

**Return of Organization Exempt From Income Tax**  
 Under section 501(c), 527, or 4947(a)(1) of the Internal Revenue Code (except private foundations)  
 ▶ Do not enter social security numbers on this form as it may be made public.  
 ▶ Information about Form 990 and its instructions is at [www.irs.gov/form990](http://www.irs.gov/form990).

**2016**

Open to Public Inspection

Department of the Treasury  
Internal Revenue Service

**A For the 2016 calendar year, or tax year beginning** , 2016, **and ending** ,

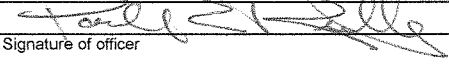
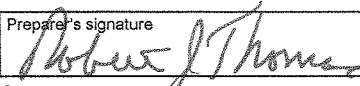
|  |  |  |   |
|--|--|--|---|
| <b>B</b> Check if applicable:                    | <b>C</b> Name of organization <u>Rare Species Conservatory Foundation</u>  |  | <b>D</b> Employer identification number   |
| <input type="checkbox"/> Address change          | Doing business as  |  | 65-0560456  |
| <input type="checkbox"/> Name change             | Number and street (or P.O. box if mail is not delivered to street address) |  | <b>E</b> Telephone number   |
| <input type="checkbox"/> Initial return          | 1222 E Road  |  | (561) 790-5864  |
| <input type="checkbox"/> Final return/terminated | City or town, state or province, country, and ZIP or foreign postal code   |  |   |
| <input type="checkbox"/> Amended return          | Loxahatchee FL 33470   |  | <b>G</b> Gross receipts \$ 908,160.   |
| <input type="checkbox"/> Application pending     | <b>F</b> Name and address of principal officer:                            |  | <b>H(a)</b> Is this a group return for subordinates? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                          |
|  | Paul R Reillo 1222 E Road Loxahatchee FL 33470                             |  | <b>H(b)</b> Are all subordinates included? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>If 'No,' attach a list. (see instructions) |
| <b>I</b> Tax-exempt status                       | <input checked="" type="checkbox"/> 501(c)(3)                              | <input type="checkbox"/> 501(c) ( ) (insert no.) | <b>H(c)</b> Group exemption number ▶  |
| <b>J</b> Website: ▶                              | Rarespecies.org  |  |   |
| <b>K</b> Form of organization:                   | <input checked="" type="checkbox"/> Corporation                            | <input type="checkbox"/> Trust                   | <b>L</b> Year of formation: 1994  |
|  | <input type="checkbox"/> Association                                       | <input type="checkbox"/> Other ▶                 | <b>M</b> State of legal domicile: FL  |

**Part I Summary**

|                                    |   |  |                                  |                     |
|------------------------------------|---|--|----------------------------------|---------------------|
| <b>Activities &amp; Governance</b> | <b>1</b>  | Briefly describe the organization's mission or most significant activities: <u>International wildlife conservation Biodiversity and habitat protection; endangered and threatened species propagation, management and recovery programs; capacity building and outreach.</u> |                                  |                     |
|                                    | <b>2</b>  | Check this box <input type="checkbox"/> if the organization discontinued its operations or disposed of more than 25% of its net assets.  |                                  |                     |
|                                    | <b>3</b>  | Number of voting members of the governing body (Part VI, line 1a) . . . . .  | <b>3</b>                         | 4                   |
|                                    | <b>4</b>  | Number of independent voting members of the governing body (Part VI, line 1b) . . . . .  | <b>4</b>                         | 4                   |
|                                    | <b>5</b>  | Total number of individuals employed in calendar year 2016 (Part V, line 2a) . . . . .   | <b>5</b>                         | 6                   |
|                                    | <b>6</b>  | Total number of volunteers (estimate if necessary) . . . . .   | <b>6</b>                         | 0                   |
|                                    | <b>7a</b>   | Total unrelated business revenue from Part VIII, column (C), line 12 . . . . .   | <b>7a</b>                        | 0.                  |
|                                    | <b>b</b> Net unrelated business taxable income from Form 990-T, line 34 . . . . . | <b>7b</b>  | 0.                               |                     |
| <b>Revenue</b>                     | <b>8</b>  | Contributions and grants (Part VIII, line 1h) . . . . .  | <b>Prior Year</b>                | <b>Current Year</b> |
|                                    | <b>9</b>  | Program service revenue (Part VIII, line 2g) . . . . .   | 662,781.                         | 903,599.            |
|                                    | <b>10</b>   | Investment income (Part VIII, column (A), lines 3, 4, and 7d) . . . . .  | 695.                             | 4,561.              |
|                                    | <b>11</b>   | Other revenue (Part VIII, column (A), lines 5, 6d, 8c, 9c, 10c, and 11e) . . . . .   |                                  |                     |
|                                    | <b>12</b>   | Total revenue — add lines 8 through 11 (must equal Part VIII, column (A), line 12) . . . . .   | 663,476.                         | 908,160.            |
| <b>Expenses</b>                    | <b>13</b>   | Grants and similar amounts paid (Part IX, column (A), lines 1-3) . . . . .   | 140,327.                         | 344,920.            |
|                                    | <b>14</b>   | Benefits paid to or for members (Part IX, column (A), line 4) . . . . .  |                                  |                     |
|                                    | <b>15</b>   | Salaries, other compensation, employee benefits (Part IX, column (A), lines 5-10) . . . . .  | 122,776.                         | 142,451.            |
|                                    | <b>16a</b>  | Professional fundraising fees (Part IX, column (A), line 11e) . . . . .  |                                  |                     |
|                                    | <b>b</b>  | Total fundraising expenses (Part IX, column (D), line 25) ▶ 1,426.   |                                  |                     |
|                                    | <b>17</b>   | Other expenses (Part IX, column (A), lines 11a-11d, 11f-24e) . . . . .   | 141,765.                         | 196,707.            |
|                                    | <b>18</b>   | Total expenses. Add lines 13-17 (must equal Part IX, column (A), line 25) . . . . .  | 404,868.                         | 684,078.            |
|                                    | <b>19</b>   | Revenue less expenses. Subtract line 18 from line 12 . . . . .   | 258,608.                         | 224,082.            |
| <b>Net Assets or Fund Balances</b> | <b>20</b>   | Total assets (Part X, line 16) . . . . .   | <b>Beginning of Current Year</b> | <b>End of Year</b>  |
|                                    | <b>21</b>   | Total liabilities (Part X, line 26) . . . . .  | 1,903,014.                       | 2,127,503.          |
|                                    | <b>22</b>   | Net assets or fund balances. Subtract line 21 from line 20 . . . . .   | 3,588.                           | 3,995.              |
|                                    |   |  | 1,899,426.                       | 2,123,508.          |

**Part II Signature Block**

Under penalties of perjury, I declare that I have examined this return, including accompanying schedules and statements, and to the best of my knowledge and belief, it is true, correct, and complete. Declaration of preparer (other than officer) is based on all information of which preparer has any knowledge.

|                               |   |   |                          |
|-------------------------------|---|---|--------------------------|
| <b>Sign Here</b>              |  | <u>05/15/17</u>   |                          |
|                               | Signature of officer  | Date  |                          |
|                               | <u>Paul Reillo</u>  | President   |                          |
|                               | Type or print name and title  |   |                          |
| <b>Paid Preparer Use Only</b> | Print/Type preparer's name  | Preparer's signature  | Date                     |
|                               | Robert J Thomas   |  | 5/12/17                  |
|                               | Firm's name ▶ Mark Brechbill, PLLC  | Check <input type="checkbox"/> if self-employed                                     | PTIN P00337434           |
|                               | Firm's address ▶ 215 S Federal Hwy, Suite 200<br>Stuart FL 34994                    | Firm's EIN ▶ 46-0734020   | Phone no. (772) 220-3380 |

May the IRS discuss this return with the preparer shown above? (see instructions) . . . . .  Yes  No

Part III Statement of Program Service Accomplishments

Check if Schedule O contains a response or note to any line in this Part III

1 Briefly describe the organization's mission:

International wildlife conservation, Biodiversity and habitat protection, endangered and threatened species propagation, management and recovery programs; capacity building and outreach

2 Did the organization undertake any significant program services during the year which were not listed on the prior Form 990 or 990-EZ? Yes No

3 Did the organization cease conducting, or make significant changes in how it conducts, any program services? Yes No

4 Describe the organization's program service accomplishments for each of its three largest program services, as measured by expenses. Section 501(c)(3) and 501(c)(4) organizations are required to report the amount of grants and allocations to others, the total expenses, and revenue, if any, for each program service reported.

4 a (Code: ) (Expenses \$ 333,528. including grants of \$ 0.) (Revenue \$ 0.)

Endangered species propagation and management programs - Rare Species Conservatory in Loxahatchee, FL See Statement of Program Service Accomplishments attached

4 b (Code: ) (Expenses \$ 344,920. including grants of \$ 0.) (Revenue \$ 0.)

International (in Situ) wildlife/biodiversity conservation Programs See Statement of Program Service Accomplishments attached

4 c (Code: ) (Expenses \$ including grants of \$ ) (Revenue \$ )

4 d Other program services (Describe in Schedule O.) (Expenses \$ including grants of \$ ) (Revenue \$ )

4 e Total program service expenses 678,448.

**Part IV Checklist of Required Schedules**

|   | Yes | No |
|---|-----|----|
| 1 Is the organization described in section 501(c)(3) or 4947(a)(1) (other than a private foundation)? If 'Yes,' complete Schedule A. . . . .  | X   |    |
| 2 Is the organization required to complete Schedule B, Schedule of Contributors (see instructions)? . . . . .   | X   |    |
| 3 Did the organization engage in direct or indirect political campaign activities on behalf of or in opposition to candidates for public office? If 'Yes,' complete Schedule C, Part I. . . . .   |     | X  |
| 4 <b>Section 501(c)(3) organizations.</b> Did the organization engage in lobbying activities, or have a section 501(h) election in effect during the tax year? If 'Yes,' complete Schedule C, Part II . . . . .   |     | X  |
| 5 Is the organization a section 501(c)(4), 501(c)(5), or 501(c)(6) organization that receives membership dues, assessments, or similar amounts as defined in Revenue Procedure 98-19? If 'Yes,' complete Schedule C, Part III . . . . .   |     | X  |
| 6 Did the organization maintain any donor advised funds or any similar funds or accounts for which donors have the right to provide advice on the distribution or investment of amounts in such funds or accounts? If 'Yes,' complete Schedule D, Part I. . . . .   |     | X  |
| 7 Did the organization receive or hold a conservation easement, including easements to preserve open space, the environment, historic land areas, or historic structures? If 'Yes,' complete Schedule D, Part II . . . . .  |     | X  |
| 8 Did the organization maintain collections of works of art, historical treasures, or other similar assets? If 'Yes,' complete Schedule D, Part III. . . . .  |     | X  |
| 9 Did the organization report an amount in Part X, line 21, for escrow or custodial account liability, serve as a custodian for amounts not listed in Part X; or provide credit counseling, debt management, credit repair, or debt negotiation services? If 'Yes,' complete Schedule D, Part IV . . . . .            |     | X  |
| 10 Did the organization, directly or through a related organization, hold assets in temporarily restricted endowments, permanent endowments, or quasi-endowments? If 'Yes,' complete Schedule D, Part V . . . . .   |     | X  |
| 11 If the organization's answer to any of the following questions is 'Yes,' then complete Schedule D, Parts VI, VII, VIII, IX, or X as applicable.  |     |    |
| a Did the organization report an amount for land, buildings, and equipment in Part X, line 10? If 'Yes,' complete Schedule D, Part VI. . . . .  | X   |    |
| b Did the organization report an amount for investments — other securities in Part X, line 12 that is 5% or more of its total assets reported in Part X, line 16? If 'Yes,' complete Schedule D, Part VII. . . . .  |     | X  |
| c Did the organization report an amount for investments — program related in Part X, line 13 that is 5% or more of its total assets reported in Part X, line 16? If 'Yes,' complete Schedule D, Part VIII . . . . .   | X   |    |
| d Did the organization report an amount for other assets in Part X, line 15 that is 5% or more of its total assets reported in Part X, line 16? If 'Yes,' complete Schedule D, Part IX . . . . .  |     | X  |
| e Did the organization report an amount for other liabilities in Part X, line 25? If 'Yes,' complete Schedule D, Part X. . . . .  | X   |    |
| f Did the organization's separate or consolidated financial statements for the tax year include a footnote that addresses the organization's liability for uncertain tax positions under FIN 48 (ASC 740)? If 'Yes,' complete Schedule D, Part X . . . . .  |     | X  |
| 12a Did the organization obtain separate, independent audited financial statements for the tax year? If 'Yes,' complete Schedule D, Parts XI and XII . . . . .  |     | X  |
| b Was the organization included in consolidated, independent audited financial statements for the tax year? If 'Yes,' and if the organization answered 'No' to line 12a, then completing Schedule D, Parts XI and XII is optional . . . . .   |     | X  |
| 13 Is the organization a school described in section 170(b)(1)(A)(ii)? If 'Yes,' complete Schedule E. . . . .   |     | X  |
| 14a Did the organization maintain an office, employees, or agents outside of the United States?. . . . .  |     | X  |
| b Did the organization have aggregate revenues or expenses of more than \$10,000 from grantmaking, fundraising, business, investment, and program service activities outside the United States, or aggregate foreign investments valued at \$100,000 or more? If 'Yes,' complete Schedule F, Parts I and IV . . . . . | X   |    |
| 15 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of grants or other assistance to or for any foreign organization? If 'Yes,' complete Schedule F, Parts II and IV . . . . .   | X   |    |
| 16 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of aggregate grants or other assistance to or for foreign individuals? If 'Yes,' complete Schedule F, Parts III and IV . . . . .   |     | X  |
| 17 Did the organization report a total of more than \$15,000 of expenses for professional fundraising services on Part IX, column (A), lines 6 and 11e? If 'Yes,' complete Schedule G, Part I (see instructions) . . . . .  |     | X  |
| 18 Did the organization report more than \$15,000 total of fundraising event gross income and contributions on Part VIII, lines 1c and 8a? If 'Yes,' complete Schedule G, Part II . . . . .   |     | X  |
| 19 Did the organization report more than \$15,000 of gross income from gaming activities on Part VIII, line 9a? If 'Yes,' complete Schedule G, Part III. . . . .  |     | X  |

**Part IV Checklist of Required Schedules (continued)**

|   | Yes | No |
|---|-----|----|
| 20a Did the organization operate one or more hospital facilities? <i>If 'Yes,' complete Schedule H</i> . . . . .  |     | X  |
| b If 'Yes' to line 20a, did the organization attach a copy of its audited financial statements to this return? . . . . .  |     |    |
| 21 Did the organization report more than \$5,000 of grants or other assistance to any domestic organization or domestic government on Part IX, column (A), line 1? <i>If 'Yes,' complete Schedule I, Parts I and II</i> . . . . .   |     | X  |
| 22 Did the organization report more than \$5,000 of grants or other assistance to or for domestic individuals on Part IX, column (A), line 2? <i>If 'Yes,' complete Schedule I, Parts I and III</i> . . . . .   |     | X  |
| 23 Did the organization answer 'Yes' to Part VII, Section A, line 3, 4, or 5 about compensation of the organization's current and former officers, directors, trustees, key employees, and highest compensated employees? <i>If 'Yes,' complete Schedule J</i> . . . . .  |     | X  |
| 24a Did the organization have a tax-exempt bond issue with an outstanding principal amount of more than \$100,000 as of the last day of the year, that was issued after December 31, 2002? <i>If 'Yes,' answer lines 24b through 24d and complete Schedule K. If 'No,' go to line 25a.</i> . . . . .                          |     | X  |
| b Did the organization invest any proceeds of tax-exempt bonds beyond a temporary period exception? . . . . .   |     |    |
| c Did the organization maintain an escrow account other than a refunding escrow at any time during the year to defease any tax-exempt bonds? . . . . .  |     |    |
| d Did the organization act as an 'on behalf of' issuer for bonds outstanding at any time during the year? . . . . .   |     |    |
| 25a <b>Section 501(c)(3), 501(c)(4), and 501(c)(29) organizations.</b> Did the organization engage in an excess benefit transaction with a disqualified person during the year? <i>If 'Yes,' complete Schedule L, Part I.</i> . . . . .   |     | X  |
| b Is the organization aware that it engaged in an excess benefit transaction with a disqualified person in a prior year, and that the transaction has not been reported on any of the organization's prior Forms 990 or 990-EZ? <i>If 'Yes,' complete Schedule L, Part I</i> . . . . .  |     | X  |
| 26 Did the organization report any amount on Part X, line 5, 6, or 22 for receivables from or payables to any current or former officers, directors, trustees, key employees, highest compensated employees, or disqualified persons? <i>If 'Yes,' complete Schedule L, Part II</i> . . . . .                                 |     | X  |
| 27 Did the organization provide a grant or other assistance to an officer, director, trustee, key employee, substantial contributor or employee thereof, a grant selection committee member, or to a 35% controlled entity or family member of any of these persons? <i>If 'Yes,' complete Schedule L, Part III</i> . . . . . |     | X  |
| 28 Was the organization a party to a business transaction with one of the following parties (see Schedule L, Part IV instructions for applicable filing thresholds, conditions, and exceptions):  |     |    |
| a A current or former officer, director, trustee, or key employee? <i>If 'Yes,' complete Schedule L, Part IV</i> . . . . .  |     | X  |
| b A family member of a current or former officer, director, trustee, or key employee? <i>If 'Yes,' complete Schedule L, Part IV.</i> . . . . .  |     | X  |
| c An entity of which a current or former officer, director, trustee, or key employee (or a family member thereof) was an officer, director, trustee, or direct or indirect owner? <i>If 'Yes,' complete Schedule L, Part IV</i> . . . . .   |     | X  |
| 29 Did the organization receive more than \$25,000 in non-cash contributions? <i>If 'Yes,' complete Schedule M</i> . . . . .  |     | X  |
| 30 Did the organization receive contributions of art, historical treasures, or other similar assets, or qualified conservation contributions? <i>If 'Yes,' complete Schedule M</i> . . . . .  |     | X  |
| 31 Did the organization liquidate, terminate, or dissolve and cease operations? <i>If 'Yes,' complete Schedule N, Part I</i> . . . . .  |     | X  |
| 32 Did the organization sell, exchange, dispose of, or transfer more than 25% of its net assets? <i>If 'Yes,' complete Schedule N, Part II</i> . . . . .  |     | X  |
| 33 Did the organization own 100% of an entity disregarded as separate from the organization under Regulations sections 301.7701-2 and 301.7701-3? <i>If 'Yes,' complete Schedule R, Part I</i> . . . . .  |     | X  |
| 34 Was the organization related to any tax-exempt or taxable entity? <i>If 'Yes,' complete Schedule R, Part II, III, or IV, and Part V, line 1.</i> . . . . .   |     | X  |
| 35a Did the organization have a controlled entity within the meaning of section 512(b)(13)? . . . . .   |     | X  |
| b If 'Yes' to line 35a, did the organization receive any payment from or engage in any transaction with a controlled entity within the meaning of section 512(b)(13)? <i>If 'Yes,' complete Schedule R, Part V, line 2</i> . . . . .  |     | X  |
| 36 <b>Section 501(c)(3) organizations.</b> Did the organization make any transfers to an exempt non-charitable related organization? <i>If 'Yes,' complete Schedule R, Part V, line 2</i> . . . . .   |     | X  |
| 37 Did the organization conduct more than 5% of its activities through an entity that is not a related organization and that is treated as a partnership for federal income tax purposes? <i>If 'Yes,' complete Schedule R, Part VI</i> . . . . .   |     | X  |
| 38 Did the organization complete Schedule O and provide explanations in Schedule O for Part VI, lines 11b and 19? <b>Note.</b> All Form 990 filers are required to complete Schedule O . . . . .  | X   |    |

BAA

Form 990 (2016)

Part V Statements Regarding Other IRS Filings and Tax Compliance

Check if Schedule O contains a response or note to any line in this Part V.

Table with columns for line numbers (1a-14b), descriptions of questions, and Yes/No columns. Includes sections for backup withholding, employee reporting, unrelated business income, foreign accounts, prohibited tax shelter transactions, deductible contributions, and 501(c)(7), (12), and (29) organizations.

Part VI Governance, Management, and Disclosure For each 'Yes' response to lines 2 through 7b below, and for a 'No' response to line 8a, 8b, or 10b below, describe the circumstances, processes, or changes in Schedule O. See instructions.

Check if Schedule O contains a response or note to any line in this Part VI. [X]

Section A. Governing Body and Management

Table with 3 columns: Question, Yes, No. Rows include: 1a Enter the number of voting members... 1b Enter the number of voting members included... 2 Did any officer, director, trustee, or key employee have a family relationship... 3 Did the organization delegate control over management duties... 4 Did the organization make any significant changes to its governing documents... 5 Did the organization become aware during the year of a significant diversion of the organization's assets... 6 Did the organization have members or stockholders... 7a Did the organization have members, stockholders, or other persons who had the power to elect or appoint one or more members of the governing body... 7b Are any governance decisions of the organization reserved to (or subject to approval by) members, stockholders, or persons other than the governing body... 8 Did the organization contemporaneously document the meetings held or written actions undertaken during the year by the following: 8a The governing body? 8b Each committee with authority to act on behalf of the governing body? 9 Is there any officer, director, trustee, or key employee listed in Part VII, Section A, who cannot be reached at the organization's mailing address? If 'Yes,' provide the names and addresses in Schedule O.

Section B. Policies (This Section B requests information about policies not required by the Internal Revenue Code.)

Table with 3 columns: Question, Yes, No. Rows include: 10a Did the organization have local chapters, branches, or affiliates? 10b If 'Yes,' did the organization have written policies and procedures governing the activities of such chapters, affiliates, and branches to ensure their operations are consistent with the organization's exempt purposes? 11a Has the organization provided a complete copy of this Form 990 to all members of its governing body before filing the form? 11b Describe in Schedule O the process, if any, used by the organization to review this Form 990. 12a Did the organization have a written conflict of interest policy? If 'No,' go to line 13. 12b Were officers, directors, or trustees, and key employees required to disclose annually interests that could give rise to conflicts? 12c Did the organization regularly and consistently monitor and enforce compliance with the policy? If 'Yes,' describe in Schedule O how this was done. 13 Did the organization have a written whistleblower policy? 14 Did the organization have a written document retention and destruction policy? 15 Did the process for determining compensation of the following persons include a review and approval by independent persons, comparability data, and contemporaneous substantiation of the deliberation and decision? 15a The organization's CEO, Executive Director, or top management official. 15b Other officers or key employees of the organization. If 'Yes' to line 15a or 15b, describe the process in Schedule O (see instructions). 16a Did the organization invest in, contribute assets to, or participate in a joint venture or similar arrangement with a taxable entity during the year? 16b If 'Yes,' did the organization follow a written policy or procedure requiring the organization to evaluate its participation in joint venture arrangements under applicable federal tax law, and take steps to safeguard the organization's exempt status with respect to such arrangements?

Section C. Disclosure

- 17 List the states with which a copy of this Form 990 is required to be filed Florida
18 Section 6104 requires an organization to make its Forms 1023 (or 1024 if applicable), 990, and 990-T (Section 501(c)(3)s only) available for public inspection. Indicate how you made these available. Check all that apply. Own website, Another's website, [X] Upon request, Other (explain in Schedule O)
19 Describe in Schedule O whether (and if so, how) the organization made its governing documents, conflict of interest policy, and financial statements available to the public during the tax year.
20 State the name, address, and telephone number of the person who possesses the organization's books and records: Paul R Reillo Ph.D., 1222 E Road, Loxahatchee, FL 33470, (561) 790-5864

**Part VII Compensation of Officers, Directors, Trustees, Key Employees, Highest Compensated Employees, and Independent Contractors**

Check if Schedule O contains a response or note to any line in this Part VII

**Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees**

**1 a** Complete this table for all persons required to be listed. Report compensation for the calendar year ending with or within the organization's tax year.

- List all of the organization's **current** officers, directors, trustees (whether individuals or organizations), regardless of amount of compensation. Enter -0- in columns (D), (E), and (F) if no compensation was paid.
- List all of the organization's **current** key employees, if any. See instructions for definition of 'key employee.'
- List the organization's five **current** highest compensated employees (other than an officer, director, trustee, or key employee) who received reportable compensation (Box 5 of Form W-2 and/or Box 7 of Form 1099-MISC) of more than \$100,000 from the organization and any related organizations.
- List all of the organization's **former** officers, key employees, and highest compensated employees who received more than \$100,000 of reportable compensation from the organization and any related organizations.
- List all of the organization's **former** directors or trustees that received, in the capacity as a former director or trustee of the organization, more than \$10,000 of reportable compensation from the organization and any related organizations.

List persons in the following order: individual trustees or directors; institutional trustees; officers; key employees; highest compensated employees; and former such persons.

