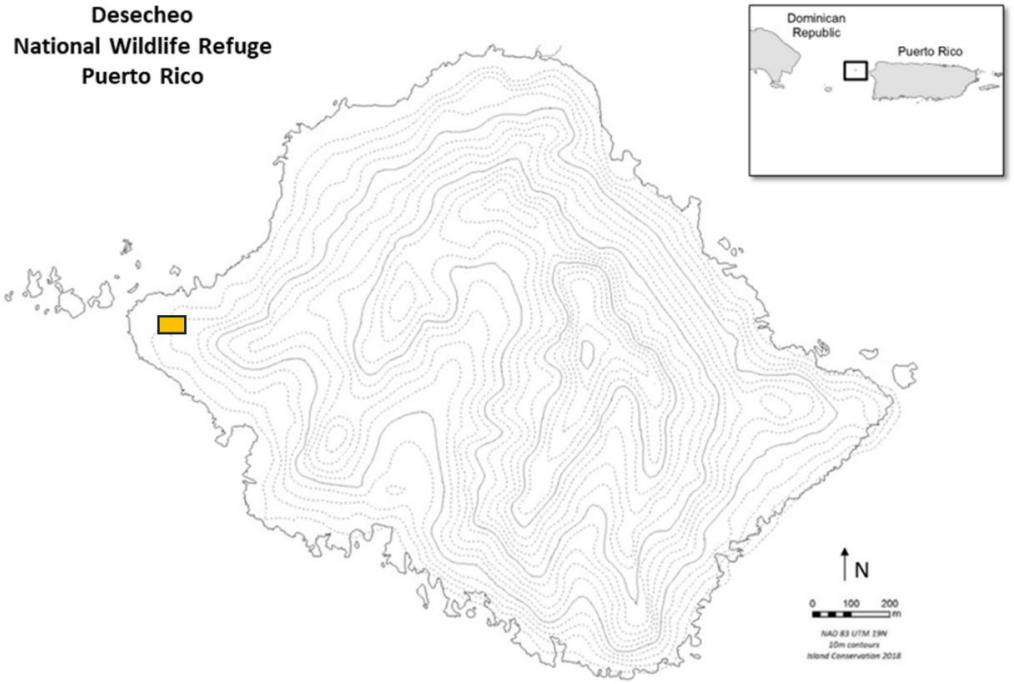

Figure 1. Desecheo National Wildlife Refuge Map. The orange rectangle marks the location of the helipad, where the remote equipment would be installed for 30 days.
Lat. 18.38341
Long. -67.48010

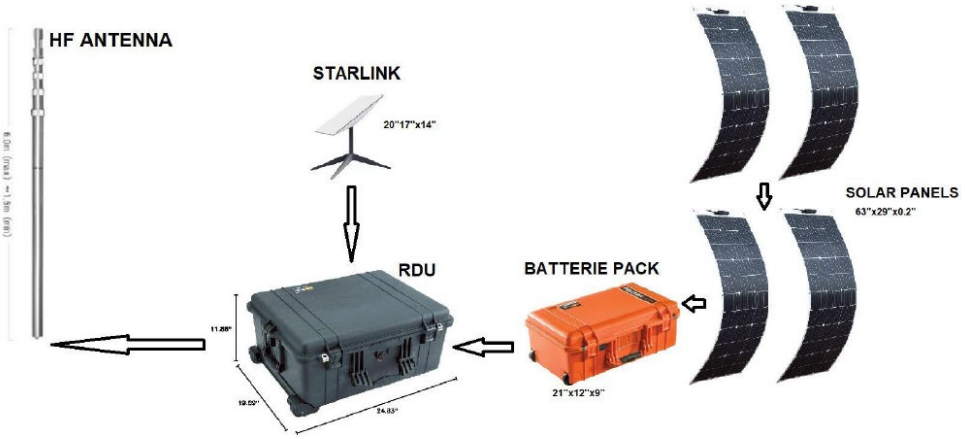

Figure 2. Remote Deployable Unit proposed for Desecheo NWR.