Check this box if neither the organization nor any related organization compensated any current officer, director, or trustee.

| (A)<br>Name and Title                          | (B)<br>Average hours per week (list any hours for related organizations below dotted line) | (C)<br>Position (do not check more than one box, unless person is both an officer and a director/trustee) |                       |         |              |                              |        | (D)<br>Reportable compensation from the organization (W-2/1099-MISC) | (E)<br>Reportable compensation from related organizations (W-2/1099-MISC) | (F)<br>Estimated amount of other compensation from the organization and related organizations |
|--|--|---|-----------------------|---------|--------------|------------------------------|--------|--|---|---|
|  |  | Individual trustee or director  | Institutional trustee | Officer | Key employee | Highest compensated employee | Former |  |   |   |
| (1) Paul R Reillo Ph.D.<br>President/Secretary | 60.00  | X   |                       | X       |              |                              |        | 0.   | 0.  | 0.  |
| (2) George Amato Ph.D.<br>Director             | 10.00  | X   |                       |         |              |                              |        | 0.   | 0.  | 0.  |
| (3) Richard D Estes Ph.D.<br>Director          | 10.00  | X   |                       |         |              |                              |        | 0.   | 0.  | 0.  |
| (4) Christopher Langen Esq.<br>Director        | 10.00  | X   |                       |         |              |                              |        | 0.   | 0.  | 0.  |
| (5) -----                                      | -----  |   |                       |         |              |                              |        |  |   |   |
| (6) -----                                      | -----  |   |                       |         |              |                              |        |  |   |   |
| (7) -----                                      | -----  |   |                       |         |              |                              |        |  |   |   |
| (8) -----                                      | -----  |   |                       |         |              |                              |        |  |   |   |
| (9) -----                                      | -----  |   |                       |         |              |                              |        |  |   |   |
| (10) -----                                     | -----  |   |                       |         |              |                              |        |  |   |   |
| (11) -----                                     | -----  |   |                       |         |              |                              |        |  |   |   |
| (12) -----                                     | -----  |   |                       |         |              |                              |        |  |   |   |
| (13) -----                                     | -----  |   |                       |         |              |                              |        |  |   |   |
| (14) -----                                     | -----  |   |                       |         |              |                              |        |  |   |   |

**Part VII Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees** (continued)

| (A)<br>Name and title | (B)<br>Average hours per week (list any hours for related organizations below dotted line) | (C)<br>Position (do not check more than one box, unless person is both an officer and a director/trustee) |                       |         |              |                              |        | (D)<br>Reportable compensation from the organization (W-2/1099-MISC) | (E)<br>Reportable compensation from related organizations (W-2/1099-MISC) | (F)<br>Estimated amount of other compensation from the organization and related organizations |
|-----------------------|--|---|-----------------------|---------|--------------|------------------------------|--------|--|---|---|
|                       |  | Individual trustee or director  | Institutional trustee | Officer | Key employee | Highest compensated employee | Former |  |   |   |
| (15) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (16) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (17) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (18) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (19) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (20) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (21) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (22) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (23) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (24) -----            |  |   |                       |         |              |                              |        |  |   |   |
| (25) -----            |  |   |                       |         |              |                              |        |  |   |   |

1 b Sub-total . . . . . 0. 0. 0.  
 c Total from continuation sheets to Part VII, Section A . . . . .  
 d Total (add lines 1b and 1c) . . . . . 0. 0. 0.

2 Total number of individuals (including but not limited to those listed above) who received more than \$100,000 of reportable compensation from the organization ▶

|   | Yes | No |
|---|-----|----|
| 3 Did the organization list any former officer, director, or trustee, key employee, or highest compensated employee on line 1a? <i>If 'Yes,' complete Schedule J for such individual</i> . . . . .  |     | X  |
| 4 For any individual listed on line 1a, is the sum of reportable compensation and other compensation from the organization and related organizations greater than \$150,000? <i>If 'Yes,' complete Schedule J for such individual</i> . . . . . |     | X  |
| 5 Did any person listed on line 1a receive or accrue compensation from any unrelated organization or individual for services rendered to the organization? <i>If 'Yes,' complete Schedule J for such person</i> . . . . .                       |     | X  |

**Section B. Independent Contractors**

1 Complete this table for your five highest compensated independent contractors that received more than \$100,000 of compensation from the organization. Report compensation for the calendar year ending with or within the organization's tax year.

| (A)<br>Name and business address | (B)<br>Description of services | (C)<br>Compensation |
|----------------------------------|--------------------------------|---------------------|
|                                  |                                |                     |
|                                  |                                |                     |
|                                  |                                |                     |
|                                  |                                |                     |

2 Total number of independent contractors (including but not limited to those listed above) who received more than \$100,000 of compensation from the organization ▶



**Part VIII Statement of Revenue**

Check if Schedule O contains a response or note to any line in this Part VIII

|  |   |  | (A)<br>Total revenue | (B)<br>Related or<br>exempt<br>function<br>revenue | (C)<br>Unrelated<br>business<br>revenue | (D)<br>Revenue<br>excluded from tax<br>under sections<br>512-514 |  |
|--|---|--|----------------------|--|---|--|--|
| <b>Contributions, Gifts, Grants and Other Similar Amounts</b>        | 1 a Federated campaigns . . . . .   | 1 a  |                      |  |   |  |  |
|  | b Membership dues . . . . .   | 1 b  |                      |  |   |  |  |
|  | c Fundraising events . . . . .  | 1 c  |                      |  |   |  |  |
|  | d Related organizations . . . . .   | 1 d  |                      |  |   |  |  |
|  | e Government grants (contributions) . .   | 1 e  |                      |  |   |  |  |
|  | f All other contributions, gifts, grants, and similar amounts not included above . .  | 1 f  | 903,599.             |  |   |  |  |
|  | g Noncash contributions included in lines 1a-1f: \$   |  |                      |  |   |  |  |
|  | h Total. Add lines 1a-1f . . . . .  |  | 903,599.             |  |   |  |  |
| <b>Program Service Revenue</b>                                       | Business Code   |  |                      |  |   |  |  |
|  | 2 a   |  |                      |  |   |  |  |
|  | b   |  |                      |  |   |  |  |
|  | c   |  |                      |  |   |  |  |
|  | d   |  |                      |  |   |  |  |
|  | e   |  |                      |  |   |  |  |
|  | f All other program service revenue . . .   |  |                      |  |   |  |  |
|  | g Total. Add lines 2a-2f . . . . .  |  |                      |  |   |  |  |
| <b>Other Revenue</b>   | 3 Investment income (including dividends, interest and other similar amounts) . . . . .   |  | 4,561.               | 0.   | 0.                                      | 4,561.   |  |
|  | 4 Income from investment of tax-exempt bond proceeds . . .  |  |                      |  |   |  |  |
|  | 5 Royalties . . . . .   |  |                      |  |   |  |  |
|  | 6 a Gross rents . . . . .   | (i) Real   |                      |  |   |  |  |
|  |   | (ii) Personal  |                      |  |   |  |  |
|  |   | b Less: rental expenses                                  |                      |  |   |  |  |
|  |   | c Rental income or (loss) . . . . .                      |                      |  |   |  |  |
|  | d Net rental income or (loss) . . . . .   |  |                      |  |   |  |  |
|  | 7 a Gross amount from sales of assets other than inventory  | (i) Securities   |                      |  |   |  |  |
|  |   | (ii) Other   |                      |  |   |  |  |
|  |   | b Less: cost or other basis and sales expenses . . . . . |                      |  |   |  |  |
|  |   | c Gain or (loss) . . . . .                               |                      |  |   |  |  |
|  | d Net gain or (loss) . . . . .  |  |                      |  |   |  |  |
|  | 8 a Gross income from fundraising events (not including . . \$ _____ of contributions reported on line 1c). See Part IV, line 18. . . . . | a  |                      |  |   |  |  |
|  | b Less: direct expenses . . . . .   | b  |                      |  |   |  |  |
|  | c Net income or (loss) from fundraising events . . . . .  |  |                      |  |   |  |  |
|  | 9 a Gross income from gaming activities. See Part IV, line 19. . . . .  | a  |                      |  |   |  |  |
|  | b Less: direct expenses . . . . .   | b  |                      |  |   |  |  |
| c Net income or (loss) from gaming activities . . . . .              |   |  |                      |  |   |  |  |
| 10 a Gross sales of inventory, less returns and allowances . . . . . | a   |  |                      |  |   |  |  |
| b Less: cost of goods sold . . . . .                                 | b   |  |                      |  |   |  |  |
| c Net income or (loss) from sales of inventory . . . . .             |   |  |                      |  |   |  |  |
| Miscellaneous Revenue  |   | Business Code  |                      |  |   |  |  |
| 11 a   |   |  |                      |  |   |  |  |
| b  |   |  |                      |  |   |  |  |
| c  |   |  |                      |  |   |  |  |
| d All other revenue . . . . .  |   |  |                      |  |   |  |  |
| e Total. Add lines 11a-11d . . . . .                                 |   |  |                      |  |   |  |  |
| 12 Total revenue. See instructions . . . . .                         |   |  | 908,160.             | 0.   | 0.                                      | 4,561.   |  |

**Part IX Statement of Functional Expenses**

Section 501(c)(3) and 501(c)(4) organizations must complete all columns. All other organizations must complete column (A).

Check if Schedule O contains a response or note to any line in this Part IX.

| Do not include amounts reported on lines 6b, 7b, 8b, 9b, and 10b of Part VIII.   | (A)<br>Total expenses | (B)<br>Program service expenses | (C)<br>Management and general expenses | (D)<br>Fundraising expenses |
|--|-----------------------|---------------------------------|--|-----------------------------|
| 1 Grants and other assistance to domestic organizations and domestic governments. See Part IV, line 21. . . . .  |                       |                                 |  |                             |
| 2 Grants and other assistance to domestic individuals. See Part IV, line 22. . . . .   |                       |                                 |  |                             |
| 3 Grants and other assistance to foreign organizations, foreign governments, and foreign individuals. See Part IV, lines 15 and 16. . . . .  | 344,920.              | 344,920.                        |  |                             |
| 4 Benefits paid to or for members. . . . .   |                       |                                 |  |                             |
| 5 Compensation of current officers, directors, trustees, and key employees . . . . .   |                       |                                 |  |                             |
| 6 Compensation not included above, to disqualified persons (as defined under section 4958(f)(1)) and persons described in section 4958(c)(3)(B). . . . .   |                       |                                 |  |                             |
| 7 Other salaries and wages. . . . .  | 132,273.              | 132,273.                        | 0.                                     | 0.                          |
| 8 Pension plan accruals and contributions (include section 401(k) and 403(b) employer contributions). . . . .  |                       |                                 |  |                             |
| 9 Other employee benefits . . . . .  |                       |                                 |  |                             |
| 10 Payroll taxes . . . . .   | 10,178.               | 10,178.                         | 0.                                     | 0.                          |
| 11 Fees for services (non-employees):  |                       |                                 |  |                             |
| a Management . . . . .   |                       |                                 |  |                             |
| b Legal . . . . .  |                       |                                 |  |                             |
| c Accounting . . . . .   | 2,238.                | 0.                              | 2,238.                                 | 0.                          |
| d Lobbying . . . . .   |                       |                                 |  |                             |
| e Professional fundraising services. See Part IV, line 17 . . . . .  |                       |                                 |  |                             |
| f Investment management fees . . . . .   |                       |                                 |  |                             |
| g Other. (If line 11g amount exceeds 10% of line 25, column (A) amount, list line 11g expenses on Schedule O.) . . . . .   |                       |                                 |  |                             |
| 12 Advertising and promotion . . . . .   |                       |                                 |  |                             |
| 13 Office expenses . . . . .   | 2,444.                | 0.                              | 1,690.                                 | 754.                        |
| 14 Information technology . . . . .  |                       |                                 |  |                             |
| 15 Royalties . . . . .   |                       |                                 |  |                             |
| 16 Occupancy . . . . .   |                       |                                 |  |                             |
| 17 Travel . . . . .  |                       |                                 |  |                             |
| 18 Payments of travel or entertainment expenses for any federal, state, or local public officials . . . . .  |                       |                                 |  |                             |
| 19 Conferences, conventions, and meetings . . . . .  |                       |                                 |  |                             |
| 20 Interest . . . . .  |                       |                                 |  |                             |
| 21 Payments to affiliates . . . . .  |                       |                                 |  |                             |
| 22 Depreciation, depletion, and amortization . . . . .   | 4,816.                | 4,816.                          | 0.                                     | 0.                          |
| 23 Insurance . . . . .   |                       |                                 |  |                             |
| 24 Other expenses. Itemize expenses not covered above (List miscellaneous expenses in line 24e. If line 24e amount exceeds 10% of line 25, column (A) amount, list line 24e expenses on Schedule O.) . . . . .                                     |                       |                                 |  |                             |
| a <u>Feed and Supplies</u> . . . . .   | 94,925.               | 94,925.                         | 0.                                     | 0.                          |
| b <u>Utilities and Fuel</u> . . . . .  | 7,958.                | 7,958.                          | 0.                                     | 0.                          |
| c <u>Development and Education</u> . . . . .   | 1,898.                | 1,898.                          | 0.                                     | 0.                          |
| d <u>Communications</u> . . . . .  | 2,265.                | 2,265.                          | 0.                                     | 0.                          |
| e All other expenses . . . . .   | 80,163.               | 79,215.                         | 276.                                   | 672.                        |
| 25 Total functional expenses. Add lines 1 through 24e. . . . .   | 684,078.              | 678,448.                        | 4,204.                                 | 1,426.                      |
| 26 Joint costs. Complete this line only if the organization reported in column (B) joint costs from a combined educational campaign and fundraising solicitation. Check here <input type="checkbox"/> if following SOP 98-2 (ASC 958-720). . . . . |                       |                                 |  |                             |

**Part X Balance Sheet**

Check if Schedule O contains a response or note to any line in this Part X

|   |   | (A)               |            | (B)          |
|---|---|-------------------|------------|--------------|
|   |   | Beginning of year |            | End of year  |
| <b>Assets</b>   | 1 Cash — non-interest-bearing . . . . .   | 755,849.          | 1          | 306,428.     |
|   | 2 Savings and temporary cash investments . . . . .  | 182,010.          | 2          | 861,091.     |
|   | 3 Pledges and grants receivable, net . . . . .  |                   | 3          |              |
|   | 4 Accounts receivable, net . . . . .  |                   | 4          |              |
|   | 5 Loans and other receivables from current and former officers, directors, trustees, key employees, and highest compensated employees. Complete Part II of Schedule L . . . . .   |                   | 5          |              |
|   | 6 Loans and other receivables from other disqualified persons (as defined under section 4958(f)(1)), persons described in section 4958(c)(3)(B), and contributing employers and sponsoring organizations of section 501(c)(9) voluntary employees' beneficiary organizations (see instructions). Complete Part II of Schedule L . . . . . |                   | 6          |              |
|   | 7 Notes and loans receivable, net . . . . .   |                   | 7          |              |
|   | 8 Inventories for sale or use . . . . .   |                   | 8          |              |
|   | 9 Prepaid expenses and deferred charges . . . . .   |                   | 9          |              |
|   | 10a Land, buildings, and equipment: cost or other basis. Complete Part VI of Schedule D . . . . .   | 10a 996,636.      |            |              |
|   | b Less: accumulated depreciation . . . . .  | 10b 77,154.       | 925,998.   | 10c 919,482. |
|   | 11 Investments — publicly traded securities . . . . .   | 38,657.           | 11         | 40,002.      |
|   | 12 Investments — other securities. See Part IV, line 11 . . . . .   |                   | 12         |              |
|   | 13 Investments — program-related. See Part IV, line 11 . . . . .  |                   | 13         |              |
|   | 14 Intangible assets . . . . .  |                   | 14         |              |
|   | 15 Other assets. See Part IV, line 11 . . . . .   | 500.              | 15         | 500.         |
| 16 <b>Total assets.</b> Add lines 1 through 15 (must equal line 34) . . . . . | 1,903,014.  | 16                | 2,127,503. |              |
| <b>Liabilities</b>  | 17 Accounts payable and accrued expenses . . . . .  |                   | 17         |              |
|   | 18 Grants payable . . . . .   |                   | 18         |              |
|   | 19 Deferred revenue . . . . .   |                   | 19         |              |
|   | 20 Tax-exempt bond liabilities . . . . .  |                   | 20         |              |
|   | 21 Escrow or custodial account liability. Complete Part IV of Schedule D . . . . .  |                   | 21         |              |
|   | 22 Loans and other payables to current and former officers, directors, trustees, key employees, highest compensated employees, and disqualified persons. Complete Part II of Schedule L . . . . .   |                   | 22         |              |
|   | 23 Secured mortgages and notes payable to unrelated third parties . . . . .   |                   | 23         |              |
|   | 24 Unsecured notes and loans payable to unrelated third parties . . . . .   |                   | 24         |              |
|   | 25 Other liabilities (including federal income tax, payables to related third parties, and other liabilities not included on lines 17-24). Complete Part X of Schedule D . . . . .  | 3,588.            | 25         | 3,995.       |
|   | 26 <b>Total liabilities.</b> Add lines 17 through 25 . . . . .  | 3,588.            | 26         | 3,995.       |
| <b>Net Assets or Fund Balances</b>  | Organizations that follow SFAS 117 (ASC 958), check here <input checked="" type="checkbox"/> and complete lines 27 through 29, and lines 33 and 34.   |                   |            |              |
|   | 27 Unrestricted net assets . . . . .  | 1,899,426.        | 27         | 2,123,508.   |
|   | 28 Temporarily restricted net assets . . . . .  |                   | 28         |              |
|   | 29 Permanently restricted net assets . . . . .  |                   | 29         |              |
|   | Organizations that do not follow SFAS 117 (ASC 958), check here <input type="checkbox"/> and complete lines 30 through 34.  |                   |            |              |
|   | 30 Capital stock or trust principal, or current funds . . . . .   |                   | 30         |              |
|   | 31 Paid-in or capital surplus, or land, building, or equipment fund . . . . .   |                   | 31         |              |
|   | 32 Retained earnings, endowment, accumulated income, or other funds . . . . .   |                   | 32         |              |
| 33 <b>Total net assets or fund balances.</b> . . . . .                        | 1,899,426.  | 33                | 2,123,508. |              |
| 34 <b>Total liabilities and net assets/fund balances</b> . . . . .            | 1,903,014.  | 34                | 2,127,503. |              |

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Form 990 (2016)

**Part XI Reconciliation of Net Assets**

Check if Schedule O contains a response or note to any line in this Part XI.

|    |   |    |            |
|----|---|----|------------|
| 1  | Total revenue (must equal Part VIII, column (A), line 12)   | 1  | 908,160.   |
| 2  | Total expenses (must equal Part IX, column (A), line 25)  | 2  | 684,078.   |
| 3  | Revenue less expenses. Subtract line 2 from line 1  | 3  | 224,082.   |
| 4  | Net assets or fund balances at beginning of year (must equal Part X, line 33, column (A)).                      | 4  | 1,899,426. |
| 5  | Net unrealized gains (losses) on investments  | 5  |            |
| 6  | Donated services and use of facilities  | 6  |            |
| 7  | Investment expenses   | 7  |            |
| 8  | Prior period adjustments  | 8  |            |
| 9  | Other changes in net assets or fund balances (explain in Schedule O)  | 9  |            |
| 10 | Net assets or fund balances at end of year. Combine lines 3 through 9 (must equal Part X, line 33, column (B)). | 10 | 2,123,508. |

**Part XII Financial Statements and Reporting**

Check if Schedule O contains a response or note to any line in this Part XII

|     |  | Yes | No |
|-----|--|-----|----|
| 1   | Accounting method used to prepare the Form 990: <input checked="" type="checkbox"/> Cash <input type="checkbox"/> Accrual <input type="checkbox"/> Other _____   |     |    |
|     | If the organization changed its method of accounting from a prior year or checked 'Other,' explain in Schedule O.  |     |    |
| 2 a | Were the organization's financial statements compiled or reviewed by an independent accountant?  |     | X  |
|     | If 'Yes,' check a box below to indicate whether the financial statements for the year were compiled or reviewed on a separate basis, consolidated basis, or both:<br><input type="checkbox"/> Separate basis <input type="checkbox"/> Consolidated basis <input type="checkbox"/> Both consolidated and separate basis |     |    |
| 2 b | Were the organization's financial statements audited by an independent accountant?   |     | X  |
|     | If 'Yes,' check a box below to indicate whether the financial statements for the year were audited on a separate basis, consolidated basis, or both:<br><input type="checkbox"/> Separate basis <input type="checkbox"/> Consolidated basis <input type="checkbox"/> Both consolidated and separate basis              |     |    |
| 2 c | If 'Yes' to line 2a or 2b, does the organization have a committee that assumes responsibility for oversight of the audit, review, or compilation of its financial statements and selection of an independent accountant?   |     |    |
|     | If the organization changed either its oversight process or selection process during the tax year, explain in Schedule O.  |     |    |
| 3 a | As a result of a federal award, was the organization required to undergo an audit or audits as set forth in the Single Audit Act and OMB Circular A-133?   |     | X  |
| 3 b | If 'Yes,' did the organization undergo the required audit or audits? If the organization did not undergo the required audit or audits, explain why in Schedule O and describe any steps taken to undergo such audits   |     |    |

BAA

**SCHEDULE A**  
**(Form 990 or 990-EZ)**

Department of the Treasury  
Internal Revenue Service

**Public Charity Status and Public Support**

Complete if the organization is a section 501(c)(3) organization or a section 4947(a)(1) nonexempt charitable trust.

▶ Attach to Form 990 or Form 990-EZ.

▶ Information about Schedule A (Form 990 or 990-EZ) and its instructions is at [www.irs.gov/form990](http://www.irs.gov/form990).

OMB No. 1545-0047

**2016**

Open to Public Inspection

|   |   |
|---|---|
| Name of the organization<br><b>Rare Species Conservatory Foundation</b> | Employer identification number<br><b>65-0560456</b> |
|---|---|

**Part I Reason for Public Charity Status** (All organizations must complete this part.) See instructions.

The organization is not a private foundation because it is: (For lines 1 through 12, check only one box.)

- 1  A church, convention of churches, or association of churches described in **section 170(b)(1)(A)(i)**.
- 2  A school described in **section 170(b)(1)(A)(ii)**. (Attach Schedule E (Form 990 or 990-EZ).)
- 3  A hospital or a cooperative hospital service organization described in **section 170(b)(1)(A)(iii)**.
- 4  A medical research organization operated in conjunction with a hospital described in **section 170(b)(1)(A)(iii)**. Enter the hospital's name, city, and state: \_\_\_\_\_
- 5  An organization operated for the benefit of a college or university owned or operated by a governmental unit described in **section 170(b)(1)(A)(iv)**. (Complete Part II.)
- 6  A federal, state, or local government or governmental unit described in **section 170(b)(1)(A)(v)**.
- 7  An organization that normally receives a substantial part of its support from a governmental unit or from the general public described in **section 170(b)(1)(A)(vi)**. (Complete Part II.)
- 8  A community trust described in **section 170(b)(1)(A)(vi)**. (Complete Part II.)
- 9  An agricultural research organization described in **section 170(b)(1)(A)(ix)** operated in conjunction with a land-grant college or university or a non-land-grant college of agriculture (see instructions). Enter the name, city, and state of the college or university: \_\_\_\_\_
- 10  An organization that normally receives: (1) more than 33-1/3% of its support from contributions, membership fees, and gross receipts from activities related to its exempt functions—subject to certain exceptions, and (2) no more than 33-1/3% of its support from gross investment income and unrelated business taxable income (less section 511 tax) from businesses acquired by the organization after June 30, 1975. See **section 509(a)(2)**. (Complete Part III.)
- 11  An organization organized and operated exclusively to test for public safety. See **section 509(a)(4)**.
- 12  An organization organized and operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more publicly supported organizations described in **section 509(a)(1)** or **section 509(a)(2)**. See **section 509(a)(3)**. Check the box in lines 12a through 12d that describes the type of supporting organization and complete lines 12e, 12f, and 12g.
  - a  **Type I.** A supporting organization operated, supervised, or controlled by its supported organization(s), typically by giving the supported organization(s) the power to regularly appoint or elect a majority of the directors or trustees of the supporting organization. You must complete **Part IV, Sections A and B**.
  - b  **Type II.** A supporting organization supervised or controlled in connection with its supported organization(s), by having control or management of the supporting organization vested in the same persons that control or manage the supported organization(s). You must complete **Part IV, Sections A and C**.
  - c  **Type III functionally integrated.** A supporting organization operated in connection with, and functionally integrated with, its supported organization(s) (see instructions). You must complete **Part IV, Sections A, D, and E**.
  - d  **Type III non-functionally integrated.** A supporting organization operated in connection with its supported organization(s) that is not functionally integrated. The organization generally must satisfy a distribution requirement and an attentiveness requirement (see instructions). You must complete **Part IV, Sections A and D, and Part V**.
  - e  Check this box if the organization received a written determination from the IRS that it is a Type I, Type II, Type III functionally integrated, or Type III non-functionally integrated supporting organization.
- f Enter the number of supported organizations
- g Provide the following information about the supported organization(s).

| (i) Name of supported organization | (ii) EIN | (iii) Type of organization (described on lines 1-10 above (see instructions)) | (iv) Is the organization listed in your governing document? |    | (v) Amount of monetary support (see instructions) | (vi) Amount of other support (see instructions) |
|------------------------------------|----------|---|---|----|---|---|
|                                    |          |   | Yes   | No |   |   |
| (A)                                |          |   |   |    |   |   |
| (B)                                |          |   |   |    |   |   |
| (C)                                |          |   |   |    |   |   |
| (D)                                |          |   |   |    |   |   |
| (E)                                |          |   |   |    |   |   |
| <b>Total</b>                       |          |   |   |    |   |   |

**Part II Support Schedule for Organizations Described in Sections 170(b)(1)(A)(iv) and 170(b)(1)(A)(vi)**

(Complete only if you checked the box on line 5, 7, or 8 of Part I or if the organization failed to qualify under Part III. If the organization fails to qualify under the tests listed below, please complete Part III.)

**Section A. Public Support**

| Calendar year (or fiscal year beginning in) ▶   | (a) 2012 | (b) 2013 | (c) 2014 | (d) 2015 | (e) 2016 | (f) Total  |
|---|----------|----------|----------|----------|----------|------------|
| 1 Gifts, grants, contributions, and membership fees received. (Do not include any 'unusual grants.') . . . . .  | 453,248. | 320,408. | 346,661. | 662,781. | 903,599. | 2,686,697. |
| 2 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf . . . . .   |          |          |          |          |          |            |
| 3 The value of services or facilities furnished by a governmental unit to the organization without charge. . . . .  |          |          |          |          |          |            |
| 4 Total. Add lines 1 through 3 . . . . .  | 453,248. | 320,408. | 346,661. | 662,781. | 903,599. | 2,686,697. |
| 5 The portion of total contributions by each person (other than a governmental unit or publicly supported organization) included on line 1 that exceeds 2% of the amount shown on line 11, column (f) . . . . . |          |          |          |          |          | 245,866.   |
| 6 Public support. Subtract line 5 from line 4 . . . . .   |          |          |          |          |          | 2,440,831. |

**Section B. Total Support**

| Calendar year (or fiscal year beginning in) ▶   | (a) 2012 | (b) 2013 | (c) 2014 | (d) 2015 | (e) 2016 | (f) Total  |
|---|----------|----------|----------|----------|----------|------------|
| 7 Amounts from line 4 . . . . .   | 453,248. | 320,408. | 346,661. | 662,781. | 903,599. | 2,686,697. |
| 8 Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources . . . . .  | 1,038.   | 747.     | 793.     | 695.     | 4,561.   | 7,834.     |
| 9 Net income from unrelated business activities, whether or not the business is regularly carried on . . . . .  |          |          |          |          |          |            |
| 10 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.) . . . . .  |          |          |          |          |          |            |
| 11 Total support. Add lines 7 through 10 . . . . .  |          |          |          |          |          | 2,694,531. |
| 12 Gross receipts from related activities, etc. (see instructions). . . . .   |          |          |          |          | 12       |            |
| 13 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and stop here . . . . . ▶ <input type="checkbox"/> |          |          |          |          |          |            |

**Section C. Computation of Public Support Percentage**

|   |    |         |
|---|----|---------|
| 14 Public support percentage for 2016 (line 6, column (f) divided by line 11, column (f)) . . . . .   | 14 | 90.58 % |
| 15 Public support percentage from 2015 Schedule A, Part II, line 14 . . . . .   | 15 | 91.07 % |
| 16a 33-1/3% support test—2016. If the organization did not check the box on line 13, and line 14 is 33-1/3% or more, check this box and stop here. The organization qualifies as a publicly supported organization . . . . . ▶ <input checked="" type="checkbox"/>  |    |         |
| b 33-1/3% support test—2015. If the organization did not check a box on line 13 or 16a, and line 15 is 33-1/3% or more, check this box and stop here. The organization qualifies as a publicly supported organization . . . . . ▶ <input type="checkbox"/>  |    |         |
| 17a 10%-facts-and-circumstances test—2016. If the organization did not check a box on line 13, 16a, or 16b, and line 14 is 10% or more, and if the organization meets the 'facts-and-circumstances' test, check this box and stop here. Explain in Part VI how the organization meets the 'facts-and-circumstances' test. The organization qualifies as a publicly supported organization . . . . . ▶ <input type="checkbox"/>    |    |         |
| b 10%-facts-and-circumstances test—2015. If the organization did not check a box on line 13, 16a, 16b, or 17a, and line 15 is 10% or more, and if the organization meets the 'facts-and-circumstances' test, check this box and stop here. Explain in Part VI how the organization meets the 'facts-and-circumstances' test. The organization qualifies as a publicly supported organization . . . . . ▶ <input type="checkbox"/> |    |         |
| 18 Private foundation. If the organization did not check a box on line 13, 16a, 16b, 17a, or 17b, check this box and see instructions . . . . . ▶ <input type="checkbox"/>  |    |         |

**Part III Support Schedule for Organizations Described in Section 509(a)(2)**

(Complete only if you checked the box on line 10 of Part I or if the organization failed to qualify under Part II. If the organization fails to qualify under the tests listed below, please complete Part II.)

**Section A. Public Support**

| Calendar year (or fiscal year beginning in) ▶   | (a) 2012 | (b) 2013 | (c) 2014 | (d) 2015 | (e) 2016 | (f) Total |
|---|----------|----------|----------|----------|----------|-----------|
| <b>1</b> Gifts, grants, contributions, and membership fees received. (Do not include any 'unusual grants'.) . . . . .   |          |          |          |          |          |           |
| <b>2</b> Gross receipts from admissions, merchandise sold or services performed, or facilities furnished in any activity that is related to the organization's tax-exempt purpose . . . . . |          |          |          |          |          |           |
| <b>3</b> Gross receipts from activities that are not an unrelated trade or business under section 513 . . . . .   |          |          |          |          |          |           |
| <b>4</b> Tax revenues levied for the organization's benefit and either paid to or expended on its behalf . . . . .  |          |          |          |          |          |           |
| <b>5</b> The value of services or facilities furnished by a governmental unit to the organization without charge. . . . .   |          |          |          |          |          |           |
| <b>6 Total.</b> Add lines 1 through 5 . . . . .   |          |          |          |          |          |           |
| <b>7a</b> Amounts included on lines 1, 2, and 3 received from disqualified persons . . . . .  |          |          |          |          |          |           |
| <b>b</b> Amounts included on lines 2 and 3 received from other than disqualified persons that exceed the greater of \$5,000 or 1% of the amount on line 13 for the year . . . . .           |          |          |          |          |          |           |
| <b>c</b> Add lines 7a and 7b . . . . .  |          |          |          |          |          |           |
| <b>8 Public support.</b> (Subtract line 7c from line 6.) . . . . .  |          |          |          |          |          |           |

**Section B. Total Support**

| Calendar year (or fiscal year beginning in) ▶   | (a) 2012 | (b) 2013 | (c) 2014 | (d) 2015 | (e) 2016 | (f) Total |
|---|----------|----------|----------|----------|----------|-----------|
| <b>9</b> Amounts from line 6 . . . . .  |          |          |          |          |          |           |
| <b>10a</b> Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources . . . . . |          |          |          |          |          |           |
| <b>b</b> Unrelated business taxable income (less section 511 taxes) from businesses acquired after June 30, 1975 . . . . .                          |          |          |          |          |          |           |
| <b>c</b> Add lines 10a and 10b . . . . .  |          |          |          |          |          |           |
| <b>11</b> Net income from unrelated business activities not included in line 10b, whether or not the business is regularly carried on . . . . .     |          |          |          |          |          |           |
| <b>12</b> Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.) . . . . .                                 |          |          |          |          |          |           |
| <b>13 Total support.</b> (Add lines 9, 10c, 11, and 12.) . . . . .  |          |          |          |          |          |           |

**14 First five years.** If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and stop here . . . . .

**Section C. Computation of Public Support Percentage**

|  |           |   |
|--|-----------|---|
| <b>15</b> Public support percentage for 2016 (line 8, column (f) divided by line 13, column (f)) . . . . . | <b>15</b> | % |
| <b>16</b> Public support percentage from 2015 Schedule A, Part III, line 15. . . . .                       | <b>16</b> | % |

**Section D. Computation of Investment Income Percentage**

|   |           |   |
|---|-----------|---|
| <b>17</b> Investment income percentage for 2016 (line 10c, column (f) divided by line 13, column (f)) . . . . . | <b>17</b> | % |
| <b>18</b> Investment income percentage from 2015 Schedule A, Part III, line 17 . . . . .                        | <b>18</b> | % |

**19a 33-1/3% support tests—2016.** If the organization did not check the box on line 14, and line 15 is more than 33-1/3%, and line 17 is not more than 33-1/3%, check this box and stop here. The organization qualifies as a publicly supported organization . . . . .

**b 33-1/3% support tests—2015.** If the organization did not check a box on line 14 or line 19a, and line 16 is more than 33-1/3%, and line 18 is not more than 33-1/3%, check this box and stop here. The organization qualifies as a publicly supported organization . . . . .

**20 Private foundation.** If the organization did not check a box on line 14, 19a, or 19b, check this box and see instructions. . . . .

**Part IV Supporting Organizations**

(Complete only if you checked a box in line 12 on Part I. If you checked 12a of Part I, complete Sections A and B. If you checked 12b of Part I, complete Sections A and C. If you checked 12c of Part I, complete Sections A, D, and E. If you checked 12d of Part I, complete Sections A and D, and complete Part V.)

**Section A. All Supporting Organizations**

|  | Yes | No |
|--|-----|----|
| <b>1</b> Are all of the organization's supported organizations listed by name in the organization's governing documents? <i>If 'No,' describe in Part VI how the supported organizations are designated. If designated by class or purpose, describe the designation. If historic and continuing relationship, explain.</i>  |     |    |
| <b>2</b> Did the organization have any supported organization that does not have an IRS determination of status under section 509(a)(1) or (2)? <i>If 'Yes,' explain in Part VI how the organization determined that the supported organization was described in section 509(a)(1) or (2).</i>   |     |    |
| <b>3a</b> Did the organization have a supported organization described in section 501(c)(4), (5), or (6)? <i>If 'Yes,' answer (b) and (c) below.</i>   |     |    |
| <b>b</b> Did the organization confirm that each supported organization qualified under section 501(c)(4), (5), or (6) and satisfied the public support tests under section 509(a)(2)? <i>If 'Yes,' describe in Part VI when and how the organization made the determination.</i>   |     |    |
| <b>c</b> Did the organization ensure that all support to such organizations was used exclusively for section 170(c)(2)(B) purposes? <i>If 'Yes,' explain in Part VI what controls the organization put in place to ensure such use.</i>  |     |    |
| <b>4a</b> Was any supported organization not organized in the United States ('foreign supported organization')? <i>If 'Yes' and if you checked 12a or 12b in Part I, answer (b) and (c) below.</i>   |     |    |
| <b>b</b> Did the organization have ultimate control and discretion in deciding whether to make grants to the foreign supported organization? <i>If 'Yes,' describe in Part VI how the organization had such control and discretion despite being controlled or supervised by or in connection with its supported organizations.</i>  |     |    |
| <b>c</b> Did the organization support any foreign supported organization that does not have an IRS determination under sections 501(c)(3) and 509(a)(1) or (2)? <i>If 'Yes,' explain in Part VI what controls the organization used to ensure that all support to the foreign supported organization was used exclusively for section 170(c)(2)(B) purposes.</i>   |     |    |
| <b>5a</b> Did the organization add, substitute, or remove any supported organizations during the tax year? <i>If 'Yes,' answer (b) and (c) below (if applicable). Also, provide detail in Part VI, including (i) the names and EIN numbers of the supported organizations added, substituted, or removed; (ii) the reasons for each such action; (iii) the authority under the organization's organizing document authorizing such action; and (iv) how the action was accomplished (such as by amendment to the organizing document).</i> |     |    |
| <b>b Type I or Type II only.</b> Was any added or substituted supported organization part of a class already designated in the organization's organizing document?   |     |    |
| <b>c Substitutions only.</b> Was the substitution the result of an event beyond the organization's control?  |     |    |
| <b>6</b> Did the organization provide support (whether in the form of grants or the provision of services or facilities) to anyone other than (i) its supported organizations, (ii) individuals that are part of the charitable class benefited by one or more of its supported organizations, or (iii) other supporting organizations that also support or benefit one or more of the filing organization's supported organizations? <i>If 'Yes,' provide detail in Part VI.</i>  |     |    |
| <b>7</b> Did the organization provide a grant, loan, compensation, or other similar payment to a substantial contributor (defined in section 4958(c)(3)(C)), a family member of a substantial contributor, or a 35% controlled entity with regard to a substantial contributor? <i>If 'Yes,' complete Part I of Schedule L (Form 990 or 990-EZ).</i>   |     |    |
| <b>8</b> Did the organization make a loan to a disqualified person (as defined in section 4958) not described in line 7? <i>If 'Yes,' complete Part I of Schedule L (Form 990 or 990-EZ).</i>  |     |    |
| <b>9a</b> Was the organization controlled directly or indirectly at any time during the tax year by one or more disqualified persons as defined in section 4946 (other than foundation managers and organizations described in section 509(a)(1) or (2))? <i>If 'Yes,' provide detail in Part VI.</i>  |     |    |
| <b>b</b> Did one or more disqualified persons (as defined in line 9a) hold a controlling interest in any entity in which the supporting organization had an interest? <i>If 'Yes,' provide detail in Part VI.</i>  |     |    |
| <b>c</b> Did a disqualified person (as defined in line 9a) have an ownership interest in, or derive any personal benefit from, assets in which the supporting organization also had an interest? <i>If 'Yes,' provide detail in Part VI.</i>   |     |    |
| <b>10a</b> Was the organization subject to the excess business holdings rules of section 4943 because of section 4943(f) (regarding certain Type II supporting organizations, and all Type III non-functionally integrated supporting organizations)? <i>If 'Yes,' answer 10b below.</i>   |     |    |
| <b>b</b> Did the organization have any excess business holdings in the tax year? <i>(Use Schedule C, Form 4720, to determine whether the organization had excess business holdings.)</i>   |     |    |



**Part IV Supporting Organizations (continued)**

|   | Yes | No |
|---|-----|----|
| <b>11</b> Has the organization accepted a gift or contribution from any of the following persons?   |     |    |
| a A person who directly or indirectly controls, either alone or together with persons described in (b) and (c) below, the governing body of a supported organization? |     |    |
| <b>11a</b>  |     |    |
| b A family member of a person described in (a) above?   |     |    |
| <b>11b</b>  |     |    |
| c A 35% controlled entity of a person described in (a) or (b) above? <i>If 'Yes' to a, b, or c, provide detail in Part VI.</i>  |     |    |
| <b>11c</b>  |     |    |

**Section B. Type I Supporting Organizations**

|   | Yes | No |
|---|-----|----|
| <b>1</b> Did the directors, trustees, or membership of one or more supported organizations have the power to regularly appoint or elect at least a majority of the organization's directors or trustees at all times during the tax year? <i>If 'No,' describe in Part VI how the supported organization(s) effectively operated, supervised, or controlled the organization's activities. If the organization had more than one supported organization, describe how the powers to appoint and/or remove directors or trustees were allocated among the supported organizations and what conditions or restrictions, if any, applied to such powers during the tax year.</i> |     |    |
| <b>1</b>  |     |    |
| <b>2</b> Did the organization operate for the benefit of any supported organization other than the supported organization(s) that operated, supervised, or controlled the supporting organization? <i>If 'Yes,' explain in Part VI how providing such benefit carried out the purposes of the supported organization(s) that operated, supervised, or controlled the supporting organization.</i>   |     |    |
| <b>2</b>  |     |    |

**Section C. Type II Supporting Organizations**

|  | Yes | No |
|--|-----|----|
| <b>1</b> Were a majority of the organization's directors or trustees during the tax year also a majority of the directors or trustees of each of the organization's supported organization(s)? <i>If 'No,' describe in Part VI how control or management of the supporting organization was vested in the same persons that controlled or managed the supported organization(s).</i> |     |    |
| <b>1</b>   |     |    |

**Section D. All Type III Supporting Organizations**

|   | Yes | No |
|---|-----|----|
| <b>1</b> Did the organization provide to each of its supported organizations, by the last day of the fifth month of the organization's tax year, (i) a written notice describing the type and amount of support provided during the prior tax year, (ii) a copy of the Form 990 that was most recently filed as of the date of notification, and (iii) copies of the organization's governing documents in effect on the date of notification, to the extent not previously provided? |     |    |
| <b>1</b>  |     |    |
| <b>2</b> Were any of the organization's officers, directors, or trustees either (i) appointed or elected by the supported organization(s) or (ii) serving on the governing body of a supported organization? <i>If 'No,' explain in Part VI how the organization maintained a close and continuous working relationship with the supported organization(s).</i>   |     |    |
| <b>2</b>  |     |    |
| <b>3</b> By reason of the relationship described in (2), did the organization's supported organizations have a significant voice in the organization's investment policies and in directing the use of the organization's income or assets at all times during the tax year? <i>If 'Yes,' describe in Part VI the role the organization's supported organizations played in this regard.</i>  |     |    |
| <b>3</b>  |     |    |

**Section E. Type III Functionally Integrated Supporting Organizations**

|  |  |  |
|--|--|--|
| <b>1</b> Check the box next to the method that the organization used to satisfy the Integral Part Test during the year (see instructions).   |  |  |
| a <input type="checkbox"/> The organization satisfied the Activities Test. Complete line 2 below.  |  |  |
| b <input type="checkbox"/> The organization is the parent of each of its supported organizations. Complete line 3 below.   |  |  |
| c <input type="checkbox"/> The organization supported a governmental entity. Describe in Part VI how you supported a government entity (see instructions).   |  |  |
| <b>2</b> Activities Test. Answer (a) and (b) below.  |  |  |
| a Did substantially all of the organization's activities during the tax year directly further the exempt purposes of the supported organization(s) to which the organization was responsive? <i>If 'Yes,' then in Part VI identify those supported organizations and explain how these activities directly furthered their exempt purposes, how the organization was responsive to those supported organizations, and how the organization determined that these activities constituted substantially all of its activities.</i> |  |  |
| <b>2a</b>  |  |  |
| b Did the activities described in (a) constitute activities that, but for the organization's involvement, one or more of the organization's supported organization(s) would have been engaged in? <i>If 'Yes,' explain in Part VI the reasons for the organization's position that its supported organization(s) would have engaged in these activities but for the organization's involvement.</i>  |  |  |
| <b>2b</b>  |  |  |
| <b>3</b> Parent of Supported Organizations. Answer (a) and (b) below.  |  |  |
| a Did the organization have the power to regularly appoint or elect a majority of the officers, directors, or trustees of each of the supported organizations? <i>Provide details in Part VI.</i>  |  |  |
| <b>3a</b>  |  |  |
| b Did the organization exercise a substantial degree of direction over the policies, programs, and activities of each of its supported organizations? <i>If 'Yes,' describe in Part VI the role played by the organization in this regard.</i>   |  |  |
| <b>3b</b>  |  |  |

**Part V Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations**

1  Check here if the organization satisfied the Integral Part Test as a qualifying trust on Nov. 20, 1970 (explain in Part VI). See instructions. All other Type III non-functionally integrated supporting organizations must complete Sections A through E.

| <b>Section A – Adjusted Net Income</b> |  | (A) Prior Year | (B) Current Year (optional) |
|--|--|----------------|-----------------------------|
| 1                                      | Net short-term capital gain  | 1              |                             |
| 2                                      | Recoveries of prior-year distributions   | 2              |                             |
| 3                                      | Other gross income (see instructions)  | 3              |                             |
| 4                                      | Add lines 1 through 3.   | 4              |                             |
| 5                                      | Depreciation and depletion   | 5              |                             |
| 6                                      | Portion of operating expenses paid or incurred for production or collection of gross income or for management, conservation, or maintenance of property held for production of income (see instructions) | 6              |                             |
| 7                                      | Other expenses (see instructions)  | 7              |                             |
| 8                                      | <b>Adjusted Net Income</b> (subtract lines 5, 6, and 7 from line 4).   | 8              |                             |

| <b>Section B – Minimum Asset Amount</b> |   | (A) Prior Year | (B) Current Year (optional) |
|---|---|----------------|-----------------------------|
| 1                                       | Aggregate fair market value of all non-exempt-use assets (see instructions for short tax year or assets held for part of year): |                |                             |
| a                                       | Average monthly value of securities   | 1 a            |                             |
| b                                       | Average monthly cash balances   | 1 b            |                             |
| c                                       | Fair market value of other non-exempt-use assets  | 1 c            |                             |
| d                                       | <b>Total</b> (add lines 1a, 1b, and 1c)   | 1 d            |                             |
| e                                       | Discount claimed for blockage or other factors (explain in detail in Part VI):  |                |                             |
| 2                                       | Acquisition indebtedness applicable to non-exempt-use assets  | 2              |                             |
| 3                                       | Subtract line 2 from line 1d.   | 3              |                             |
| 4                                       | Cash deemed held for exempt use. Enter 1-1/2% of line 3 (for greater amount, see instructions).                                 | 4              |                             |
| 5                                       | Net value of non-exempt-use assets (subtract line 4 from line 3)  | 5              |                             |
| 6                                       | Multiply line 5 by .035.  | 6              |                             |
| 7                                       | Recoveries of prior-year distributions  | 7              |                             |
| 8                                       | <b>Minimum Asset Amount</b> (add line 7 to line 6)  | 8              |                             |

| <b>Section C – Distributable Amount</b> |   |   | Current Year |
|---|---|---|--------------|
| 1                                       | Adjusted net income for prior year (from Section A, line 8, Column A)   | 1 |              |
| 2                                       | Enter 85% of line 1.  | 2 |              |
| 3                                       | Minimum asset amount for prior year (from Section B, line 8, Column A)  | 3 |              |
| 4                                       | Enter greater of line 2 or line 3.  | 4 |              |
| 5                                       | Income tax imposed in prior year  | 5 |              |
| 6                                       | <b>Distributable Amount.</b> Subtract line 5 from line 4, unless subject to emergency temporary reduction (see instructions). | 6 |              |

7  Check here if the current year is the organization's first as a non-functionally integrated Type III supporting organization (see instructions).

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**Part V Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations (continued)**

| <b>Section D – Distributions</b>   | <b>Current Year</b> |
|--|---------------------|
| 1 Amounts paid to supported organizations to accomplish exempt purposes  |                     |
| 2 Amounts paid to perform activity that directly furthers exempt purposes of supported organizations, in excess of income from activity      |                     |
| 3 Administrative expenses paid to accomplish exempt purposes of supported organizations  |                     |
| 4 Amounts paid to acquire exempt-use assets  |                     |
| 5 Qualified set-aside amounts (prior IRS approval required)  |                     |
| 6 Other distributions (describe in Part VI). See instructions.   |                     |
| 7 <b>Total annual distributions.</b> Add lines 1 through 6.  |                     |
| 8 Distributions to attentive supported organizations to which the organization is responsive (provide details in Part VI). See instructions. |                     |
| 9 Distributable amount for 2016 from Section C, line 6   |                     |
| 10 Line 8 amount divided by Line 9 amount  |                     |

| <b>Section E – Distribution Allocations (see instructions)</b>  | <b>(i)<br/>Excess<br/>Distributions</b> | <b>(ii)<br/>Underdistributions<br/>Pre-2016</b> | <b>(iii)<br/>Distributable<br/>Amount for 2016</b> |
|---|---|---|--|
| 1 Distributable amount for 2016 from Section C, line 6  |   |   |  |
| 2 Underdistributions, if any, for years prior to 2016 (reasonable cause required – explain in Part VI). See instructions.   |   |   |  |
| 3 Excess distributions carryover, if any, to 2016:  |   |   |  |
| a   |   |   |  |
| b   |   |   |  |
| c From 2013 . . . . .   |   |   |  |
| d From 2014 . . . . .   |   |   |  |
| e From 2015 . . . . .   |   |   |  |
| f <b>Total</b> of lines 3a through e  |   |   |  |
| g Applied to underdistributions of prior years  |   |   |  |
| h Applied to 2016 distributable amount  |   |   |  |
| i Carryover from 2011 not applied (see instructions)  |   |   |  |
| j Remainder. Subtract lines 3g, 3h, and 3i from 3f.   |   |   |  |
| 4 Distributions for 2016 from Section D, line 7: \$   |   |   |  |
| a Applied to underdistributions of prior years  |   |   |  |
| b Applied to 2016 distributable amount  |   |   |  |
| c Remainder. Subtract lines 4a and 4b from 4.   |   |   |  |
| 5 Remaining underdistributions for years prior to 2016, if any. Subtract lines 3g and 4a from line 2. For result greater than zero, explain in Part VI. See instructions. |   |   |  |
| 6 Remaining underdistributions for 2016. Subtract lines 3h and 4b from line 1. For result greater than zero, explain in Part VI. See instructions.                        |   |   |  |
| 7 <b>Excess distributions carryover to 2017.</b> Add lines 3j and 4c.   |   |   |  |
| 8 Breakdown of line 7:  |   |   |  |
| a   |   |   |  |
| b Excess from 2013 . . . .  |   |   |  |
| c Excess from 2014 . . . .  |   |   |  |
| d Excess from 2015 . . . .  |   |   |  |
| e Excess from 2016 . . . .  |   |   |  |

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**Part VI** **Supplemental Information.** Provide the explanations required by Part II, line 10; Part II, line 17a or 17b; Part III, line 12; Part IV, Section A, lines 1, 2, 3b, 3c, 4b, 4c, 5a, 6, 9a, 9b, 9c, 11a, 11b, and 11c; Part IV, Section B, lines 1 and 2; Part IV, Section C, line 1; Part IV, Section D, lines 2 and 3; Part IV, Section E, lines 1c, 2a, 2b, 3a, and 3b; Part V, line 1; Part V, Section B, line 1e; Part V, Section D, lines 5, 6, and 8; and Part V, Section E, lines 2, 5, and 6. Also complete this part for any additional information. (See instructions.)

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Other Addl Info The Organization received an unusual grant during 2014. Brad Kelly/ Rum Creek Ranch LLC gave \$100,000 as a one-time, 100% restricted grant to support field conservation efforts by the Bongo surveillance Program operated in Kenya by the Rhino Ark Charitable Trust. No funds retained by RSCF for overhead, indirect expenses, grant administration or operations.

**Schedule B**  
(Form 990, 990-EZ,  
or 990-PF)

Department of the Treasury  
Internal Revenue Service

**Schedule of Contributors**

▶ Attach to Form 990, Form 990-EZ, or Form 990-PF.

▶ Information about Schedule B (Form 990, 990-EZ, 990-PF) and its instructions is at [www.irs.gov/form990](http://www.irs.gov/form990).

OMB No. 1545-0047

**2016**

|   |   |
|---|---|
| Name of the organization<br><b>Rare Species Conservatory Foundation</b> | Employer identification number<br><b>65-0560456</b> |
|---|---|

**Organization type (check one):**

**Filers of:**

Form 990 or 990-EZ

**Section:**

- 501(c)( 3 ) (enter number) organization
- 4947(a)(1) nonexempt charitable trust not treated as a private foundation
- 527 political organization

Form 990-PF

- 501(c)(3) exempt private foundation
- 4947(a)(1) nonexempt charitable trust treated as a private foundation
- 501(c)(3) taxable private foundation

Check if your organization is covered by the **General Rule** or a **Special Rule**.

**Note.** Only a section 501(c)(7), (8), or (10) organization can check boxes for both the General Rule and a Special Rule. See instructions.

**General Rule**

- For an organization filing Form 990, 990-EZ, or 990-PF that received, during the year, contributions totaling \$5,000 or more (in money or property) from any one contributor. Complete Parts I and II. See instructions for determining a contributor's total contributions.

**Special Rules**

- For an organization described in section 501(c)(3) filing Form 990 or 990-EZ that met the 33-1/3% support test of the regulations under sections 509(a)(1) and 170(b)(1)(A)(vi), that checked Schedule A (Form 990 or 990-EZ), Part II, line 13, 16a, or 16b, and that received from any one contributor, during the year, total contributions of the greater of (1) \$5,000 or (2) 2% of the amount on (i) Form 990, Part VIII, line 1h, or (ii) Form 990-EZ, line 1. Complete Parts I and II.
- For an organization described in section 501(c)(7), (8), or (10) filing Form 990 or 990-EZ that received from any one contributor, during the year, total contributions of more than \$1,000 *exclusively* for religious, charitable, scientific, literary, or educational purposes, or for the prevention of cruelty to children or animals. Complete Parts I, II, and III.
- For an organization described in section 501(c)(7), (8), or (10) filing Form 990 or 990-EZ that received from any one contributor, during the year, contributions *exclusively* for religious, charitable, etc., purposes, but no such contributions totaled more than \$1,000. If this box is checked, enter here the total contributions that were received during the year for an *exclusively* religious, charitable, etc., purpose. Don't complete any of the parts unless the **General Rule** applies to this organization because it received *nonexclusively* religious, charitable, etc., contributions totaling \$5,000 or more during the year . . . . . ▶ \$ \_\_\_\_\_

**Caution.** An organization that isn't covered by the General Rule and/or the Special Rules doesn't file Schedule B (Form 990, 990-EZ, or 990-PF), but it **must** answer 'No' on Part IV, line 2, of its Form 990; or check the box on line H of its Form 990-EZ or on its Form 990-PF, Part I, line 2, to certify that it doesn't meet the filing requirements of Schedule B (Form 990, 990-EZ, or 990-PF).

|  |  |
|--|--|
| Name of organization<br>Rare Species Conservatory Foundation | Employer identification number<br>65-0560456 |
|--|--|

**Part I Contributors** (see instructions). Use duplicate copies of Part I if additional space is needed.

| (a)<br>Number | (b)<br>Name, address, and ZIP + 4   | (c)<br>Total<br>contributions | (d)<br>Type of contribution  |
|---------------|---|-------------------------------|--|
| 1             | The Miami Foundation<br>200 South Biscayne Blvd<br>Miami FL 33131                                       | \$ 100,000.                   | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |
| 2             | Goody Two Shoes Foundation<br>6345W 23rd Court<br>Boca Raton FL 33496                                   | \$ 5,000.                     | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |
| 3             | Hufty Foundation<br>580 Village Blvd, Suite 110<br>West Palm Beach FL 33409                             | \$ 11,500.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |
| 4             | Tami Hoag C/O Level Four Business Mgmt LLC<br>11812 San Vicente Blvd, 4th Floor<br>Los Angeles CA 90049 | \$ 10,000.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |
| 5             | MacArthur Foundation<br>140 S Dearborn Avenue, Suite 1200<br>Chicago IL 60603                           | \$ 95,000.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |
| 6             | U.S. Fish and Wildlife Service<br>1875 Century Blvd, Suite 310<br>Atlanta GA 30345-3310                 | \$ 115,915.                   | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br><small>(Complete Part II for noncash contributions.)</small> |

|  |  |
|--|--|
| Name of organization<br>Rare Species Conservatory Foundation | Employer identification number<br>65-0560456 |
|--|--|

**Part I Contributors** (see instructions). Use duplicate copies of Part I if additional space is needed.

| (a)<br>Number | (b)<br>Name, address, and ZIP + 4  | (c)<br>Total<br>contributions | (d)<br>Type of contribution  |
|---------------|--|-------------------------------|--|
| 7             | FIU Foundation<br>11200 SW 8th Street, MARC 5th Floor<br>Miami FL 33199    | \$ 300,000.                   | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |
| 8             | FIU<br>11200 SW 8th Street, MARC 5th Floor<br>Miami FL 33199               | \$ 116,000.                   | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |
| 9             | Valley Zoological Society<br>500 Ringgold Street<br>Brownsville TX 78520   | \$ 32,061.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |
| 10            | Dr Terry Root<br>7910 Kennedy Lane<br>Sarasota FL 34240                    | \$ 20,000.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |
| 11            | Mohammed Bin Zayed Species Conservation<br>PO Box 131112<br>Abu Dhabi, UAE | \$ 23,150.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |
| 12            | Koninklijke Burgers' Zoo B.V.<br>6816 SH Arnhem<br>Arnhem, Netherlands     | \$ 57,430.                    | Person <input checked="" type="checkbox"/><br>Payroll <input type="checkbox"/><br>Noncash <input type="checkbox"/><br>(Complete Part II for<br>noncash contributions.) |

SCHEDULE D (Form 990)

Department of the Treasury Internal Revenue Service

Supplemental Financial Statements

Complete if the organization answered 'Yes' on Form 990, Part IV, line 6, 7, 8, 9, 10, 11a, 11b, 11c, 11d, 11e, 11f, 12a, or 12b. Attach to Form 990.

Information about Schedule D (Form 990) and its instructions is at www.irs.gov/form990.

OMB No. 1545-0047

2016

Open to Public Inspection

Name of the organization

Employer identification number

Rare Species Conservatory Foundation

65-0560456

Part I Organizations Maintaining Donor Advised Funds or Other Similar Funds or Accounts.

Complete if the organization answered 'Yes' on Form 990, Part IV, line 6.

Table with 2 columns: (a) Donor advised funds, (b) Funds and other accounts. Rows include: 1 Total number at end of year, 2 Aggregate value of contributions to (during year), 3 Aggregate value of grants from (during year), 4 Aggregate value at end of year, 5 Did the organization inform all donors and donor advisors in writing that the assets held in donor advised funds are the organization's property, subject to the organization's exclusive legal control?, 6 Did the organization inform all grantees, donors, and donor advisors in writing that grant funds can be used only for charitable purposes and not for the benefit of the donor or donor advisor, or for any other purpose conferring impermissible private benefit?

Part II Conservation Easements.

Complete if the organization answered 'Yes' on Form 990, Part IV, line 7.

- 1 Purpose(s) of conservation easements held by the organization (check all that apply). Preservation of land for public use (e.g., recreation or education), Protection of natural habitat, Preservation of open space, Preservation of a historically important land area, Preservation of a certified historic structure. 2 Complete lines 2a through 2d if the organization held a qualified conservation contribution in the form of a conservation easement on the last day of the tax year. Table: Held at the End of the Tax Year. 2a Total number of conservation easements, 2b Total acreage restricted by conservation easements, 2c Number of conservation easements on a certified historic structure included in (a), 2d Number of conservation easements included in (c) acquired after 8/17/06, and not on a historic structure listed in the National Register. 3 Number of conservation easements modified, transferred, released, extinguished, or terminated by the organization during the tax year. 4 Number of states where property subject to conservation easement is located. 5 Does the organization have a written policy regarding the periodic monitoring, inspection, handling of violations, and enforcement of the conservation easements it holds? 6 Staff and volunteer hours devoted to monitoring, inspecting, handling of violations, and enforcing conservation easements during the year. 7 Amount of expenses incurred in monitoring, inspecting, handling of violations, and enforcing conservation easements during the year. 8 Does each conservation easement reported on line 2(d) above satisfy the requirements of section 170(h)(4)(B)(i) and section 170(h)(4)(B)(ii)? 9 In Part XIII, describe how the organization reports conservation easements in its revenue and expense statement, and balance sheet, and include, if applicable, the text of the footnote to the organization's financial statements that describes the organization's accounting for conservation easements.

Part III Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets.

Complete if the organization answered 'Yes' on Form 990, Part IV, line 8.

- 1 a If the organization elected, as permitted under SFAS 116 (ASC 958), not to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide, in Part XIII, the text of the footnote to its financial statements that describes these items. b If the organization elected, as permitted under SFAS 116 (ASC 958), to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide the following amounts relating to these items: (i) Revenue included on Form 990, Part VIII, line 1, (ii) Assets included in Form 990, Part X. 2 If the organization received or held works of art, historical treasures, or other similar assets for financial gain, provide the following amounts required to be reported under SFAS 116 (ASC 958) relating to these items: a Revenue included on Form 990, Part VIII, line 1, b Assets included in Form 990, Part X.



**Part III Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets (continued)**

- 3 Using the organization's acquisition, accession, and other records, check any of the following that are a significant use of its collection items (check all that apply):
- a  Public exhibition
  - b  Scholarly research
  - c  Preservation for future generations
  - d  Loan or exchange programs
  - e  Other \_\_\_\_\_
- 4 Provide a description of the organization's collections and explain how they further the organization's exempt purpose in Part XIII.
- 5 During the year, did the organization solicit or receive donations of art, historical treasures, or other similar assets to be sold to raise funds rather than to be maintained as part of the organization's collection?  Yes  No

**Part IV Escrow and Custodial Arrangements.** Complete if the organization answered 'Yes' on Form 990, Part IV, line 9, or reported an amount on Form 990, Part X, line 21.

- 1 a Is the organization an agent, trustee, custodian or other intermediary for contributions or other assets not included on Form 990, Part X?  Yes  No
- b If 'Yes,' explain the arrangement in Part XIII and complete the following table:
- |                                 | Amount |
|---------------------------------|--------|
| c Beginning balance             | 1 c    |
| d Additions during the year     | 1 d    |
| e Distributions during the year | 1 e    |
| f Ending balance                | 1 f    |
- 2 a Did the organization include an amount on Form 990, Part X, line 21, for escrow or custodial account liability?  Yes  No
- b If 'Yes,' explain the arrangement in Part XIII. Check here if the explanation has been provided on Part XIII

**Part V Endowment Funds.** Complete if the organization answered 'Yes' on Form 990, Part IV, line 10.

|  | (a) Current year | (b) Prior year | (c) Two years back | (d) Three years back | (e) Four years back |
|--|------------------|----------------|--------------------|----------------------|---------------------|
| 1 a Beginning of year balance                    |                  |                |                    |                      |                     |
| b Contributions                                  |                  |                |                    |                      |                     |
| c Net investment earnings, gains, and losses     |                  |                |                    |                      |                     |
| d Grants or scholarships                         |                  |                |                    |                      |                     |
| e Other expenditures for facilities and programs |                  |                |                    |                      |                     |
| f Administrative expenses                        |                  |                |                    |                      |                     |
| g End of year balance                            |                  |                |                    |                      |                     |

- 2 Provide the estimated percentage of the current year end balance (line 1g, column (a)) held as:
- a Board designated or quasi-endowment  %
  - b Permanent endowment  %
  - c Temporarily restricted endowment  %
- The percentages on lines 2a, 2b, and 2c should equal 100%.
- 3 a Are there endowment funds not in the possession of the organization that are held and administered for the organization by:
- |  | Yes    | No |
|--|--------|----|
| (i) unrelated organizations  | 3a(i)  |    |
| (ii) related organizations   | 3a(ii) |    |
| b If 'Yes' on line 3a(ii), are the related organizations listed as required on Schedule R? | 3b     |    |
- 4 Describe in Part XIII the intended uses of the organization's endowment funds.

**Part VI Land, Buildings, and Equipment.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 11a. See Form 990, Part X, line 10.

| Description of property  | (a) Cost or other basis (investment) | (b) Cost or other basis (other) | (c) Accumulated depreciation | (d) Book value |
|--------------------------|--------------------------------------|---------------------------------|------------------------------|----------------|
| 1 a Land                 |                                      | 905,208.                        |                              | 905,208.       |
| b Buildings              |                                      | 15,000.                         | 10,181.                      | 4,819.         |
| c Leasehold improvements |                                      |                                 |                              |                |
| d Equipment              |                                      | 68,853.                         | 59,398.                      | 9,455.         |
| e Other                  |                                      | 7,575.                          | 7,575.                       | 0.             |

Total. Add lines 1a through 1e. (Column (d) must equal Form 990, Part X, column (B), line 10c.) 919,482.

**Part VII Investments – Other Securities.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 11b. See Form 990, Part X, line 12.

| (a) Description of security or category (including name of security)       | (b) Book value | (c) Method of valuation: Cost or end-of-year market value |
|--|----------------|---|
| (1) Financial derivatives . . . . .  |                |   |
| (2) Closely-held equity interests . . . . .                                |                |   |
| (3) Other _____  |                |   |
| (A) _____  |                |   |
| (B) _____  |                |   |
| (C) _____  |                |   |
| (D) _____  |                |   |
| (E) _____  |                |   |
| (F) _____  |                |   |
| (G) _____  |                |   |
| (H) _____  |                |   |
| (I) _____  |                |   |
| Total. (Column (b) must equal Form 990, Part X, column (B) line 12.) . . ▶ |                |   |

**Part VIII Investments – Program Related.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 11c. See Form 990, Part X, line 13.

| (a) Description of investment  | (b) Book value | (c) Method of valuation: Cost or end-of-year market value |
|--|----------------|---|
| (1)  |                |   |
| (2)  |                |   |
| (3)  |                |   |
| (4)  |                |   |
| (5)  |                |   |
| (6)  |                |   |
| (7)  |                |   |
| (8)  |                |   |
| (9)  |                |   |
| (10)   |                |   |
| Total. (Column (b) must equal Form 990, Part X, column (B) line 13.) . . ▶ |                |   |

**Part IX Other Assets.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 11d. See Form 990, Part X, line 15.

| (a) Description  | (b) Book value |
|--|----------------|
| (1)  |                |
| (2)  |                |
| (3)  |                |
| (4)  |                |
| (5)  |                |
| (6)  |                |
| (7)  |                |
| (8)  |                |
| (9)  |                |
| (10)   |                |
| Total. (Column (b) must equal Form 990, Part X, column (B) line 15.) . . . . . ▶ |                |

**Part X Other Liabilities.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 11e or 11f. See Form 990, Part X, line 25

| (a) Description of liability   | (b) Book value |
|--|----------------|
| (1) Federal income taxes   |                |
| (2) Payroll Taxes Payable  | 3,995.         |
| (3)  |                |
| (4)  |                |
| (5)  |                |
| (6)  |                |
| (7)  |                |
| (8)  |                |
| (9)  |                |
| (10)   |                |
| (11)   |                |
| Total. (Column (b) must equal Form 990, Part X, column (B) line 25.) . . . . . ▶ | 3,995.         |

2. Liability for uncertain tax positions. In Part XIII, provide the text of the footnote to the organization's financial statements that reports the organization's liability for uncertain tax positions under FIN 48 (ASC 740). Check here if the text of the footnote has been provided in Part XIII. . . . .

**Part XI Reconciliation of Revenue per Audited Financial Statements With Revenue per Return.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

|   |   |     |  |     |
|---|---|-----|--|-----|
| 1 | Total revenue, gains, and other support per audited financial statements . . . . .        |     |  | 1   |
| 2 | Amounts included on line 1 but not on Form 990, Part VIII, line 12:                       |     |  |     |
|   | a Net unrealized gains (losses) on investments . . . . .                                  | 2 a |  |     |
|   | b Donated services and use of facilities . . . . .  | 2 b |  |     |
|   | c Recoveries of prior year grants . . . . .   | 2 c |  |     |
|   | d Other (Describe in Part XIII.) . . . . .  | 2 d |  |     |
|   | e Add lines 2a through 2d . . . . .   |     |  | 2 e |
| 3 | Subtract line 2e from line 1 . . . . .  |     |  | 3   |
| 4 | Amounts included on Form 990, Part VIII, line 12, but not on line 1:                      |     |  |     |
|   | a Investment expenses not included on Form 990, Part VIII, line 7b. . . . .               | 4 a |  |     |
|   | b Other (Describe in Part XIII.) . . . . .  | 4 b |  |     |
|   | c Add lines 4a and 4b . . . . .   |     |  | 4 c |
| 5 | Total revenue. Add lines 3 and 4c. (This must equal Form 990, Part I, line 12.) . . . . . |     |  | 5   |

**Part XII Reconciliation of Expenses per Audited Financial Statements With Expenses per Return.**

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

|   |  |     |  |     |
|---|--|-----|--|-----|
| 1 | Total expenses and losses per audited financial statements. . . . .                        |     |  | 1   |
| 2 | Amounts included on line 1 but not on Form 990, Part IX, line 25:                          |     |  |     |
|   | a Donated services and use of facilities . . . . .   | 2 a |  |     |
|   | b Prior year adjustments . . . . .   | 2 b |  |     |
|   | c Other losses . . . . .   | 2 c |  |     |
|   | d Other (Describe in Part XIII.) . . . . .   | 2 d |  |     |
|   | e Add lines 2a through 2d . . . . .  |     |  | 2 e |
| 3 | Subtract line 2e from line 1 . . . . .   |     |  | 3   |
| 4 | Amounts included on Form 990, Part IX, line 25, but not on line 1:                         |     |  |     |
|   | a Investment expenses not included on Form 990, Part VIII, line 7b. . . . .                | 4 a |  |     |
|   | b Other (Describe in Part XIII.) . . . . .   | 4 b |  |     |
|   | c Add lines 4a and 4b . . . . .  |     |  | 4 c |
| 5 | Total expenses. Add lines 3 and 4c. (This must equal Form 990, Part I, line 18.) . . . . . |     |  | 5   |

**Part XIII Supplemental Information.**

Provide the descriptions required for Part II, lines 3, 5, and 9; Part III, lines 1a and 4; Part IV, lines 1b and 2b; Part V, line 4; Part X, line 2; Part XI, lines 2d and 4b; and Part XII, lines 2d and 4b. Also complete this part to provide any additional information.

**SCHEDULE F**  
**(Form 990)**

Department of the Treasury  
Internal Revenue Service

**Statement of Activities Outside the United States**

▶ Complete if the organization answered 'Yes' on Form 990, Part IV, line 14b, 15, or 16.  
▶ Attach to Form 990.  
▶ Information about Schedule F (Form 990) and its instructions is at [www.irs.gov/form990](http://www.irs.gov/form990).

OMB No. 1545-0047

**2016**

Open to Public Inspection

Name of the organization

Rare Species Conservatory Foundation

Employer identification number

65-0560456

**Part I** **General Information on Activities Outside the United States.** Complete if the organization answered 'Yes' on Form 990, Part IV, line 14b.

- 1 **For grantmakers.** Does the organization maintain records to substantiate the amount of its grants and other assistance, the grantees' eligibility for the grants or assistance, and the selection criteria used to award the grants or assistance? . . . . .  Yes  No
- 2 **For grantmakers.** Describe in Part V the organization's procedures for monitoring the use of its grants and other assistance outside the United States.
- 3 **Activities per Region.** (The following Part I, line 3 table can be duplicated if additional space is needed.)

| (a) Region  | (b) Number of offices in the region | (c) Number of employees, agents, and independent contractors in the region | (d) Activities conducted in the region (by type) (such as, fundraising, program services, investments, grants to recipients located in the region) | (e) If activity listed in (d) is a program service, describe specific type of service(s) in the region | (f) Total expenditures for and investments in the region |
|---|-------------------------------------|--|--|--|--|
| (1) Central America   | 0                                   | 0  | Program Service  | See Schedule F - Part V  | 18,294.  |
| (2) Sub-Saharan Africa                                      | 0                                   | 0  | Program Service  | See Schedule F- Part V   | 326,626.   |
| (3)   |                                     |  |  |  |  |
| (4)   |                                     |  |  |  |  |
| (5)   |                                     |  |  |  |  |
| (6)   |                                     |  |  |  |  |
| (7)   |                                     |  |  |  |  |
| (8)   |                                     |  |  |  |  |
| (9)   |                                     |  |  |  |  |
| (10)  |                                     |  |  |  |  |
| (11)  |                                     |  |  |  |  |
| (12)  |                                     |  |  |  |  |
| (13)  |                                     |  |  |  |  |
| (14)  |                                     |  |  |  |  |
| (15)  |                                     |  |  |  |  |
| (16)  |                                     |  |  |  |  |
| (17)  |                                     |  |  |  |  |
| <b>3 a Sub-total . . . . .</b>                              | 0                                   | 0  |  |  | 344,920.   |
| <b>b Total from continuation sheets to Part I . . . . .</b> |                                     |  |  |  |  |
| <b>c Totals (add lines 3a and 3b) . . . . .</b>             | 0                                   | 0  |  |  | 344,920.   |

**Part II Grants and Other Assistance to Organizations or Entities Outside the United States.** Complete if the organization answered 'Yes' on Form 990, Part IV, line 15, for any recipient who received more than \$5,000. Part II can be duplicated if additional space is needed.

| 1    | (a) Name of organization | (b) IRS code section and EIN (if applicable) | (c) Region         | (d) Purpose of grant | (e) Amount of cash grant | (f) Manner of cash disbursement | (g) Amount of noncash assistance | (h) Description of noncash assistance | (i) Method of valuation (book, FMV, appraisal, other) |
|------|--------------------------|--|--------------------|----------------------|--------------------------|---------------------------------|----------------------------------|---------------------------------------|---|
| (1)  |                          |  | Central America    | Wildlife Research    | 18,294.                  | Wire/ check                     |                                  |                                       |   |
| (2)  |                          |  | Sub-Saharan Africa | Wildlife Cons        | 326,626.                 | Wire/Check                      |                                  |                                       |   |
| (3)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (4)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (5)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (6)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (7)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (8)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (9)  |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (10) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (11) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (12) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (13) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (14) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (15) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |
| (16) |                          |  |                    |                      |                          |                                 |                                  |                                       |   |

2 Enter total number of recipient organizations listed above that are recognized as charities by the foreign country, recognized as tax-exempt by the IRS, or for which the grantee or counsel has provided a section 501(c)(3) equivalency letter . . . . . 4

3 Enter total number of other organizations or entities. . . . .

**Part III** Grants and Other Assistance to Individuals Outside the United States. Complete if the organization answered 'Yes' on Form 990, Part IV, line 16. Part III can be duplicated if additional space is needed.

| (a) Type of grant or assistance | (b) Region | (c) Number of recipients | (d) Amount of cash grant | (e) Manner of cash disbursement | (f) Amount of noncash assistance | (g) Description of noncash assistance | (h) Method of valuation (book, FMV, appraisal, other) |
|---------------------------------|------------|--------------------------|--------------------------|---------------------------------|----------------------------------|---------------------------------------|---|
| (1)                             |            |                          |                          |                                 |                                  |                                       |   |
| (2)                             |            |                          |                          |                                 |                                  |                                       |   |
| (3)                             |            |                          |                          |                                 |                                  |                                       |   |
| (4)                             |            |                          |                          |                                 |                                  |                                       |   |
| (5)                             |            |                          |                          |                                 |                                  |                                       |   |
| (6)                             |            |                          |                          |                                 |                                  |                                       |   |
| (7)                             |            |                          |                          |                                 |                                  |                                       |   |
| (8)                             |            |                          |                          |                                 |                                  |                                       |   |
| (9)                             |            |                          |                          |                                 |                                  |                                       |   |
| (10)                            |            |                          |                          |                                 |                                  |                                       |   |
| (11)                            |            |                          |                          |                                 |                                  |                                       |   |
| (12)                            |            |                          |                          |                                 |                                  |                                       |   |
| (13)                            |            |                          |                          |                                 |                                  |                                       |   |
| (14)                            |            |                          |                          |                                 |                                  |                                       |   |
| (15)                            |            |                          |                          |                                 |                                  |                                       |   |
| (16)                            |            |                          |                          |                                 |                                  |                                       |   |
| (17)                            |            |                          |                          |                                 |                                  |                                       |   |
| (18)                            |            |                          |                          |                                 |                                  |                                       |   |

**Part IV Foreign Forms**

- 1 Was the organization a U.S. transferor of property to a foreign corporation during the tax year? *If 'Yes,' the organization may be required to file Form 926, Return by a U.S. Transferor of Property to a Foreign Corporation (see Instructions for Form 926).* . . . . .  Yes  No
  
- 2 Did the organization have an interest in a foreign trust during the tax year? *If 'Yes,' the organization may be required to separately file Form 3520, Annual Return To Report Transactions with Foreign Trusts and Receipt of Certain Foreign Gifts, and/or Form 3520-A Annual Information Return of Foreign Trust With a U.S. Owner (see Instructions for Forms 3520 and 3520-A; do not file with Form 990).* . . . . .  Yes  No
  
- 3 Did the organization have an ownership interest in a foreign corporation during the tax year? *If 'Yes,' the organization may be required to file Form 5471, Information Return of U.S. Persons With Respect To Certain Foreign Corporations (see Instructions for Form 5471)* . . . . .  Yes  No
  
- 4 Was the organization a direct or indirect shareholder of a passive foreign investment company or a qualified electing fund during the tax year? *If 'Yes,' the organization may be required to file Form 8621, Information Return by a Shareholder of a Passive Foreign Investment Company or Qualified Electing Fund (see Instructions for Form 8621).* . . . . .  Yes  No
  
- 5 Did the organization have an ownership interest in a foreign partnership during the tax year? *If 'Yes,' the organization may be required to file Form 8865, Return of U.S. Persons With Respect to Certain Foreign Partnerships (see Instructions for Form 8865).* . . . . .  Yes  No
  
- 6 Did the organization have any operations in or related to any boycotting countries during the tax year? *If 'Yes,' the organization may be required to separately file Form 5713, International Boycott Report (see Instructions for Form 5713; do not file with Form 990).* . . . . .  Yes  No

**Part V Supplemental Information**

Provide the information required by Part I, line 2 (monitoring of funds); Part I, line 3, column (f) (accounting method; amounts of investments vs. expenditures per region); Part II, line 1 (accounting method); Part III (accounting method); and Part III, column (c) (estimated number of recipients), as applicable. Also complete this part to provide any additional information. See instructions.

Pt I Line 2 Grant Monitoring: All grants are required to have a detailed budget, expense tracking along with interim and follow-up reports, in addition to reporting requirements by the original granting agency.



**2016 990 Misc. responses:**

**Schedule F, Parts I and II**

**Central America/Caribbean (\$18,294 total):**

***Dominica:*** Expended \$2294 (direct expenses by Reillo via credit card, cash and checks, year-round) to provide Dominica's Forestry, Wildlife and Parks Division supplies, equipment, field gear, and maintenance/cleanup materials for the Parrot Conservation and Research Program and to host Dominican delegation to Florida for conservation program planning. Material support is part of RSCF's longstanding conservation-program collaboration with Dominica's Forestry, Wildlife and Parks Division.

\$16,000 (via wire transfer) was also sent to the Government of Dominica to incentivize recruitment of new conservation staff within the Forestry, Wildlife and Parks Division.

**Sub-Saharan Africa (\$326,626 total)**

***Kenya:*** \$122,528 grant (via wire transfer) to Rhino Ark Charitable Trust for field operations, wildlife protection and surveillance and community outreach under the Bongo Surveillance Programme (BSP). Included in this total is \$4528 expended by credit card, cash and checks to cover RSCF's delegates' participation in the National Bongo Task Force Meeting and Bongo Experts visit to Kenya in December 2016. The bongo program includes species recovery planning and implementation, bongo antelope population management, field monitoring, community education and awareness, wildlife clubs, antelope surveillance, population surveys, and data/sample collection. All field bongo research is coordinated between the Bongo Surveillance Programme, Rhino Ark Charitable Trust and the Kenya Wildlife Service.

***Kenya:*** \$161,388, including \$80,300 (via wire transfer) to East African Wild Life Society and \$81,088 in direct project expenses, in furtherance of grant to RSCF from MacArthur Foundation entitled, "***Plant Red List Assessment for the Lake Victoria Basin***". See RSCF program documents for project specifics.

***Cote d'Ivoire:*** \$42,710, including \$20,000 (wire transfer) and \$22,710 (via check and credit card purchases) disbursed to continue project entitled "***In- and Ex-Situ Conservation of the West-African, Slender-snouted Crocodile *Mecistops* in the Upper Guinea Forest Region***". See project description for specifics. Project is implemented *in situ* by Research Associate Dr. Matthew Shirley in collaboration with the Abidjan National Zoo and the Ivorian national parks service (OIPR). Afrique Nature, an Ivorian NGO, serves as in-country fiduciary for receipt of funds granted to RSCF. Expenses include field-research running costs, field equipment and gear (e.g., telemetry equipment, packs, boots, and essential field gear), disposable supplies and local/international travel.

**SCHEDULE O**  
**(Form 990 or 990-EZ)**

**Supplemental Information to Form 990 or 990-EZ**

OMB No. 1545-0047

Complete to provide information for responses to specific questions on  
Form 990 or 990-EZ or to provide any additional information.

**2016**

▶ Attach to Form 990 or 990-EZ.

▶ Information about Schedule O (Form 990 or 990-EZ) and its instructions is  
at [www.irs.gov/form990](http://www.irs.gov/form990).

Open to Public  
Inspection

Department of the Treasury  
Internal Revenue Service

Name of the organization

Employer identification number

Rare Species Conservatory Foundation

65-0560456

A copy of the 990 is provided to the Directors before filing. The 990 with backup is prepared with and reviewed by a tax accounting professional and sent back to RSCF for corrections. After all corrections are made and the return is reviewed by the accountant, a clean copy is prepared for signing and PDF format, and distributed to the directors for approval. The final copy is signed, updated to PDF for redistribution to the directors, and filed with the IRS.

Pt VI, Line 11b

Pt VI, Line 12c

Pt VI, Line 19

Conflict of Interest Policy: See schedule O - Attachment

Whistleblower Protection Policy: See Schedule O - See Attachment

**Schedule O:**

Part VI Line 12c:

***Conflict of Interest Policy.*** RSCF Directors are requested to disclose any conflict of interest annually. Any and all potential conflicts must be disclosed via signed letter monitored by each program's director and/or RSCF's President. Such disclosure, by notice in writing, shall be made by any and all interested parties to RSCF's full Board of Directors in all conflicts of interest including, but not limited to, the following:

- A board member's relationship to other members
- If a board member or his/her organization or financial interest stands to benefit from any RSCF transaction
- A board member's organization and/or financial interest receives RSCF grant funds
- A board member or staff member is part of the governing body of any contributor to the RSCF
- A board member in any way influences, or attempts to influence, any contributor to the RSCF

Part VI, Line 19:

***Whistleblower Protection Policy, Rare Species Conservatory Foundation, Inc. (RSCF):***

A. Application. This Whistleblower Protection Policy applies to all of the RSCF's staff, whether full-time, part-time, or temporary employees, to all volunteers, to all who provide contract services, and to all officers and directors, each of whom shall be entitled to protection.

B. Reporting Credible Information. A protected person shall be encouraged to report information relating to illegal practices or violations of policies of RSCF (a "Violation") that such person in good faith has reasonable cause to believe is credible. Information shall be reported to RSCF's President (As Compliance Officer), unless the report relates to the President, in which case the report shall be made to any officer or director of RSCF's Board of Directors, or RSCF's Curator, whom shall be responsible to provide an alternative procedure. Anyone reporting a Violation must act in good faith, and have reasonable grounds for believing that the information shared in the report indicates that a Violation has occurred.

C. Investigating Information. The Compliance Officer shall promptly investigate each such report and prepare a written report to the Board of Directors. In connection with such investigation all persons entitled to protection shall provide the Compliance Officer with credible information. All actions of the Compliance Officer in receiving and investigating the report and additional information shall endeavor to protect the confidentiality of all persons entitled to protection.

D. Confidentiality. RSCF encourages anyone reporting a Violation to identify himself or herself when making a report in order to facilitate the investigation of the Violation. However, reports may be submitted anonymously by filing a written complaint by e-mail ([info@rarespecies.org](mailto:info@rarespecies.org)) or regular mail, addressed to the RSCF Board of Directors or President. Reports of Violations or suspected Violations will be kept confidential to the extent possible, with the understanding that confidentiality may not be maintained where identification is required by law or in order to enable RSCF or law enforcement to conduct an adequate investigation.

E. Protection from Retaliation. No person entitled to protection shall be subjected to retaliation, intimidation, harassment, or other adverse action for reporting information in accordance with this Policy. Any person entitled to protection who believes that he or she is the subject of any form of retaliation for such participation should immediately report the same as a violation of and in accordance with this Policy. Any individual within the Organization who retaliates against another individual who has reported a Violation in good faith or who, in good faith, has cooperated in the investigation of a Violation is subject to discipline, including termination of employment or volunteer status.

F. Dissemination and Implementation of Policy. This Policy shall be available and disseminated in writing to all affected constituencies. RSCF shall adopt procedures for implementation of this Policy, which may include, but are not limited to, the following:

- (1) documenting reported Violations;
- (2) working with legal counsel to decide whether the reported Violation requires review by the Compliance Officer or should be directed to another person or department;
- (3) keeping RSCF's board of directors informed of the progress of the investigation;
- (4) interviewing employees;
- (5) requesting and reviewing relevant documents, and/or requesting that an auditor or counsel investigate the complaint; and
- (6) preparing a written record of the reported violation and its disposition, to be retained for a specified period of time.

The procedures for implementation of this Policy shall include a process for communicating with a complainant about the status of the complaint, to the extent that the complainant's identity is disclosed, and to the extent consistent with any privacy or confidentiality limitations.

**Depreciation and Amortization  
(Including Information on Listed Property)**

**2016**

Department of the Treasury  
Internal Revenue Service

(99)

Information about Form 4562 and its separate instructions is at [www.irs.gov/form4562](http://www.irs.gov/form4562).

Attachment  
Sequence No. **179**

Name(s) shown on return

Rare Species Conservatory Foundation

Identifying number

65-0560456

Business or activity to which this form relates

Form 990 / Form 990EZ

**Part I Election To Expense Certain Property Under Section 179**

Note: If you have any listed property, complete Part V before you complete Part I.

|    |  |                              |                  |
|----|--|------------------------------|------------------|
| 1  | Maximum amount (see instructions)  | 1                            |                  |
| 2  | Total cost of section 179 property placed in service (see instructions)  | 2                            |                  |
| 3  | Threshold cost of section 179 property before reduction in limitation (see instructions)   | 3                            |                  |
| 4  | Reduction in limitation. Subtract line 3 from line 2. If zero or less, enter -0-   | 4                            |                  |
| 5  | Dollar limitation for tax year. Subtract line 4 from line 1. If zero or less, enter -0-. If married filing separately, see instructions. | 5                            |                  |
| 6  | (a) Description of property  | (b) Cost (business use only) | (c) Elected cost |
| 7  | Listed property. Enter the amount from line 29   | 7                            |                  |
| 8  | Total elected cost of section 179 property. Add amounts in column (c), lines 6 and 7   | 8                            |                  |
| 9  | Tentative deduction. Enter the smaller of line 5 or line 8   | 9                            |                  |
| 10 | Carryover of disallowed deduction from line 13 of your 2015 Form 4562  | 10                           |                  |
| 11 | Business income limitation. Enter the smaller of business income (not less than zero) or line 5 (see instrs)                             | 11                           |                  |
| 12 | Section 179 expense deduction. Add lines 9 and 10, but don't enter more than line 11   | 12                           |                  |
| 13 | Carryover of disallowed deduction to 2017. Add lines 9 and 10, less line 12.   | 13                           |                  |

Note: Don't use Part II or Part III below for listed property. Instead, use Part V.

**Part II Special Depreciation Allowance and Other Depreciation (Don't include listed property.) (See instructions.)**

|    |   |    |  |
|----|---|----|--|
| 14 | Special depreciation allowance for qualified property (other than listed property) placed in service during the tax year (see instructions) | 14 |  |
| 15 | Property subject to section 168(f)(1) election  | 15 |  |
| 16 | Other depreciation (including ACRS)   | 16 |  |

**Part III MACRS Depreciation (Don't include listed property.) (See instructions.)**

**Section A**

|    |  |    |                          |
|----|--|----|--------------------------|
| 17 | MACRS deductions for assets placed in service in tax years beginning before 2016.  | 17 | 4,816.                   |
| 18 | If you are electing to group any assets placed in service during the tax year into one or more general asset accounts, check here. |    | <input type="checkbox"/> |

**Section B — Assets Placed in Service During 2016 Tax Year Using the General Depreciation System**

| (a) Classification of property | (b) Month and year placed in service | (c) Basis for depreciation (business/investment use only — see instructions) | (d) Recovery period | (e) Convention | (f) Method | (g) Depreciation deduction |
|--------------------------------|--------------------------------------|--|---------------------|----------------|------------|----------------------------|
| 19 a 3-year property           |                                      |  |                     |                |            |                            |
| b 5-year property              |                                      |  |                     |                |            |                            |
| c 7-year property              |                                      |  |                     |                |            |                            |
| d 10-year property             |                                      |  |                     |                |            |                            |
| e 15-year property             |                                      |  |                     |                |            |                            |
| f 20-year property             |                                      |  |                     |                |            |                            |
| g 25-year property             |                                      |  | 25 yrs              |                | S/L        |                            |
| h Residential rental property  |                                      |  | 27.5 yrs            | MM             | S/L        |                            |
| i Nonresidential real property |                                      |  | 39 yrs              | MM             | S/L        |                            |

**Section C — Assets Placed in Service During 2016 Tax Year Using the Alternative Depreciation System**

|                 |  |  |        |    |     |  |
|-----------------|--|--|--------|----|-----|--|
| 20 a Class life |  |  |        |    | S/L |  |
| b 12-year       |  |  | 12 yrs |    | S/L |  |
| c 40-year       |  |  | 40 yrs | MM | S/L |  |

**Part IV Summary (See instructions.)**

|    |  |    |        |
|----|--|----|--------|
| 21 | Listed property. Enter amount from line 28   | 21 |        |
| 22 | Total. Add amounts from line 12, lines 14 through 17, lines 19 and 20 in column (g), and line 21. Enter here and on the appropriate lines of your return. Partnerships and S corporations — see instructions | 22 | 4,816. |
| 23 | For assets shown above and placed in service during the current year, enter the portion of the basis attributable to section 263A costs.   | 23 |        |

**Part V Listed Property** (Include automobiles, certain other vehicles, certain aircraft, certain computers, and property used for entertainment, recreation, or amusement.)

**Note:** For any vehicle for which you are using the standard mileage rate or deducting lease expense, complete only 24a, 24b, columns (a) through (c) of Section A, all of Section B, and Section C if applicable.

**Section A – Depreciation and Other Information** (Caution: See the instructions for limits for passenger automobiles.)

| 24 a Do you have evidence to support the business/investment use claimed? . . . . . <input type="checkbox"/> Yes <input type="checkbox"/> No  |                                  |   |                               |  |                           |                              |                                  |                                       | 24b If 'Yes,' is the evidence written? . . . <input type="checkbox"/> Yes <input type="checkbox"/> No |  |
|---|----------------------------------|---|-------------------------------|--|---------------------------|------------------------------|----------------------------------|---------------------------------------|---|--|
| (a)<br>Type of property<br>(list vehicles first)  | (b)<br>Date placed<br>in service | (c)<br>Business/<br>investment<br>use<br>percentage | (d)<br>Cost or<br>other basis | (e)<br>Basis for depreciation<br>(business/investment<br>use only) | (f)<br>Recovery<br>period | (g)<br>Method/<br>Convention | (h)<br>Depreciation<br>deduction | (i)<br>Elected<br>section 179<br>cost |   |  |
| 25 Special depreciation allowance for qualified listed property placed in service during the tax year and used more than 50% in a qualified business use (see instructions) . . . . . |                                  |   |                               |  |                           |                              |                                  | 25                                    |   |  |
| 26 Property used more than 50% in a qualified business use:   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
|   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
|   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
| 27 Property used 50% or less in a qualified business use:   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
|   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
|   |                                  |   |                               |  |                           |                              |                                  |                                       |   |  |
| 28 Add amounts in column (h), lines 25 through 27. Enter here and on line 21, page 1 . . . . .  |                                  |   |                               |  |                           |                              |                                  | 28                                    |   |  |
| 29 Add amounts in column (i), line 26. Enter here and on line 7, page 1 . . . . .   |                                  |   |                               |  |                           |                              |                                  |                                       | 29  |  |

**Section B – Information on Use of Vehicles**

Complete this section for vehicles used by a sole proprietor, partner, or other 'more than 5% owner,' or related person. If you provided vehicles to your employees, first answer the questions in Section C to see if you meet an exception to completing this section for those vehicles.

| 30 Total business/investment miles driven during the year (don't include commuting miles). . . . . | (a)<br>Vehicle 1 |    | (b)<br>Vehicle 2 |    | (c)<br>Vehicle 3 |    | (d)<br>Vehicle 4 |    | (e)<br>Vehicle 5 |    | (f)<br>Vehicle 6 |    |
|--|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|------------------|----|
| 31 Total commuting miles driven during the year . . . . .  |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |
| 32 Total other personal (noncommuting) miles driven . . . . .                                      |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |
| 33 Total miles driven during the year. Add lines 30 through 32 . . . . .                           |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |
|  | Yes              | No | Yes              | No | Yes              | No | Yes              | No | Yes              | No | Yes              | No |
| 34 Was the vehicle available for personal use during off-duty hours? . . . . .                     |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |
| 35 Was the vehicle used primarily by a more than 5% owner or related person? . . . . .             |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |
| 36 Is another vehicle available for personal use? . . . . .  |                  |    |                  |    |                  |    |                  |    |                  |    |                  |    |

**Section C – Questions for Employers Who Provide Vehicles for Use by Their Employees**

Answer these questions to determine if you meet an exception to completing Section B for vehicles used by employees who aren't more than 5% owners or related persons (see instructions).

|  |     |    |
|--|-----|----|
| 37 Do you maintain a written policy statement that prohibits all personal use of vehicles, including commuting, by your employees? . . . . .   | Yes | No |
| 38 Do you maintain a written policy statement that prohibits personal use of vehicles, except commuting, by your employees? See the instructions for vehicles used by corporate officers, directors, or 1% or more owners. . . . . |     |    |
| 39 Do you treat all use of vehicles by employees as personal use? . . . . .  |     |    |
| 40 Do you provide more than five vehicles to your employees, obtain information from your employees about the use of the vehicles, and retain the information received? . . . . .  |     |    |
| 41 Do you meet the requirements concerning qualified automobile demonstration use? (See instructions.) . . . . .   |     |    |
| <b>Note:</b> If your answer to 37, 38, 39, 40, or 41 is 'Yes,' don't complete Section B for the covered vehicles.  |     |    |

**Part VI Amortization**

| (a)<br>Description of costs   | (b)<br>Date amortization<br>begins | (c)<br>Amortizable<br>amount | (d)<br>Code<br>section | (e)<br>Amortization<br>period or<br>percentage | (f)<br>Amortization<br>for this year |
|---|------------------------------------|------------------------------|------------------------|--|--------------------------------------|
| 42 Amortization of costs that begins during your 2016 tax year (see instructions):      |                                    |                              |                        |  |                                      |
|   |                                    |                              |                        |  |                                      |
| 43 Amortization of costs that began before your 2016 tax year. . . . .                  |                                    |                              |                        |  | 43                                   |
| 44 Total. Add amounts in column (f). See the instructions for where to report . . . . . |                                    |                              |                        |  | 44                                   |

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Schedule O (Form 990 or 990-EZ), Supplemental Information to Form 990 or 990-EZ  
Form 990, Page 10, Line 24e All Other Expenses (continued)

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| Description                        | (A)<br>Total | (B)<br>Program<br>services | (C)<br>Management<br>and general | (D)<br>Fundraising |
|------------------------------------|--------------|----------------------------|----------------------------------|--------------------|
| Equipment                          | 2,723.       | 2,723.                     | 0.                               | 0.                 |
| Postage and printing               | 887.         | 0.                         | 215.                             | 672.               |
| Veterinary services                | 4,864.       | 4,864.                     | 0.                               | 0.                 |
| License                            | 5,039.       | 5,039.                     | 0.                               | 0.                 |
| Dues and Subscription              | 999.         | 999.                       | 0.                               | 0.                 |
| Real estate taxes                  | 4,166.       | 4,166.                     | 0.                               | 0.                 |
| Other Conservation Program support | 61,424.      | 61,424.                    | 0.                               | 0.                 |
| Annual Filing Fee                  | 61.          | 0.                         | 61.                              | 0.                 |

RARE SPECIES CONSERVATORY FOUNDATION, INC.

EIN: 65-0560456

FORM: 990

TAX YEAR: 2016

PART III: STATEMENT OF PROGRAM SERVICE ACCOMPLISHMENTS

**Mission and Scope:** RSCF is a 501(c)(3), non-profit organization dedicated to preserving biodiversity through hands-on conservation programs rooted in sound science. RSCF employs the “flagship species” concept to identify and conserve high profile, priority species in order to leverage protection for the ecosystems they represent. Flagship species breeding and conservation efforts, along with field-based research, habitat protection and local capacity building, are directed toward long-term, regional-scale biodiversity preservation. RSCF designs sustainable recovery, reintroduction and protection programs for endangered species in the wild, and works collaboratively with governments and other conservation/research organizations to restore target species and protect critical habitats. RSCF also provides consulting and technical services to conservation teams, and forms educational, political and economic partnerships to expedite specific habitat and species conservation projects.

Please also see detailed descriptions of program activities at [www.rarespecies.org](http://www.rarespecies.org).

I. 2016 Wildlife breeding and research activities

**The Red-browed Amazon parrot:** The endangered Amazon parrot *Amazona rhodocorytha* is a top priority for long-term captive breeding and management, from which a sustainable, *in situ* recovery effort is evolving. RSCF holds the only known breeding group in North America. The captive effort serves as a program platform to facilitate global management of the species and *in situ* conservation investment in Brazil. The Red-brow is a parrot of highest conservation priority, as identified in the 2000-2001 Status Survey and Conservation Action Plan for Parrots, published in 2000 by the IUCN (World Conservation Union) in coordination with the World Parrot Trust. In conjunction with IBAMA/ICMBIO (the Brazilian government wildlife authority), RSCF and partnering NGO’s (Zoo Curitiba, Ideia Ambiental, Associação de Pesquisa e Conservação da Vida Silvestre, Fundação Neotrópica do Brasil) seek to assess the distribution, ecology and status of the species throughout its range, repatriate confiscated *in situ* and captive-bred *ex situ* Red-brows, and transfer title for all *ex situ* Red-brows to the Brazilian government in recognition of Brazil’s governing authority and progressive conservation and law enforcement efforts. RSCF aims to return a core population of Red-brows to Brazil as necessary to complement an existing breeding-and-rehabilitation program. During 2016, RSCF Director Reillo continued to coordinate program elements with Pedro Scherer Neto, point person for the Red-brow effort in Curitiba, Brazil. Program development during 2016 included continuation of on- and off-exhibit aviaries at Tampa’s Lowry Park Zoo. The Zoo is engaging in a progressive collaboration with RSCF on behalf of Red-brows, helping manage the North American population, promoting conservation education and outreach. In 2014, this partnership sponsored a grant to Fundação Neotrópica do Brasil entitled, “Distribution, Ecology and Conservation Status of the Red-browed Parrot *Amazona rhodocorytha* in the State of Minas Gerais, Brazil (see *Conservation and Research Program Field Projects, below*).” In addition, a modest grant from The Batchelor Foundation enabled RSCF to compile an historical, video mini-documentary of the Red-brow recovery effort, released mid-2015 (Black Door Films, Inc.). Ultimately, the RSCF-TLPZ-Brazil collaboration will coordinate husbandry and captive-breeding methods, prepare field recovery strategies, and implement international governmental regulations to thwart trade in the species and reinforce species-level authority and sovereignty by the Brazilian government. During 2015, after 23 years of artificially incubating and hand-rearing all Red-brow offspring at the Conservatory, RSCF allowed all breeding Red-brow pairs to naturally incubate and rear their young. Eight Red-brows were successfully fledged from five breeding pairs. 2016 saw an additional 4 Red-brows added to the flock.

**The white-bellied Caique parrot:** RSCF’s 2016 on-site population of *Pionites leucogaster xanthomeria* totaled six breeding pairs. In 1999, RSCF concluded the longest running (10 years) and most successful breeding and research



program on the white-bellied caique parrot. After compiling five years of reproductive and genetic data from a founder breeding population into a husbandry manual and population management system, RSCF developed the breeding protocol for this species, which is now used in aviculture worldwide. In 2000, RSCF's focus turned to placing the remaining genetically important stock with zoological institutions in the U.S. and the Graeme Hall Nature Sanctuary in Barbados (birds delivered in early 2001), and continuing to support the genetic and husbandry database. During 2001, RSCF completed the reduction of the Conservatory's white-belly inventory, with the remaining birds to be maintained indefinitely at the Loxahatchee facility. Since early 2002, *Pionites* will only be reproduced by special request from wildlife parks, accredited aviaries, or avicultural centers.

***The East African Bongo:*** One of the most spectacular mammals bred at the Conservatory is the Mountain (or East African) Bongo, a large antelope facing extinction in the wild. The vegetation and climate at the Conservatory have proven ideal for propagating and researching this shy, forest-dwelling bovid. In 2003, RSCF commenced an inter-institutional project with the U.N. Foundation and U.N. Development Programme to establish an *in situ* breeding program for bongo in Kenya at the Mt. Kenya Wildlife Conservancy. Entitled ***Repatriation of Mountain Bongo Antelope to Mt. Kenya World Heritage Site***, this initiative represents the successful completion of the first of several conservation steps needed to reestablish a self-sustaining, wild population of bongo on Mt. Kenya and in the Aberdares and surrounding ecosystems, and stimulate a broad base of conservation program support for the Mt. Kenya World Heritage Site and Aberdares National Park and Conservation Area—both global-priority biodiversity areas.

RSCF coordinated the project as an NGO contractor to UNDP, was consignor for the bongo export (receiving legal title to all animals donated to the project and repatriated to Kenya), and also donated four bongo from the RSCF population to the effort. In 2009, RSCF Research Associate Lyndon Estes completed his Ph.D. at the University of Virginia, focusing on the ecology and habitat utilization of wild bongo in the Aberdares. This research complements other recovery efforts, both *ex situ* and *in situ*, by helping to identify appropriate habitat for sustainable reintroduction, train local guides and researchers, and bolster monitoring and protection of the remaining wild bongo population. Along with the United Nations Development Programme (Small Grants Programme) and partnering NGO's, RSCF helps sponsor the Aberdares bongo surveillance effort (BSP—Bongo Surveillance Programme, [www.mountainbongo.org](http://www.mountainbongo.org)), coordinated with the local NGO Rhino Ark ([www.rhinoark.org](http://www.rhinoark.org)). On the *in situ* captive front, RSCF has provided technical and veterinary services to the Mt. Kenya Wildlife Conservancy and helped sponsor general husbandry and animal care for the repatriated bongo group. During 2007, RSCF completed formal collaborations with Dr. Michael Bruford, University of Cardiff, Wales, to genetically assess the wild Aberdares and Mt. Kenya populations via mtDNA and microsatellite analyses of field-collected dung samples. This program confirmed species identities and haplotype variation in wild populations, as it also trained a Kenyan graduate student in molecular genetics laboratory methodology. Co-sponsored by Rhino Ark, this trained technician has brought state-of-the-art molecular laboratory techniques and expertise back to Kenya. In addition to corroborating field teams' detection of bongo presence in the field, the analyses produced a microsatellite protocol (using bovid markers) for discriminating individual bongo genotypes from bongo dung. During 2007 RSCF donated an ELISA fluorimeter to Analabs, Ltd. (Nairobi) to assist in the isolation and identification of bovine infectious diseases that impact both wild and agricultural bovine populations. Early detection and intervention is critical to thwart periodic outbreaks of *Theileriosis*, rinderpest, hoof-and-mouth disease, and other viral and parasite-borne infections that cross between domestic and wild bovinds.

A detailed summary of research findings and management recommendations can be found at [www.rarespecies.org](http://www.rarespecies.org) in the document entitled "Mountain Bongo Research Summary", compiled by former Research Associate Lyndon Estes. Current program expansion includes enhancing surveillance capacity for the BSP, providing direct support for the Bongo Program Coordinator and field staff within Rhino Ark, ongoing surveillance, monitoring and population assessment throughout the bongo's range, and continuing a comprehensive genetic assessment of all living bongo (captive and wild) using micro-satellite DNA analysis (with RSCF trustee Dr. George Amato, Director of Conservation Genomics, American Museum of Natural History—see *Other African Wildlife Initiatives*, below). Program partners, including the Center for Conservation of Tropical Ungulates (CCTU), White Oak Conservation Center and European EEP institutions, have pledged direct and in-kind support for capacity building, field logistics,

and tangible conservation implementation in the Aberdares and on Mt. Kenya. During 2016, RSCF transferred \$118,000 to the Rhino Ark Charitable Trust for ongoing BSP surveillance, protection and research activities in the field. During 2016, the Kenya Wildlife Service, RSCF and the Rhino Ark team finalized a comprehensive health assessment of bongo at the Mt. Kenya Wildlife Conservancy (MKWC) as part of technical planning for translocations to Mt. Eburu, which has been entirely fenced. In December, RSCF delegates Reillo and Davis, DVM traveled to Kenya to visit all wild-bongo habitats, review translocation and repatriation options, and assess animals at MKWC as part of an extensive KWS-invited “experts visit”. The RSCF team made specific husbandry, management and recovery recommendations at the National Bongo Task Force Meeting that were immediately adopted into the Bongo Action Plan. Most significantly, performance metrics set by RSCF delegates must be met by MKWC by July 2017 as part of the Action Plan. Several recovery options are under development, including a possible second repatriation by early 2018.

**Florida Bongo Ranching Program:** During 2016, RSCF continued coordinating the Florida-based bongo management consortium among three key facilities— RSCF, the Micanopy Zoological Preserve and CCTU— to help maintain a healthy *ex situ* bongo population and provide animals for repatriation and reintroduction in Kenya as necessary. RSCF developed the ranching initiative upon request by the Rhino Ark Charitable Trust and Bongo Surveillance Programme (working collaboratively with the Kenya Wildlife Service), which anticipate multiple *in situ* bongo management centers over the coming years. The ranches coordinate long-term breeding, management and surplus with RSCF and the International Studbook and contribute to *in situ* conservation via philanthropic support. All animal transactions are reported to the USDA and FWC in accordance with permit regulations.

**Other in-house projects:** During 2015, RSCF phased out management efforts for Hawk-headed parrots (*Deropitrus accipitrinus accipitrinus* and *D. a. fuscifrons*), primarily due to aging animals and the death, from old age, of the last-known, male Brazilian hawk-head in North America. RSCF continues to maintain a small group of the nominate race of hawk-heads, along with Golden conures (*Guaruba guarouba*), Pygmy marmosets (*Cebuella pygmaea*), Golden Lion Tamarins (*Leontopithecus rosalia*) and Golden-headed Lion Tamarins (*Leontopithecus chrysomelas*). RSCF participates in AZA (American Zoo and Aquarium Association)-sanctioned Species Survival Plans, Population Management Plans and studbooks for all housed species, and voluntarily maintains its animal database with ISIS, the International Species Information System. During 2016, pygmy marmoset breeding was again expanded to help recover the dwindling North American captive population, although the demographics of the population continue to pose significant, long-term challenges to recovery (male sex-ratio bias). RSCF maintains 11 family groups. RSCF’s commitment to Golden-headed Lion Tamarins (*Leontopithecus chrysomelas*) and Golden Lion Tamarins (*Leontopithecus rosalia*) is unwavering and RSCF works closely with the population managers for both species.

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**Tropical Conservation Institute at Florida International University (FIU):** RSCF and FIU formally teamed during 2014 to launch a broad interdisciplinary and international conservation platform named the Tropical Conservation Institute (TCI) under FIU’s School of Environment, Arts and Society. A collaboration agreement between FIU and RSCF (executed in 2014), which establishes how TCI will be coordinated and run, links both organizations to a \$5M challenge grant agreement between The Batchelor Foundation and FIU, which will help establish initial TCI operating capital and leverage all incoming, new program revenues over the next five years. After serving as Senior Research Fellow to FIU during the development phase of TCI, Reillo was appointed TCI co-director with Mike Maunder, Ph.D., Associate Dean for Research Engagement at FIU School of Environment, Arts and Society.

A full prospectus for the Institute, including budget and program priorities, is available upon request.

#### **Overview—FIU Tropical Conservation Institute, School of Environment, Arts and Society**

Building upon its history of excellence in conservation education and research, FIU has established the Tropical Conservation Institute (TCI). In partnership with the Rare Species Conservatory Foundation (RSCF), the School of Environment, Arts and Society (SEAS) in the College of Arts & Sciences will stop extinctions by empowering FIU

graduates and conservation practitioners to protect ecosystems and species in the tropics and sub-tropics. TCI will leverage SEAS' broad portfolio of research, education, and outreach programs focused on tropical and sub-tropical ecosystems. FIU's geographic expertise in conservation extends from South Florida to the Caribbean, Central and South America, Africa, the Pacific and Asia. These regions comprise the top global biodiversity hotspots - areas of exceptional species richness facing extraordinary threats. TCI will build upon the years of innovative and successful conservation methods and programs developed by RSCF and combine them with FIU programs to position TCI on the leading edge of tropical conservation action, education, research and outreach. The scope of the partnership will position TCI to be truly transformative on a global level.

### **The Need**

Biodiversity, an essential foundation for a sustainable future, is being lost at an accelerating rate. We must act swiftly and decisively to protect biodiversity, and develop solutions to preserve critical species and their ecosystems while ensuring that human communities prosper. Nature's plight demands new approaches to conservation, in particular those that focus on species survival and ecosystem protection. Innovation is key for implementing real-time conservation action and training the next generation of conservation professionals here and abroad. A novel academic platform is needed to deliver effective conservation education, training and on-the-ground programs — linking universities, practitioners and institutions dedicated to conservation.

### **The Vision**

The FIU Tropical Conservation Institute will address the critical issues driving wildlife to extinction and the decline in ecosystems, including habitat loss, wildlife trade, climate change, competition over water and land resources and disruptions to coastal marine ecology, in effect, developing tools to prevent the extinction of tropical species. Our global collaborators in academic institutions, NGOs, governments, and the private sector have long recognized FIU's leadership and international influence in the field of tropical conservation. FIU's degree programs in Biological Sciences and Earth and Environment have trained thousands of students for careers in environmental conservation around the globe.

As the primary partner, the RSCF, offers decades of experience solving critical conservation problems and a network of collaborating organizations in biodiversity hotspots. RSCF designs sustainable recovery programs for endangered flagship species in the wild, and works in collaboration with governments and other conservation/research organizations to protect critical habitats. RSCF also provides consulting and technical services to conservation teams, and forms educational, political and economic partnerships to expedite conservation projects.

Initially, the FIU Tropical Conservation Institute will work with some of the world's most threatened species in three bio-geographical areas — Latin America and the Caribbean (including South Florida), East Africa and the tropical Pacific.

### **The FIU Tropical Conservation Institute will save species by establishing:**

- Partnerships and collaborations to deliver transformative conservation programs.
- A network of Conservation Fellows — extraordinary scientists who will enhance research opportunities, provide field training for students, and deliver innovative courses for undergraduate and graduate students.
- Enhanced student and faculty professional opportunities, offering access to specialized conservation facilities in South Florida and around the world.
- FIU as an international leader in applied conservation training for local and international students. New professional master's programs will attract conservation practitioners and decision makers from around the world.
- New collaborations between science and the humanities to increase public understanding of biodiversity loss

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***Feral parrot monitoring:*** During 2016, RSCF continued non-invasive assessment and monitoring of a non-native, Palm Beach population of Green-cheeked Amazon parrots (*Amazona viridigenalis*). Globally endangered and endemic to Mexico, the species has persisted on Palm Beach since the 1940's. RSCF has monitored the population for 20+ years, under an agreement with the Breakers Hotel and special permitting from the Florida Fish and Wildlife Conservation Commission. Activities include nest-site monitoring, intra-cavity inspections and video recording, banding/weighing of chicks, rehabilitation, public education and outreach (with The Breakers' education staff) and annual recruitment estimation.

***Florida Grasshopper Sparrow:***

[U.S. Fish and Wildlife Service Grant Agreement # F12AP01156, Captive Breeding, Florida Grasshopper Sparrow]

Captive recovery strategies for the Florida Grasshopper Sparrow (*Ammodramus savannarum floridanus*, hereafter FGSP) continue to develop between USFWS, RSCF and the broad FGSP Working Group. As stipulated in the grant contract and earlier reports, RSCF was requested to initially provide technical assistance to a pilot captive-breeding effort for the Eastern Grasshopper Sparrow (*A. s. pratensis*) to be conducted by B. Lohr at UMBC, and to concurrently develop and integrate a captive breeding strategy for FGSP in Florida.

Since the captive program was initiated in 2013, RSCF has engaged in discussions and workshops addressing wild population assessments and multiple recovery approaches. These include numerous discussions with USFWS staff and consultants and participation in all FGSP workshops—both by phone and in person. Reillo and Lohr also communicate frequently to discuss nutritional, developmental and veterinary issues with the *A. s. pratensis* in Lohr's lab, methodologies, and research applications to FGSP recovery.

Significantly, in 2015, seven FGSP were brought into captivity for the first time. Five four-day-old nestlings and two parent-reared (hatch-year) birds were delivered to RSCF by USFWS personnel in May and July 2015. The nestlings were hand-reared by RSCF staff using a protocol developed by songbird rehabilitators. All nestlings developed normally and fledged at nine days of age (independence at 23 days), with weights and behaviors that mirrored wild FGSP fledglings. The parent-reared birds and hand-reared birds were socialized in a large, indoor flight enclosure (for full description see RSCF technical reports and website). Field-recorded FGSP songs were broadcast throughout the critical learning period for song development. Altogether, 3 male and 4 female FGSP, comprising two hand-reared clutches (2.3) and two HY birds (1.1) were successfully raised and maintained at RSCF through 2015.

**Summary of 2016 captive-FGSP breeding activities:**

Following the loss of the single wild-caught, 2015 HY male (07415) to an owl attack, the captive breeding stock for 2016 consisted of 2.4 adults, all but one of which were hand-reared in 2015 from field-collected nestlings (the exception is a 2015 HY female from TLWMA). The hand-reared females and both males (clutch-mates) originated at Destiny. The rearing and housing of these founders is described in FP12AP01156 progress report dated 4 January 2016.

During the 2016 breeding season, every captive adult bird attempted reproduction multiple times, with fertile eggs from every female and both males. Three of the females, housed together with an unrelated male, successfully hatched chicks, and one of these successfully raised two clutches (4 chicks [3.1] and 2 chicks [2.0], respectively) to independence without help from the male. Neither male assisted with rearing, nor supported any of the nesting females, which may at least partially explain the nest failures from the other three females.

The successfully reared, captive-bred young, all from one female, totaled 5 males and 1 female. All male offspring died suddenly within two weeks of achieving independence, with no signs of illness or other problems. These male offspring were robust, healthy-looking and in perfect feather. Necropsies and histopathology were inconclusive. Dr. Joseph DeRisi's lab at UCSF failed to identify a pathogen using deep, next-generation sequencing. The mortality pattern among these offspring—albeit all from a single breeding pair—strongly implies a sex-linked or sex-limited predisposition. Further post-mortem tissue testing by the University of Georgia's Infectious Disease Laboratory (UGA) confirmed the presence of an *Atoxoplasmosis*-like protozoan in one of the parent-reared, captive-bred male offspring. UGA's current sequencing analyses aim to identify the protozoan and help develop a practical assay for live birds. In stark contrast, the captive-bred female offspring is healthy and has never exhibited signs of illness.

Fourteen additional FGSP were hand-reared during the 2016 breeding season, all products of a valiant rescue effort by TLWMA and USFWS staff following two major flooding events in May. These 14 young FGSP consist of 1 field-collected fledgling, 3 field-collected nestlings, and 10 resulting from artificial incubation of field-collected eggs from flooded nests. Twenty-three collected eggs, mostly found floating, were artificially incubated, of which 21 hatched, validating RSCF's targeted incubation parameters (37.65 C; 62% RH, turning 11 times/day 180 degrees + twice daily 90-120 degree). Upon pipping, eggs were transferred to a hatcher at 37.55 C, 75% RH, no turning. The hand-feeding protocol from the 2015 season, previously described, was applied to all hand-reared chicks. The resultant sexes of the 2016 youngsters are 8.7.

2016 youngsters were housed socially upon reaching independence. Since the incubator-hatched broods were staggered, birds developed and reached independence over a month-long period, necessitating housing in multiple indoor enclosures. As in 2015, all youngsters were exposed to a continuous, random-sequence loop of natural FGSP vocalizations (buzz and warble) during daylight hours; this exposure is maintained for six months. By the end of the 2016 season, the captive FGSP were distributed among three sparrow houses: (1) sparrow house #1 with the original, large enclosure housing 1.3 adults; (2) sparrow house #2, with mostly older, field-collected youngsters including the parent-reared female in one, large enclosure; and (3) sparrow house #3, with two groups of three incubator-hatched youngsters each housed in separate suspended enclosures, and one pair of adult birds (from sparrow house #1 porch enclosure) in a separate, suspended enclosure. An ISIS/ARKS Taxon Report filed with USFWS reflects the captive FGSP inventory.

### **Housing and maintenance**

During 2016, FGSP housing accommodations were expanded substantially, but the general husbandry protocol follows from that implemented during 2015. The original sparrow house (#1) was not disturbed during the breeding season aside from routine servicing, cleaning and mat-changing as needed. A soft-sided outdoor enclosure prototype, 12'x15'x8', was built to accommodate field-collected HY's and/or adult birds as per the FGSP collection-plan recommendations from both 2015 and 2016. However, no wild HY's or adults were collected for RSCF's FGSP population, and this finished, landscaped enclosure has yet to be utilized.

A second sparrow house, similar to house #1, was completed in May to accommodate rescued nestlings and incubator-hatched chicks once they became independent. This structure has the same features as house #1, with full-spectrum UVA/UVB lighting, oat grasses, climate control, ambient and timer-driven photoperiods, etc. A large (4'x5'x12') flocking enclosure, which can be subdivided, is suspended above a bank of five smaller (30"x3'x4') cages separated with plastic partitions. As chicks became independent during the 2016 season, they were grouped by age and distributed among enclosures in sparrow house #2.

A third sparrow house was completed in August 2016 to accommodate breeding pairs, in anticipation of the 2017 breeding season. Two banks of suspended cages, one above the other, and separated by plastic partitions, provide a sufficient number of segregated spaces for all possible breeding pairs. House #3 features the same lighting, climate control, photoperiod, ambient temperature ability, ventilation, etc. as houses #1 and #2.

All FGSP enclosures are serviced three times per day, and more often during breeding activity. Fresh water, seed and a variety of live insects are provided throughout the day. Substrates are changed and cleaned as necessary, and calcium supplements are provided several times per week, along with cuttlebone being provided in all enclosures at all times.

A dedicated, stand-alone insect house has been added to maintain the large number of live crickets, mealworms, and fly larvae fed to the FGSP. Insect growth media and substrates are attended to daily, and up to three insect shipments arrive per week. Timberline Industries, the U.S. leader in cultivated feeder insects, is donating calcium-supplemented waxworms, mealworms and crickets to RSCF, with RSCF paying only for shipping. This arrangement enables a considerable savings on the running costs for maintaining the FGSP colony. Similarly, Dyson has donated quiet fans for the sparrow houses, and RSCF/TCI is approaching Dyson for additional sponsorship.

### **Data collection, data files, interpretation**

Numerous, comprehensive datasets derive from the 2016 season, all filed with USFWS. They include the field-collection log from TLWMA, detailing clutches of nestlings or eggs collected and transferred to RSCF and their fates. This dataset dovetails with the daily activity logs for all rescued chicks and eggs (and incubation results), and ultimately is condensed in a table showing the schedule of hatching and development for all successfully reared FGSP. Running activity logs document the intensive care given to hand-reared nestlings and include notes and annotations indicating problems, medical intervention, euthanasia, developmental observations, etc. Similarly, daily activity logs document breeding, nesting and chick-rearing activities among adults in sparrow house #1. These data present total reproductive output, expressed as numbers of eggs laid, fertility, hatches, and successful fledges/weaning.

The volume of simultaneous observations among hand-reared and parent-reared clutches and the high number of activity notes associated with each, render these logs somewhat unwieldy. Essential information has been digested into graphical form, available upon request as a PDF of a PowerPoint presentation, with appropriate notes and comments embedded.

Sections of the 2016 progress report are currently being prepared for peer-reviewed publication pending the results of genome-sequencing and pathogen analyses. Throughout the 2016 season, press releases and media outreach, coordinated with USFWS, have communicated major developments in the FGSP captive-breeding effort. The Orlando Sentinel, Audubon (Florida and national) and National Public Radio featured stories on the FGSP.

### **Discussion**

*Captive-bred FGSP:* The first captive FGSP breeding was achieved at RSCF during the 2016 season, with one female (L0551B) successfully rearing six offspring to independence without assistance from the male (L072515A). Given the very limited number of founders (six) from three clutches, and the necessary social grouping of birds (1.3 in the house #1), this is an unexpectedly fortuitous and significant outcome. While the female incubated eggs, and brooded and raised her chicks, RSCF keeper staff provisioned her hourly with live insects. All successfully brooded chicks were raised to independence without antagonism from the other adults in the enclosure. In addition to the successful clutches, this female attempted several unsuccessful clutches, including chicks that were hatched and discarded. In her second successful clutch of two youngsters, two other hatchlings were discarded from the nest a day after hatching, consistent with brood reduction.

All other adult females exhibited multiple reproduction attempts and all laid fertile eggs. All three females in the group enclosure successfully hatched chicks, but only L0551B successfully reared hers to independence.

The males (hand-reared siblings) did not assist any of the females during incubation, brooding or post-fledging. The combination of multiple successful and partially successful clutches among females in the group enclosure evidences the FGSP females' tolerance of one another nesting in close proximity. Even greater evidence is a communal nest, comprising 10 eggs from the three females in the main enclosure, which was periodically, and sporadically, attended to by all three females. Two females were observed to occasionally sit this nest simultaneously, and no competition or aggression was observed among any of the females. All eggs from this nest were candled after five days, proved to be infertile, and were removed.

The implications of communal nesting—even as a likely artifact of captive breeding in an indoor enclosure—deserve comment. From our observations, FGSP females do not compete with one another and may build nests close to one another, or share a single nest. Female clutch-mates (e.g., L05515A and B) appear to preferentially associate with one another both during and outside of nesting. We suspect that familial relationships and sociality may affect distribution and nest-site selection among FGSP females. Adult males, however, are extremely territorial and altogether intolerant of one another in enclosures with maturing/mature females. Chasing and feather-pulling were commonly observed among males nearing maturity (>8 months of age). As Lohr previously observed with GRSP in activity, males may also be quite abusive toward females before and during nesting. Males were observed antagonizing and chasing females off nests even after successful courtship and mating, and such chases also occurred while females were brooding or weaning their chicks.

The sudden death of all male, parent-reared youngsters at approximately 30 days of age was unexpected, especially in light of their excellent body condition, disposition and behavior. This, coupled with the simultaneous health challenges encountered in the nursery with incubator-hatched chicks, prompted the RSCF team to conduct bacteriological cultures and submit multiple specimens to various diagnostic laboratories (e.g., Micrim, Rainforest Clinic for Birds, UGA, DeRisi/UCSF). In contrast, the single, parent-reared female from clutch #2 has been healthy and robust since hatching.

Necropsies and histopathology of parent-reared males were largely inconclusive. Deep-pathogen, next-generation genomic sequencing of these youngsters and other mortalities among incubator-hatched birds failed to detect a viral or other pathogenic agent. However, after much persistent, follow-up testing, UGA reported a positive *Atoxoplasmosis* test result from one of the parent-reared males. PCR analysis of spleen and muscle tissue concluded presence of an extra-intestinal protozoan, but PCR cannot discriminate among *Atoxoplasmosis*-like protozoan species and organisms. UGA is currently conducting additional sequencing and other pathogen testing to identify the organism from this positive sample and hopefully develop a non-invasive testing assay for live FGSP.

Rescued nestlings and eggs: As in 2015, all field-collected nestlings were successfully raised without incident during 2016, employing the same hand-feeding formula and protocol previously reported. Immediately following the May floods, TLWMA staff brought a large number of FGSP eggs to RSCF for candling and assessment. Reillo candled all of the eggs and determined that 23 were potentially viable, spanning from ~2-7 days of natural incubation. These were placed in a prototype Alpha-Genesis 3000P top-heated incubator. Over the course of the next three days, Reillo carefully and continuously adjusted incubation parameters to yield the best vascular development across most of the eggs, ultimately centering on 37.65 C, 62% RH, turning eggs automatically 11 times/day @ 180 degrees/turn, plus turning manually twice daily @ 90-120 degrees/turn). Upon pipping, eggs were transferred to a separate hatcher maintained at 37.55 C and 75% RH, with no turning.

Twenty-one of the 23 incubated eggs successfully hatched, all without assistance. All hatches were strong and typically occurred on day 11 or 12 of the estimated incubation schedule. All hatchlings were brooded initially at 37.3 C / 70% RH for two days, after which they were transitioned to gradually lower temperatures and 70% RH over the course of the next week. Six brooders, varying in temperature from 36.3 C to 28 C, housed chicks until they fledged (9 days), at which time they were transferred to small cages at ambient, room temperature (25-27 C) for weaning. All chicks were kept in marked cups while brooded and segregated by brood until banding, so individual identity could be tracked continuously from time of hatching. Weaning cages varied in size to accommodate different numbers of similarly aged birds, with birds ultimately socially grouped in sparrow house #2 as previously described.

Incubator-hatched chicks were initially hand-fed half-hourly or hourly from 0600 hrs – 2200 hrs. Feeding frequency decreased with chick age through weaning, which typically was achieved by 21-25 days of age, as per the previously described hand-feeding protocol.

The viability of incubator-hatched chicks varied within and between broods, and the successful fraction of each clutch generally declined over time, signaling that early-incubated chicks were generally more robust and successful than later chicks, both within and between clutches. However, at least one individual from each field-collected clutch survived to independence and beyond. Early-hatched chicks encountered fewer developmental and health problems than later chicks, and also tended to be male—although the temporal sex-ratio bias co-varies across both brood and time. The small number of individuals from near-synchronous broods frustrates differentiating these factors statistically. The resultant sexes of all rescued nestlings and eggs is 8.6. Adding the captive-bred, parent-reared female, the total equals 8.7 youngsters added to the RSCF captive population during 2016.

Enteritis, gut flora, immunology: Approximately half of incubator-hatched chicks developed severe enteritis/diarrhea during the first few days of life. Some also exhibited developmental abnormalities (e.g., stunting, failure to thrive), expressed as poor growth or arrested development. Despite treatment with antibiotics, pro-biotics and anti-fungal medication (following repeated cultures that proved negative), most of these early-illness chicks either died within a few days or were euthanized once they failed to clear the hand-feeding formula, failed to gain weight for three or more days, or were unable to stand or gape.

All deceased chicks were necropsied, with reports kept on file for future reference. A representative sample of these mortalities also was sent to UCSF for pathogen/genomic sequencing along with specimens and tissues from the male, parent-reared captive-bred offspring. The next-generation sequencing failed to detect a pathogen although iterative sequence-data filtering (infomatics) is ongoing. Similarly, gut-bacteriological cultures were either negative or inconclusive for the incubator-hatched neonatal mortalities, which might be expected due to the severity of the enteritis, low gut-retention time, rapid dehydration and small intestinal volume.

Hand-rearing day-one, incubator-hatched FGSP chicks is an extremely difficult, labor-intensive and technically exacting process, which likely was complicated during 2016 by all eggs having been field-collected following heavy rains. Nonetheless, 10 of 21 incubator-hatched chicks survived. To what extent the eggs may have been compromised by environmental contaminants or other factors is unknown, as is the degree to which natural mortality and natural brood reduction by brooding females would have produced a similar fledgling yield.

Field sampling, recovery concerns: Our difficulty diagnosing and treating the enteritis encountered with young incubator-hatched neonates prompted an investigation of natural gut flora in wild FGSP. While chicks were being hand-reared in the nursery, choanal and cloacal swabs of nestlings in wild nests were cultured to help illuminate the spectrum of naturally occurring bacteria in wild FGSP, from which useful comparisons might be made to hand-reared chicks. Surprisingly, nearly all field-collected samples (batched by clutch) revealed heavy growth of multi-drug-resistant bacterial isolates. Whether these isolates identify potentially pathogenic strains or are simply harmless commensals is unknown but warrants additional investigation and discussion. The heavy-growth, gram-negative, multi-drug-resistant bacteria, spanning several species, is cause for concern. The drug resistance is broad-spectrum, including second-generation quinolone antibiotics. Bacteria with such resistance, even if non-pathogenic, should be considered environmental contaminants and alien to FGSP physiology and the sparrow's natural ecosystem. Agriculture (e.g., the use of antibiotics in production livestock) is a likely source of contamination, facilitated by many possible biological vectors and environmental connectors between agricultural areas and the FGSP prairie ecosystem. Widespread antibiotic resistance has now become a global wildlife conservation concern, after emerging as one of the most daunting human-health challenges.

The presence of multi-drug resistant bacteria in wild FGSP complicates interpreting the developmental challenges among the incubator-hatched FGSP. Our difficulty in identifying, much less treating, the enteritis could be due to inherent, pathogenic drug-resistant bacteria vertically transmitted from wild FGSP parents to eggs and offspring.



Treating such cases is problematic, since broad-spectrum antibiotics can be highly destructive to young neonates' developing immune systems and often suppress physiological development overall. In addition to this, we know that our hand-feeding formula, while 100% successful with four-day-old-and-older nestlings, is an imperfect substitute for the parents' natural feeding process.

The presence of these bacteria in wild FGSP suggests the possibility that at least some wild FGSP are immunologically challenged. Apart from natural, beneficial gut flora, drug-resistant bacterial isolates may impose immune-system stresses and weaken the FGSP's ability to defend against infections and overgrowth of unhealthy bacterial strains. All of the FGSP bacteriology samples indicated heavy growth of bacterial species, indicating that the FGSP are actually harboring these species, as opposed to the isolates being transient.

Unlike the FGSP samples, similar sampling of CSSS nests revealed virtually no drug-resistant gut bacteria—a healthy finding we would have expected among birds found on the vast central-Florida prairie. This stark contrast between samples warrants further investigation into how possible wild-FGSP immuno-suppression and disease resistance may affect immediate and long-term population recovery. Such research also bears upon the viability of captive breeding, since endemic diseases, which would now be inherent in the FGSP founder and first-generation groups, may constrain captive-breeding yield. The sudden death of all male, captive-bred, parent-reared offspring during 2016 is a flag for such a disease agent. Whereas we suspect this agent is protozoal, any additional immunological challenges only further inhibit recovery options.

#### **2016-2017 Captive FGSP Recommendations:**

The 21 captive FGSP at RSCF span 12 different broods from TLWMA and Destiny. Of these, only one 2015 HY female (L081115) can be considered a wild, parent-reared founder. She and the single captive-bred, parent-reared female from 2016 represent the only two parent-reared birds at RSCF. All others started as either hand-reared, field-collected nestlings or hand-reared, incubator-hatched chicks.

**In light of the flock composition and this year's findings, we again recommend that a stratified sample of all remaining wild, parent-reared FGSP be collected to ensure a genetically representative, captive base population.** Moreover, wild, parent-reared birds have natural behaviors that are essential for future parent rearing, proper vocalization development and retaining as much wildness as possible in the captive flock. Males are urgently needed, since neither of the hand-reared (sibling) males has exhibited parental care. All males in the 2016 cohort are similarly hand-reared.

The FGSP captive-breeding strategy has become more complex than originally envisioned. While the RSCF population is genetically diverse, most broods are represented by a few hand-reared individuals. If a protozoan or other pathogenic agent inhibits captive birds' parent-rearing capabilities, future offspring may need to be hand-reared to circumvent the neonatal morbidity/mortality period (e.g., if the agent is *Atoxoplasmosis* or something similar).

The immediate priorities are to identify the agent implicated in the deaths of the captive-bred offspring and assess its pathogenicity, after which we may be able to design a breeding approach to evaluate differential resistance and selectively breed around the problem. If sufficient pathogen-resistance variation is exhibited across extant bloodlines, a breeding-selection scheme can be applied to select for birds that successfully parent-rear at least partially resistant offspring. This selection process is a function of how much additive genetic variation is needed to determine differential resistance, how much genetic variation exists among partially resistant individuals, and how much genetic variation will be compromised by selecting for partially or fully resistant broods. With sufficient replicates of reciprocal breeding pairs (all of which would likely need to be products of hand-rearing), most of the captive-population's genetic diversity theoretically can be preserved, even with the putative pathogen present in the base population. Ultimately, only those pairs that confer resistance to their parent-reared offspring would become breeders, which necessarily will be a subset of the initial breeding matrix. The greater the number of unrelated, reciprocal breeding pairs, the greater the odds of achieving multiple bloodlines with some resistance. However, this

captive-breeding plan is theoretical until the pathogen is identified and its pathogenicity assessed. If the agent is highly pathogenic, there may not be sufficient differential resistance for directional selection to achieve a desirable result.

The above breeding plan will likely require hand-rearing youngsters for two-three years to create a sufficient base population to evaluate differential pathogen resistance via parent rearing. Partially resistant bloodlines will comprise a subset of the base population, representing a post-selection group from which the captive-breeding program can continue. All other factors notwithstanding, we foresee a minimum of five years of intensive captive-breeding, gradually incorporating an adaptive strategy of hand- and parent-rearing, to ultimately produce a robust captive population with breeding pairs that can exclusively parent-rear their young.

The costs associated with a protracted captive-breeding program are considerable. The wild FGSP population's dire state punctuates the necessity of captive-breeding as the only feasible hedge against extinction. Exploring ways to at least partially privatize the finances of the FGSP captive program, for example via support from private philanthropy, collaborative NGO's and conservation groups (e.g., Audubon, American Bird Conservancy), could help strengthen and diversify program funding and potentially defray operational costs over the long-term.

Many significant and unexpected discoveries resulted from the 2016 FSGP captive-breeding effort. The prognosis for a self-sustaining captive population is bright, but a successful program will require steadfast financial support and focused husbandry expertise for many years. Prospects for effective wild-population recovery that derive from captive breeding should, in our collective opinion, be considered distant until a self-perpetuating captive population is established.

**2016 Addendum: Annual report from Dr. Bernie Lohr, (for \$50,352 sub-award to UMBC for GRSP research, 2015-2016):**

Breeding efforts with captive eastern Grasshopper Sparrows have been ongoing at the University of Maryland Baltimore County. Birds at that facility consisted of 9.11 adults at the start of 2016, including two females that had been reared the prior year in the laboratory. Birds were paired (8.8) early in 2016 in 56"L x 23"D x 20"H breeding cages (6.6) and 36"L x 20"D x 20"H breeding cages (2.2) (barriers separated males and females of a pair until they demonstrated breeding readiness - male CP, female nest-building). Surplus birds were held individually in separate cages in the same room (36"L x 20"D x 20"H). These are the most artificial conditions of any of the three facilities currently attempting captive breeding with Grasshopper Sparrows, testing the limits of what is possible regarding captive breeding strategies with this species. Identical strategies were used as in prior breeding years to approximate natural conditions as well as possible. These included a natural simulated photoperiod tied directly to progression of the natural photoperiod at the latitude of a nearby field population, the Chester River Field Research Station. In prior years the onset of the spring photoperiod had been accelerated to a greater (~ 2X, 2015) or lesser (~1.5X, 2014) extent. Light level was augmented from prior years with the addition of 6 broad-spectrum fluorescent 4-bulb 48" ballasts, as well as 2 banks of 6 incandescent lights, though the range of light levels in the room remained over an order of magnitude below light levels on sunny days outdoors. Humidity levels were increased above ambient, and as in earlier years remained between 30 - 60% depending on external conditions. Finally, as in prior years, extended breeding season recordings made at the nearby field site, including the calls and songs of wild Grasshopper Sparrows (~ 2 hour loop), were broadcast into the room at appropriate sound pressure levels to simulate background ambient sound at the field site. As in the previous years, canary pairs were available as potential surrogate brooders for any eggs produced by the sparrows, with plans to split fertile eggs between our incubator and brooding canary pairs.

As an additional experiment in 2016, we tested the efficacy of a precursor reproductive hormone, GnRH, which has been used successfully to raise testosterone and estradiol levels in male and female songbirds, respectively. Two targeted females (1 year old and 2 years old, respectively) received a course of 5 injections of GnRH over two weeks in late July, a time course that should result in physiologically-relevant levels of estradiol production.

Similar to the disappointing results in 2015 (initially thought to be due to the dramatically accelerated photoperiod that year), we had relatively few eggs produced in 2016. All were infertile. One female (G/S, age 2 years) produced three eggs, 2 in early June, 1 in late August (see below). A second female (F/B, age 3 years) produced 1 egg in mid June. One of the captive reared birds from 2015 (S/P, age 1 year) produced 2 eggs in early - mid June. Egg production began late compared with birds at the nearby field site (fully one month after eggs first appeared in the field), and egg production ceased at the end of June. Injections of the reproductive precursor hormone GnRH were not generally successful in inducing egg production with one possible exception. The older of the two females receiving the injections in July produced one additional egg in late August, potentially as a result of this additional treatment.

The results of the past two years stand in contrast with results from 2014 in which 7 females produced eggs (4 producing fertile eggs) for a total of 34 eggs that season, 9 of which were fertile. The lack of eggs this year is especially puzzling, as efforts were made to provide even more typical environmental cues than in 2014 (i.e. rather than accelerating the onset of spring photoperiod, photoperiod changes were set to natural parameters). In other ways conditions were nearly identical to those in 2014. The only difference is that photoperiod adjustments in 2016 were made weekly, while adjustments in 2014 were made bi-weekly.

Throughout the course of 2016 the UMBC colony had five sparrow mortalities, ranging from early April through late August. At the present time this leaves the UMBC colony with 8.7 adult birds. One male died suddenly (necropsy was inconclusive). An older female likely succumbed to senescence. Another female exhibited balance/neurological issues for several weeks prior to death, similar to two prior mortalities in earlier years. Another female declined over several days (weight loss, general lethargy), and eventually died (necropsy also inconclusive). And one of the captive-reared females from 2015 was killed by her pair-mate suddenly one morning, before they could be separated (unfortunately, this was the captive-reared female that had produced two eggs).

## II. 2016 Conservation and Research Program Field Projects

### *Dominica program:*

Over the past half-century, Dominica's endemic Amazon parrots, the Sisserou and Jaco (*Amazona imperialis* and *A. arausiaca*, respectively), have proven to be effective conservation flagships for Dominica's diverse oceanic rainforest ecosystem. Continuous parrot-conservation and public-education efforts focusing on the Sisserou, Dominica's national bird and emblem, have achieved a broad base of public support and awareness, along with significant protection of Sisserou habitat, including the oldest forest stands on the island. Both parrot species' secretive natures and Dominica's difficult terrain often have impeded quantitative research into the parrots' ecologies, even as a comprehensive parrot-conservation program has evolved and yielded tangible results. Current field-research activities continue to quantify the parrots' distribution and abundance using GPS/GIS survey methods and direct counts. Research teams use new camera technologies to monitor and document reproduction and parental care, and are quantifying the botanical inventories of critical parrot nesting and foraging habitats. The Dominica parrot-conservation program has stimulated novel research and enhanced protected-area policies island-wide, ensuring a future for the Nature Island's vast montane forests and its winged ambassadors.

Since 1997, RSCF and Dominica's government have partnered to research and conserve Dominica's parrots. The program is multifaceted, and includes:

- extending formal, legal protection to all forests surrounding Morne Diablotin, nesting stronghold for the Sisserou, and expanding protected areas to augment the Morne Diablotin and Morne Trois Pitons National Parks
- developing management and conservation strategies for the Jaco and Sisserou with Dominica's Forestry, Wildlife and Parks Division, including new protected-areas policies (Morne Diablotin National Park and recent

annexations, 1999-2005) and wildlife legislation (Wildlife Act, amended 2003-2007 and currently under Cabinet review for inclusion in a new National Parks system)

- coordinating support for ongoing research, staff capacity building and education programs with public zoological facilities, other non-profit organizations, UNDP/UNEP and local and international NGO's. Efforts include field training, delivering new research technologies and equipment, infrastructure enhancements (e.g., overhauling the Parrot Conservation and Research Centre), field vehicles, and funding outreach programs (e.g., continuous PSA's, annual Caribbean Endemic Bird Festival, trail and road signage, publications).

The broad-based conservation program has produced many significant results, including formative documentation of reproduction and bi-parental care in the Jaco and Sisserou,, delineation of key parrot habitat, and the compilation of area-specific biological inventories. Most significantly, on January 21, 2000, culminating a two-year, \$1.086 million campaign spearheaded by RSCF and the Dominican government, Dominica formally declared the new Morne Diablotin National Park, encompassing ~8500 acres (3443 ha) of pristine rainforest and the principal nesting area for the Sisserou. Since then, RSCF funds have enabled seven additional, adjacent, private land parcels to be annexed into the park, and the Morne Diablotin National Park Visitors Centre and Forestry field station to be completed and serve at a vital management outpost for the park.

*Outreach, education:* During 2015, in addition to assisting the parrot field conservation program, RSCF provided operational funding for the Parrot Conservation and Research Centre at the Botanical Gardens and continued its 14-year commitment to on-island environmental awareness efforts by sponsoring print and radio Public Service Announcements and special programming (e.g. Voice of Life Radio, DBS radio and television) and the 2015 Caribbean Endemic Birds Festival. In addition, RSCF again distributed funds from a research grant from the Loro Parque Fundacion in Tenerife, Spain for the Dominican parrot team to conduct a comprehensive population survey of the Sisserou parrot. This survey replicates the GPS/GIS parrot survey methodology co-developed by RSCF and Dominica's Forestry Division in 2001 to estimate current population size and distribution by estimating parrot densities across vast, montane forest habitat.

Significantly, RSCF provided Forestry with emergency equipment and supplies (totaling \$9482 value) following devastating Tropical Storm Erika in August 2015, which caused catastrophic flooding and landslides island-wide. The shipment included chain saws and other power equipment to enable Forestry to access difficult areas and restore trails and critical infrastructure.

*Mobile Wildlife Laboratory:* During 2011, RSCF shipped a self-contained RV from Florida and equipped it to become a stand-alone, mobile wildlife laboratory, housed at the Parrot Conservation and Research Centre in Roseau. The laboratory sleeps six and provides a flexible, environmentally controlled facility for researchers and Forestry staff working on special wildlife cases (e.g., rearing/rehabilitation of wildlife, specialized veterinary care, extended stays in the field). During 2014, additional veterinary supplies, equipment and pharmaceuticals were added to the facility—most importantly an isoflurane anesthesia machine. The anesthesia machine, the only one of its kind on the island, provides safe, reversible anesthesia for avian examinations and procedures. Reillo and support staff used the mobile lab as an operations base during 2016.

*Externship in Avian Medicine and Husbandry:* From 29 September – 10 October 2014 RSCF hosted Assistant Forest Officer Stephen Durand and Veterinary Officer/AO3 Bryon Richards (representing the Ministry of Agriculture and Forestry) for intensive, hands-on training in avian husbandry and medical care. The techniques-oriented sessions were designed to build practical capacity for personnel responsible for the care and management of the endemic Amazon parrots currently held at the Parrot Conservation and Research Centre in the Botanic Gardens, Roseau. The training covered relevant aspects of small-wildlife handling, examination, anesthesia, assessment, surgery and emergency treatment. In addition, laboratory techniques, including fecal floatation analysis and microbiology (bacterial/fungal cultures and sensitivities) were conducted. Co-coordinated by Dr. Susan Clubb at the Rainforest Clinic for Birds and Exotics (in Loxahatchee, FL) and Reillo at RSCF, the methods course emphasized routine procedures and treatments to enable Forestry/Veterinary staff ability to provide appropriate, basic medical

care for Dominica's wildlife. Forestry and Veterinary Services frequently receive animals in need of medical attention and rehabilitation. A full report of the externship, filed by Durand and Richards with the Ministry of Agriculture, is available upon request.

*Construction of a new parrot exhibit enclosure near the Parrot Conservation and Research Centre (PCRC), National Botanic Gardens:* During 2008, RSCF designed, shipped and installed a new exhibit aviary for Jaco parrots and other representative wildlife at the Botanical Gardens in Roseau. This 15'x15'x40' enclosure, modeled after RSCF's Red-brow aviary in Loxahatchee, FL enables visitors to see Jaco parrots, agoutis, iguanas, and other representative fauna in a large, free-flight, landscaped enclosure. Previously, visitors intruded upon the PCRC to glimpse the only captive Jaco and Sisserou parrots in the world. Constructed in 1991 by the Jersey Wildlife Preservation Trust and overhauled by RSCF in 1999, the original PCRC complex is headquarters for the parrot conservation and research program, spearheaded by the Forestry, Wildlife and Parks Division. The PCRC provides safe harbor for non-releasable animals, a center for captive breeding and research for the Sisserou parrot, and laboratory and veterinary space for wildlife rehabilitation. RSCF has funded and provided all diets, consumables, equipment and supply costs for the PCRC since 1997, and in 2008 supplied renovation materials (e.g., paint, carpentry supplies and tools). During 2009, this enclosure was formally made accessible to the viewing public, as the main PCRC complex was taken off-line to again serve as a full-time, protected avian research and breeding facility. As a result, the world's only captive breeding pair of Sisserou parrots at the PCRC successfully hatched the first Sisserou chick in captivity, on 5 May 2010. During 2011, the PCRC was enhanced with new concrete sills for aviary enclosures, new wiring and plumbing, and site preparation for the mobile wildlife laboratory described above. During 2014, the exhibit enclosure was outfitted with new perimeter fencing, visitor set-backs, colorful graphics, and security measures.

*Caribbean Endemic Birds Festival:* Since its inception in 2002, RSCF has sponsored the Forestry, Wildlife and Parks Division's participation in the CEBF, the broadest annual environmental outreach program for children in the Lesser Antilles (>4,000 children in 2016). The program runs for one month in May, and enables children from across the island to celebrate the richness of Dominica's bird life, totaling 228 species. The program is a collective effort between Forestry, RSCF, local sponsors and Birds Caribbean, the latter of which produces the *Journal of Caribbean Ornithology*. Each year, Forestry staff voluntarily lead presentations, tours, and media releases on the ecology and conservation of Dominica's avifauna, engaging all radio, television and print media outlets island-wide. Experienced Foresters accompany school groups on birding expeditions, seabird-watches and rainforest tours, and give illustrated presentations at the National Botanic Gardens—all on their own time. The Division also hosts a *BirdArt* contest and exhibition (300+ entries last year), for children from pre-K to Seniors (IV Form). CEBF has grown each year since its inception. RSCF's annual contribution supports transportation, supplies for educational materials, field binoculars for students, field consumables, the *BirdArt* and *Radio Quiz* programs, and press-release materials.

*Establishing agro-processing facility in village of Dublanc.* This is an extension of the Morne Diablotin National Park/U.N. Cluster World Heritage Site program initiated by RSCF in 2000. RSCF engaged the United Nations Development Programme (UNDP) to solicit FAVACA (Florida volunteer corps.) to provide two citrus production and marketing specialists to assess citrus management in the Morne Diablotin area. The report, filed in 2006, indicates adequate acreage, production and suitable fruit quality for small-scale processing. The initiative aims to provide livelihood development for farmers and agricultural stakeholders adjacent to Morne Diablotin National Park who suffer significant crop losses to parrots and other protected wildlife. Current citrus-crop utilization is less than 40% in Dominica, largely due to on-the-tree fruit storage, and local, fresh-fruit market sales only. Micro-processing enables farmers to explore local fresh juice and extract-product markets and utilize a greater percentage of fruit set each year, thereby reducing wildlife-human conflicts. The Jaco parrot (*Amazona arausiaca*) exploits agriculture on Dominica, and while fully protected under law, the species is no longer considered imminently threatened. As opportunists, Jaco parrots supplement their food intake with readily available citrus (primarily to extract seeds), but do not rely on agriculture for adequate nutrition. The Sisserou parrot (*A. imperialis*) does not forage in agricultural areas. Smaller birds, such as bananaquits, tremblers and thrashers, also consume agriculture, along with agoutis, maniocou (opossum) and rats.

The Western Farmers Citrus Association is incorporated and fully registered as a Community Based Organization (NGO), and serves as the local consortium for agricultural stakeholders in the Morne Diablotin area. The Association has been recognized by both Dominica's Ministry of Agriculture and the Environment and UNDP as the appropriate entity to receive duty-free agricultural concessions consigned by NGO's to Government. During 2008, RSCF delivered two state-of-the-art fruit processors manufactured in Florida by FMC, the world's largest manufacturer of processing equipment ([www.fmctechnologies.com](http://www.fmctechnologies.com)):

- 1 Fresh 'n Squeeze Multi-fruit Juicer, 240VAC, with service parts
- 1 Produce Plus Juicer (for mangos, pineapple, guava, etc.)

The shipment also included spare and maintenance parts for the machines and a fully purchased, 20' shipping container for storage, with all items consigned to the Ministry of Agriculture and the Environment as duty-free. During 2012, the Ministry officially commissioned operations of the completed micro-processing facility to the Association, which began commercial processing under its own label in early 2013. The facility is located in Dublanc, a small, coastal village situated at the base of Morne Diablotin on Dominica's west coast, and has the potential to serve growers within a 10-mile radius. During 2016, the facility processed and distributed juices under its "Jaco" label. Processing includes juices and extracts of all types, with waste material suitable for industrial uses (e.g., organic solvents), organic compost and animal feeds. This facility is intended as a model to be replicated across Dominica's agricultural communities to enhance local crop management, community cooperation and juicing efficiency, while simultaneously reducing wildlife depredation of tree-stored fruits.

During 2016, RSCF assisted the Ministry of Agriculture, Forestry and Fisheries with a grant to incentivize the recruitment of new Forestry conservation staff. RSCF, Forestry and the Ministry are working closely to advance the conservation and research programs on Dominica that have been a hallmark of the Forestry Division since 1947. RSCF also hosted Dominica's Permanent Secretary in the Ministry of Agriculture, Forestry and Fisheries and the head of the Parrot Conservation and Research Program, introducing collaborations with the new Tropical Conservation Institute and mapping future joint conservation projects.

#### ***Other wildlife initiatives:***

RSCF Board member R.D. Estes was appointed Lifetime Member Emeritus to the IUCN Species Survival Commission, in recognition of chairmanship of the Antelope Specialist Group from 1978-2004. In addition to his pivotal role in the bongo antelope conservation program, Estes is actively involved in the conservation of the giant sable antelope, through RSCF and ASG support of an Angolan ecologist who recently obtained photographic proof that the species survives in the Cangandala National Park. In 2009, Estes assisted in an ambitious translocation effort for the giant sable in Angola and provided technical support, outreach and essential documentation for the project. He again served as Resident Naturalist in Kenya's Maasai Mara Reserve, Governors Camp, during 2014 and provided guide and guard training for wildlife teams from Mozambique, Tanzania (Gremeti Reserve), and South Africa. His comprehensive treatise on wildebeest, *The Gnu's World*, drawing upon decades of research and historical population data compiled since 1967, was published in 2014. During his regular field expeditions throughout the year, Estes monitors wildebeest, elephant and ungulate populations while offering outreach and interpretive services to park personnel and visitors.

#### ***RSCF Research Associate Activities:***

*Crocodylian research and conservation by Research Associate Matt Shirley (University of Florida)*—Shirley is currently based at Florida International University and Cote d'Ivoire, developing conservation recovery strategies for the West African slender-snouted crocodile with Abidjan National Zoo and the Ivorian national parks service. A full project description, including comprehensive budget, objectives, timelines and partner responsibilities, is available

from RSCF. Recently, the IUCN Save our Species program has been a primary funder, with RSCF functioning as technical and administrative resource and zero-overhead fiduciary for Dr. Shirley's research. The project is now continuing as an extension from the original IUCN proposal's scope of work, as summarized below:

**Project Title:** *In- and Ex-Situ Conservation of Mecistops in the Upper Guinea Forest Region*

**Executive Summary:** This project aims to reverse the extinction trajectory of Africa's most Critically Endangered crocodylian (the West African slender-snouted crocodile *Mecistops cataphractus*) through captive breeding and reintroduction in the Upper Guinea forest region. The slender-snouted crocodile is a evolutionarily and ecologically unique crocodylian species endemic to the forested wetlands of the Upper Guinea and Congo biomes. Recent research has shown that the populations in these two regions have been isolated for > 7.5 million years and are readily distinguished morphologically and genetically. As a result, they are currently being split into two unique species. Crocodile surveys in West Africa over the past decade have detected < 50 individual *Mecistops*, of which only three were adults. Habitat loss and historic hunting have threatened this species and small, fragmented populations now impede recovery. To combat this, we are reviving captive breeding efforts for this species at the Abidjan National Zoo, evaluating reintroduction sites for ecological and socio-economic suitability, and reintroducing captive bred crocodiles for population reinforcement or revival in the case of local extinctions. By coordinating activities with national parks and protected areas development the project will be contributing to the burgeoning wildlife conservation efforts in Cote d'Ivoire. The long-term impacts will be further expanded through extensive capacity building with local stakeholders, national parks staff, students, community members and wildlife agents. This is the first ever project in Africa specifically designed to reinforce depleted and revive locally extinct crocodile populations.

#### IUCN - SOS Final Technical Report

### 1. Project Information

|   |   |
|---|---|
| <b>Organization:</b>                          | Rare Species Conservatory Foundation (RSCF)   |
| <b>Project Title:</b>                         | In- and Ex-Situ Conservation of Mecistops in the Upper Guinea Forest Region   |
| <b>Grant code:</b>                            | 2013A-066   |
| <b>SOS Grant Type:</b>                        | Threatened Species Grant  |
| <b>Report Author and Contact Information:</b> | Matthew H. Shirley, Project Director<br><a href="mailto:mshirley@rarespecies.org">mshirley@rarespecies.org</a> , +241(0)4894572 |
| <b>Date of Report:</b>                        | 15 January 2016   |

|  |   |
|--|---|
| <b>SOS Strategic Direction(s):</b>               | Threatened Central & Western African Vertebrates  |
| <b>Project Dates</b>                             | 1 January 2014 – 31 December 2015   |
| <b>SOS Grant Amount (US\$):</b>                  | \$90,000  |
| <b>Total Project Amount (US\$):</b>              | \$170,500   |
| <b>Focal Threatened Species:</b>                 | West African slender-snouted crocodile ( <i>Mecistops cataphractus</i> )  |
| <b>Implementation Partners for this project:</b> | Office Ivoirien des Parcs et Réserves (OIPR)<br>Université de Nangui-Abrogoua (UNA)<br>Zoo National d'Abidjan (ZNA) |

### 2. Project Progress by Objectives / Results

2A. Report on Objectives and Results. Reporting should state if Objectives and Results have been “ACHIEVED”, “PARTIALLY ACHIEVED” or are still “IN PROGRESS”. Please reference specific products/deliverables from the approved project design and other relevant information including quantitative and qualitative measurement of chosen indicators.

| Objective or Result   | Actual at Completion  |
|---|---|
| <p><b>Objective 1.</b><br/>           Implement reintroduction of captive <i>M. cataphractus</i> into the wild for the purpose of population augmentation and/or re-establishment of locally extinct populations.</p> | <p>Partially Achieved and Continually in Progress</p>   |
| <p>R1.1 Reinforce declining and revive locally extinct <i>Mecistops</i> populations</p>   | <p>To effectively achieve this result we planned to carry out 4 principle activities: 1) crocodile and habitat surveys to assess biological suitability of potential reintroduction sites, 2) community surveys to assess socio-economic suitability of potential reintroduction sites, 3) reintroduce captive-produced crocodiles at selected sites, and 4) monitor reintroduced individuals.</p> <p>Our greatest advances were in principle activity 1. We surveyed sites in 3 national parks (Azagny, Taï, and Comoë), 4 forest reserves (ForêtMaraïs de Tanoê et Ehy (FMTE), RapideGrah, Port Gauthier, and Tiapleu), 1 wildlife reserve (Reserve de Faune de N'zo), and additional non-protected areas both adjacent these protected areas and further afield. In total, we conducted +/- 900 km of surveys in potentially suitable crocodile habitat. In total, we encountered 182 slender-snouted crocodiles, though this number is certainly inflated due to the fact that our survey methodology involved repetitive counts and some individuals were undoubtedly counted more than once over the course of several nights at each site. The most positive result from these surveys, aside from effectively tripling the number of known West African slender-snouted crocodiles, was the detection of hatchlings, yearlings, and other small juveniles at each site – confirming the presence not only of adults, but of reproductively active adults. However, very few adults (n = 17) and subadults (n = 15) were encountered, suggesting that these populations have significant problems with recruitment.</p> <p>In addition to counting crocodiles, our surveys provided an opportunity to assess habitat suitability using such indicators as forest cover and other signs of intactness or degradation, presence/abundance of prey, and human activity (see below). Sites with the most intact habitat were Taï and Comoë National Parks and the FMTE, which is currently under proposal to become either a national park or wildlife reserve. In addition, Azagny National Park may offer considerable potentially suitable habitat in its interior, but these areas are incredibly difficult to access limiting our ability to date to evaluate it fully. We conducted a preliminary analysis of diet and foraging in crocodiles at Azagny, as well as assessed body condition of all crocodiles encountered, and select captured crocodiles, at all sites. Crocodiles of all species captured and evaluated at Azagny proved to be eating a varied and</p> |



sufficient diet, which is all the more incredible considering the pressure on fish and crustacean resources by the local community at this site. And, at all sites, crocodile body condition was not noticeably poor, supporting the general habitat quality and prey resource availability.

Prior to making any final decisions about sites with at least a minimum biological suitability for reintroduction we have 2 additional national parks (Comoë and Marahoué) and 9 additional forest reserves to survey. However, pending the results of these surveys, the most biologically feasible sites for reintroduction include 2 of the national parks (Taï and Comoë) and 2 of the forest reserves (FMTE and Rapide Grah) surveyed to date. The latter are particularly interesting, as they would provide an ideal opportunity to work in close collaboration with the local communities. While the habitat in Azagny may be suitable, this park was the focal park for crocodile reintroductions in the 1980's/1990's and, unfortunately, we found little evidence of long-term success of that endeavour.

At all sites surveyed we found small numbers of individuals of the other two crocodile species present in Cote d'Ivoire - West African crocodile (*Crocodylus suchus*) and West African dwarf crocodiles (*O. sp. nov. cf. tetraspis*). In the absence of slender-snouted crocodiles, which are apparently much more susceptible to hunting, habitat degradation, artisanal fishing, and other forms of disturbance, the relative abundance of these two species can be informative about habitat quality and human pressure on wildlife. For example, despite the abundance of highly suitable habitat, very few dwarf crocodiles were found in Azagny, indicating what is likely heavy pressure from bushmeat hunting. This is similar to the relatively low abundance of West African crocodiles in Comoë, where we found significant sign of illegal fishing and hunting activity in the park (see below).

While principle activity 2 has yet to reach the in-depth level of investigation as our biological surveys, we have begun assessing the socio-economic suitability of each site as part of our biological inventories. For example, during crocodile surveys we additionally count and mark deployed fishing nets, traps, camps, villages and boats. In Taï National Park, for example, we have yet to encounter signs of fishing in the areas of the park that are most suitable for slender-snouted crocodiles, though illegal hunting and, likely, egg harvest remain a problematic. In contrast, in Azagny we found very low fishing pressure in the Bandama River, but fishing pressure was higher in the canal with 3.78 swamp fishing/hunting trails cut into the forest per kilometre, and we counted anywhere from 10 – 90 nets and fishermen per night, while in the Ebrié Lagoon it was nearly impossible to navigate because of the density of fishing nets and the park interior seems to be a regular hunting ground. In Comoë, we did not encounter any fishermen at the time of our surveys, but found at least 3 maintained fishing camps along the river that all had signs of net by-catch (i.e., turtle remains), which we know impacts crocodiles in the park.

Work in the forest reserves detected much higher levels of human activity, notably fishing and hunting, including utilizing specialized nets and other devices for not only crocodiles but also West African manatees. And, in at

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|  | <p>least 3 of the forest reserves, including the two identified as possible reintroduction sites, we have made contact with the individuals who were historically the specialist crocodile hunters in the area.</p> <p>This preliminary work provides a basis for more in-depth work with the communities identifying socio-economically suitable release sites. In addition, it helps <i>a priori</i> eliminate places like Azagny from the initial list. And, finally, we now understand that this “community” work cannot just be limited to the actual local communities. By better understanding the human pressures in the national parks and other protected areas we are now in a better position to work with OIPR in developing better strategies for protecting the aquatic zones of the parks. For example, in both Comoë and Taï the fisherman are only able to access the park via single entry points – the rivers. To date, OIPR does not prioritize controlling these access points even though, in reality, controlling here would also help control hunting pressure and other illegal activities in the parks, such as fuel wood harvest and grazing. Developing strategies with OIPR, or even SODEFOR (the authority responsible for forest reserves), to better protect wetland zones will be both critical to the success of our reintroduction efforts, as well as to the sustainability of wildlife resources that adjacent local communities depend on (e.g., fisheries).</p> <p>No activity has been advanced on principle activity 3 – the reintroduction of crocodiles at chosen sites. While it is true that we have not yet finished the evaluations necessary to select sites for reintroduction, the major limiting factor is in the growth of captive-produced offspring. While we have had good success in producing baby crocodiles, they are simply not big enough yet to begin reintroductions. We assure that they are growing at a reasonable rate, it can just take several years before they hit that optimum size.</p> <p>Since no crocodiles have been reintroduced, we have not yet had the opportunity to start work on principle activity 4 – monitoring reintroduced crocodiles. However, we have begun a telemetry study on wild juvenile crocodiles – the same size and demographic that we plan to reintroduce – in order to better understand natural home range, territory, habitat selection, and survival parameters. This will not only help us refine reintroduction site selection, but will also provide data to which we can compare reintroduced individuals as metrics of reintroduction success until the time that our reintroduced juveniles become adults and start breeding.</p> |
| <p><b>Objective 2.</b><br/> <b>Establish a permanent breeding colony of <i>M. cataphractus</i> at the Abidjan National Zoo that can continue to be used as a source population for reintroduction in West Africa</b></p> | <p><b>Partially Achieved and Continually in Progress</b></p>  |
| <p>R2.1 Successful rehabilitation of zoo infrastructure</p>  | <p>To effectively achieve this result we planned to carry out 2 principle activities: 1) remodel manatee/hippo pools into <i>Mecistops</i> enclosures, and 2) rehabilitate the crocodile breeding/rearing facility.</p>   |

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|   | <p>This aspect of the project was designed around the assumption that matching funds provided by the San Diego Zoo for facilities and infrastructure would be available during the project period. Unfortunately, this is not yet the case and, as such, some aspects of the planned activities leading to this result had to be modified pending the formalization of the relationship between the San Diego Zoo and the Abidjan National Zoo. We are pleased to report some progress in this area. In December, representatives of the San Diego Zoo met again with the director of the Abidjan National Zoo to clear up any and all remaining confusion about the proposed agreements. At the end of the meeting we were promised that the ZNA is interested in the relationship, understand the benefits both to the zoo at large and for the Project <i>Mecistops</i>. We are in the process of finalizing agreement revisions and will hopefully advance rapidly in the next few months.</p> <p>However, to summarize the progress made to date. We have not yet remodelled the manatee pool to accommodate the West Africa crocodiles at the zoo because the zoo director has yet to decide what he would ultimately like to do with this pool. While it is 100% clear they will not be getting any manatees, he is debating the merits of a crocodile display, versus something for other reptiles like the monitor lizards or big snakes. In any case, because we have not yet needed to bring the breeding group of slender-snouted crocodiles from Assinie to Abidjan, we do not yet need this space and there is no pressure or rush to get it done. In the meantime, the manatee pool continues to serve as a depository for all the miscellaneous small crocodiles that come into the zoo on a regular basis. Interestingly, however, as part of the developing relationship with the San Diego Zoo, it was brought to our attention that the mammal department (which is the single largest and most well-funded department of any zoo in the world, even surpassing the resources of most full zoo budgets), is interested in working with the ZNA to revive their pygmy hippo program. During the 1980's and 1990's at the same time the zoo's crocodile program was being developed, they were also actively engaged in a pygmy hippo conservation program that was regularly breeding these endangered species. Having the backing of the San Diego Zoo to reignite such an initiative would almost guarantee its success and turn the ZNA into a true endangered species conservation breeding program – the only one in western Africa. Pygmy hippo fieldwork would actually correspond nice to our efforts for slender-snouted crocodiles and this is an initiative we would support.</p> <p>While the resources from San Diego have not yet been made available to rebuild the breeding center, we have had support from the ZNA volunteers to construct an outdoor enclosure for the yearling slender-snouted crocodiles. This has proven of great value with their growth rate increasing through increased sun exposure and more natural thermal regimes.</p> |
| R2.2 Staff trained in crocodile handling, health and breeding | <p>When we first started this project, it was clear that the ZNA keeper staff not only had no skills in dealing with their crocodiles, but that they were also afraid to interact with them leading to improper care and maintenance. To overcome this it was critical to implement lots of hands on training:</p>  |

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|  | <ol style="list-style-type: none"> <li>1) The very first thing we did was to catch all the crocodiles for physical assessment, PIT tagging, and to relocate the West African crocodiles. This was implemented on day 1 with the Project <i>Mecistops</i> team, showing the keepers how to construct crocodile catch materials, how to be in the enclosure with the crocodiles safely, and how to safely catch, handle, and release crocodiles. Some of ours are over 3.5 meters long and weigh in excess of 300 kg, needless to say there was pretty significant trepidation in the first few captures. But once they got the hang of it, attitudes quickly shifted from fear and aggression to interest and attention.</li> <li>2) Specialist crocodile keepers from San Diego Zoo and the Albuquerque Biopark (ABQ), who also sent a veterinarian, came to Abidjan in January 2014 to visit the project and work with the keepers. As part of this visit, the keeper staff again captured all the crocodiles for a full veterinary inspection and selection of crocodiles to go to San Diego Zoo. ABQ keeper Matt Eschenbrenner taught the ZNA keepers the basics of crocodile training – including station training for better control of feeding – and incubation. ABQ donated incubator hoods to the project and Matt helped us build our first climate controlled incubators and taught the keeper staff how to monitor and control incubation temperature and humidity throughout the incubation period, as well as reinforcing the basics of egg collection from nests.</li> <li>3) In May 2014, we arranged for Cpt. Digbe, the ZNA manager of the crocodile breeding program, to attend the AZA's Crocodile Biology and Captive Management continuing education course at the St. Augustine Alligator Farm, Florida, USA. In order to attend this course, Digbe became the first ever African recipient of the Behler Scholarship. San Diego Zoo paid for one of their keepers who speaks French fluently to also attend the course to ensure Digbe had adequate translation and assistance. Following the week at St. Augustine, which is arguably the best crocodile facility in the world, he was able to spend an additional week at the San Diego Zoo working daily with the keepers in the reptile department.</li> <li>4) In July 2014 we brought Cody Bartolini, a specialist keeper from the St. Augustine Alligator Farm, to Abidjan to teach the ZNA keepers how to care for hatchling crocodiles. Cody established the hatchling rearing tanks and taught the keepers how to feed the baby crocodiles, including foraging for natural foods around the zoo grounds. Because of Cody's training, our hatchling survival rate to year one is over 80%, and the yearling survival rate is over 90%.</li> <li>5) In September 2014 specialist keeper Lauren Augustine came from the Smithsonian Institute, the national zoo of the United States. She worked with the keepers to reinforce the station training they learned from ABQ, and additionally accompanied us in the field helping to show the keepers the basics of crocodile fieldwork.</li> <li>6) In April 2015 Shawn Heflick, founder of Crocodile University in the USA, came to Abidjan and worked with the keepers to further refine our egg collection and incubation methods, as well as advance their training in interacting with the crocodiles in a way</li> </ol> |
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|  | <p>that reduces stress. As a result of this training, the keepers no longer catch-upthe crocodiles, or even drain the pool, to move them around the enclosure. This not only reduces the stress level of the crocodiles themselves, but also in the keepers making them more confident and secure in their work and minimizing the potential for accidents.</p> <p>7) Following their first visit to the zoo in January 2014, the ABQ formalized a relationship with the ZNA and sent back a full team in September 2015 to not only continue work with the crocodiles, but also work with all areas of the zoo.</p> <p>8) Following his participation in the regional Crocodile Specialist Group meeting (see below), Samuel Martin, direct of La Ferme aux Crocodiles in France, committed his support for our three crocodile keepers and Digbe to do a 1 month long internship at his facility – France’s only crocodile zoo. This is being planned for 2016 or 2017.</p>   |
| <p>R2.3 Successful development of a recordkeeping system</p>     | <p>This activity was successfully completed through the provision of a dedicated computer for record keeping, establishment of datasheets for daily monitoring of incubation conditions, weekly and monthly monitoring of baby crocodile growth, and methods of permanently marking captive crocodiles – PIT tags for the adults and scute notching for the hatchlings.</p>   |
| <p>R2.4 Managed breeding of crocodiles in the captive colony</p> | <p>To effectively achieve this result we planned to carry out 3 principle activities: 1) divide breeding groups into two or more founder groups for permanent breeding, 2) artificially incubate all eggs annually, and 3) successfully raise captive-produced stock to reintroduction size.</p> <p>We have not yet divided the breeding group into multiple smaller colonies for several reasons. First, we have not yet brought the breeding group from Assinie to Abidjan, which were to be the core of the secondary group. Second, dividing the current group into smaller groups is risky because we are unsure of which males and which females are breeding. While there is the possibility that dividing the males out into two groups would increase nesting, there is also the possibility it would decrease if we paired the wrong individuals. Finally, in consultation with the specialists who have visited Abidjan and others around the world, we have decided that one of the reasons this colony breeds so well compared to all other efforts globally is the size of the group. It has been observed in other species that large captive groups effectively diminish aggression and territoriality and facilitate breeding where it may not otherwise happen. Dividing the group could result in an imbalance in established social hierarchies and increased aggression with likely negative results.</p> <p>So, instead, we are managing the enclosure and other resources to encourage increased reproduction. First, we were able to sign an agreement with Cote d’Ivoire’s largest fish farm to receive all day old dead fish that are no longer fit for human consumption. Improvement in diet provides a better nutritional base for increased fertility. Second, the keepers are now providing incubation substrate throughout the enclosure. Third, we actively demolish nests at the end of each nesting season to both stimulate nest building the following year, and ensure that we are capable to identifying</p> |

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|   | <p>new nests for egg harvest. Finally, this breeding season the keepers are screening from view over 50% of the enclosure perimeter fence in an effort to stimulate nesting at new sites around the enclosure.</p> <p>Since the start of managed breeding we have successfully recovered over 200 eggs from nests. Unfortunately, close to 75% of these eggs are either infertile or die early in the incubation period, though due to our controlled incubation methods we have a high hatching rate amongst fertile eggs. One problem that we are continually working on is stability in the Abidjan city power grid where, for example, we estimate that extended power cuts resulted in loss of 80% or more of our fertile eggs last breeding season. Once the breeding facility is constructed with the support of San Diego Zoo, we may be able to set-up a back-up generator for use during the breeding season.</p> <p>Despite continued hitches in the incubation period, we are managing to raise the baby crocodiles successfully. As previously mentioned, we have an over 80% survival rate for hatchlings, and so far over 90% survival rate for yearlings. And, in spite of inconsistently available food sources, the hatchling crocodiles are growing at a rate within the norms for captive raised crocodiles. We anticipate that the first cohort will be ready for reintroduction after their third year of growth.</p>  |
| <p><b>Objective 3.<br/>Develop the individual and institutional capacity to manage and monitor crocodile populations in West Africa</b></p> | <p><b>Partially Achieved and Continually in Progress</b></p>   |
| <p>R3.1 Development of a pool of national and regional technicians skilled in crocodilian conservation and management</p>                   | <p>To effectively achieve this result we planned to carry out 2 principle activities: 1) conduct training workshops with OIPR staff in crocodile conservation and human wildlife conflict management, and 2) train students in research on crocodilian management and conservation.</p> <p>Both of these activities are continually on going, and we foresee that they will play integral parts of this project over its lifetime and, as such, this result is not something to be achieved but achieved continually. With that in mind, we have made solid headway in our efforts with OIPR through trainings held at Azagny and Taï national parks. Over the course of nearly a month, as many as 7 OIPR agents worked us to better understand the management needs of crocodiles. In the case of Azagny, our training was particularly helpful for the general management of the park as it also provided an intensive training for their new boat pilot using their new boats – a critical aspect for this highly aquatic park. We also worked extensively with the biomonitoring guys who are responsible for planning law enforcement patrols based on wildlife presence. They were able to see the utility in night and river patrols in controlling illegal fishing, much of which happens at night, and observations from the water courses which provide the bulk of the entry points into the park for poaching and other illegal activities. In Taï our work also extended beyond the biomonitoring and law enforcement to the tourism agents, where we trained them to conduct night excursions looking for crocodiles with tourists. Finally, the initial results of</p> |

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|  | <p>our crocodile and human surveys (discussed above) provided the much needed base of understanding for where our future efforts with OIPR should be directed – including better control of the wetland areas in parks and developing a better understanding that these wetlands play for sustainable resource development outside the parks (e.g., as fish source populations, for example).</p> <p>Our biggest headway has been with principle activity 2, where we have been working with the Aquatic Biology lab at the University of Nangui-Abrogoua (Abidjan) since January 2014 and signed a full collaborative agreement with the University in May 2015. Thus far we have passed one Master’s II student looking at prey and foraging ecology in juvenile crocodiles in Azagny National Park. And, we have two PhD students. The first is evaluating the effectiveness of Cote d’Ivoire’s national parks in protecting wetlands species; most parks and other protected areas in Cote d’Ivoire, as with most of Central and West Africa, were designed and are managed principally with terrestrial species in mind. His objective is to determine if aquatic species, specifically crocodiles, still benefit from this protection or, if not, advise on what can be done to ensure the full complement of important biodiversity benefits. The second is just starting her project on establishing critical movement, habitat selection, and survival parameters in juvenile slender-snouted crocodiles to serve as a baseline for monitoring reintroduced individuals. In addition to their research activities, all of these students participate in every aspect of this project from budgeting and preparing missions, logistics, accounting and reporting, so as to help them develop as well-rounded, competent conservation professionals.</p> |
| <p>R3.2 Foster local support for crocodilian conservation</p>  | <p>To effectively achieve this result we planned to carry out capacity building within local communities to assist conservation efforts, particularly around the chosen reintroduction sites. As we have not yet begun our intense work with the local communities, and reintroduction sites have yet to be chosen, activities leading to achieve this result have not yet begun.</p>   |
| <p>R3.3 Development of a national and sub-regional monitoring program for <i>Mecistops</i> populations</p> | <p>To effectively achieve this result we planned to carry out 2 principle activities: 1) support national agencies and ministries in developing needed strategies for crocodile and other wildlife management as necessary, and 2) support the 3<sup>rd</sup> West and Central African (WACA) Regional Meeting of the IUCN/SSC Crocodile Specialist Group.</p> <p>Crocodiles were thrust into the Ivorian national wildlife management spotlight for three principle reasons over the past 5 years. First, between 2010 and 2013 as many as 4 people were killed, or almost killed, by the famous Presidential crocodiles in Yamoussoukro. Second, the city of Abidjan is reporting more and more crocodiles appearing throughout the city’s drainage canals and, particularly, around the Baie de Cocody. This latter is being seen as particularly problematic in light of the city’s plans to rehabilitate the bay and construct various recreational facilities around the lagoon edge, and they would like to minimize the risk of conflict with crocodiles. And, third, our project was launched in 2014. We have found the national wildlife authority, the city of Yamoussoukro, the presidency, and the city of Abidjan are responding positively to our presence in an</p>  |

effort to develop appropriate crocodile management plans and the human capacity to implement them. In 2014, we visited Yamoussoukro and drafted a comprehensive report on how they can better manage the Presidential crocodiles while simultaneously increasing security for local visitors, continuing to respect Bouaké traditions involving these crocodiles, and maintaining the small crocodile-driven tourist income. Also in 2014 we developed a proposal to work with the city of Abidjan, including representative from the mayor's office, the wildlife authority, the fire brigade, and the zoo to develop a nuisance crocodile response team for the city. We anticipate that our involvement in such issues will extend beyond crocodiles into more general human wildlife conflict in the future.

The 3<sup>rd</sup> WACA meeting of the CSG was held at the University of Nangui-Abrogoua in Abidjan from 08 – 10 December 2015. We attracted 60 – 80 participants (depending on the day) from 16 countries in the WACA region and 8 more globally. We succeeded in this meeting to more than double the number of daily participants, attract participants from critical countries that were never previously represented by local participants in the regional crocodile arena (e.g., Gabon, Nigeria, Cote d'Ivoire, Liberia, and Sierra Leone), and hold all proceedings in both French and English. Approximately 25 presentations were given, representing all regional countries present. We successfully conducted a Red List evaluation for the West African crocodile (*Crocodylus suchus*), which, aside from being a critical activity for the conservation of this species, was a critical training exercise for all participants to conduct red list assessments for other taxa. And, we conducted a full day workshop evaluating the regional crocodile conservation strategy document that was produced after the 2<sup>nd</sup> WACA meeting (Burkina Faso, 2010). Probably the most important results from this meeting were, like most meetings, the ability for people in the region to see what kind of crocodile research and conservation was being carried out by their regional peers and build their own networks.

Following the meeting, we took 10 of the young, motivated crocodile researchers, representing six countries, out to Taï national park for a weeklong intense training session. In addition to exposing the participants to the basics of crocodile surveys, we trained people how to pilot outboard motorboats, paddle kayaks, navigate with GPS's and compasses, and even swim. Since many of these participants are themselves students, or young technicians in their respective wildlife authorities, we focused considerably on the scientific process developing research questions and the conservation process – what it takes to run a conservation project or program, where to look for funding, how to network, and how to develop activities that not only achieve their conservation goals, but permit them to develop further conservation goals and activities. The culmination of their participation in both the 3<sup>rd</sup> WACA meeting and the training session at Taï was them developing their own regional group, which they are calling the “Young Crocodile Specialists of West and Central Africa,” and which they formally presented to the CSG chair just after the new year. The formation of this group and strengthening of the network of crocodile conservationists in the region is undoubtedly one of the biggest successes of Project *Mecistops* to date.



**2B. Were any components unrealized? If so, how has this affected the overall impact of the project?**

There were two components that have yet to be realized: 1) reintroduction of captive-bred crocodiles and subsequent monitoring of these individuals, and 2) capacity building within the local communities at reintroduction sites for the development of community-based crocodile conservation programs. Both of these are later stage objectives and can only be tackled once a certain foundation has been built, which we are continually working to achieve. Because they were not yet achieved, we can say that the overall impact of the SOS-funded portion of this project is slightly diminished; however, Project *Mecistops* is continuing with significant financial support beyond the SOS funding period giving us the opportunity to realize these components. As such, the project is still on course to realize the initially predicted and desired impact for conservation of crocodiles in Cote d'Ivoire and throughout West Africa.

**2C. Please list and submit (electronically if possible) any documents, tools, products, or methodologies that resulted from this project or contributed to the results.**

*Please number and make sure titles correspond to titles of any attachments submitted electronically.*

Not applicable.

**3. Species Conservation Impacts**

Note: Please use this section to summarize the overall impact of your project. Present results in terms of:

- Overall impact of the project (see 3A to 3C below)
- Project activities' impacts on species status (see 3.1 below),
- Population size and trajectories (see 3.2 below),
- Critical habitat condition and trajectory (see 3.3 below),
- Major threats (see 3.4 below), and
- Enabling conditions for effective conservation (see 3.5 below).

**3A. Planned Outcome(s) / Impact(s) (as stated in the project logical framework):**

- Implement reintroduction of captive *M. cataphractus* into the wild for the purpose of population augmentation and/or re-establishment of locally extinct populations. By establishing a biological and social basis for crocodile reintroduction our project is poised to make significant headway towards the conservation and future sustainability of this emblematic denizen of the Upper Guinea forests.
- Develop the individual and institutional capacity to manage and monitor crocodile populations in West Africa. We will work with individuals identified by our in country collaborating organizations to provide extensive species-specific monitoring training. These individuals will participate in all survey and village-based efforts, as well as be integral in planning the crocodile releases and post-release monitoring. By including local personnel at all levels of this work, we will empower Ivoirians to work on traditionally ignored species of conservation concern to meet the mutual goals of wildlife conservation and local community support.
- Re-establish a permanent breeding colony of slender-snouted crocodiles at the Abidjan National Zoo. This will not only involve selection of the crocodile founding colony, but rehabilitation of the facilities

and training of staff to ensure that the colony is successful in the long-term. Once completed, this will be the first example of captive breeding for crocodile conservation in Africa and can be used as a model and training program for countries throughout the region looking to improve the conservation utility of their zoological park resources.

### **3B. Actual Progress towards Impacts at Completion:**

The overarching objectives of this project are two-fold: 1) captive-produce West African slender-snouted crocodiles (*Mecistops cataphractus*) and raise them to an appropriate reintroduction release size at the Abidjan National Zoo, and 2) release these individuals back into the wild after determining appropriate release sites through a series of population and socio-economic surveys. The long-term success of these two aspects not only depends on their successful implementation, but on significant capacity development with our Ivorian institutional partners for long-term, continued implementation of this project and its evolving goals. With this in mind, a number of critically important accomplishments have been achieved throughout the period of SOS funding, please see the table above in section 2A for full details of the progress, here we provide a brief summary.

To establish the long-term foundation, Project *Mecistops* signed full, collaborative partnership agreements with the *Office Ivoirien des Parcs et Reserves* (OIPR), Cote d'Ivoire's national parks agency, and the *Universite de Nangui-Abrogoua*. These underscore the commitment of the Ivorian government not only to the conservation of this Critically Endangered crocodile species, but to the development of its technical capacity to manage the aquatic components of Cote d'Ivoire's national parks and its wildlife resources more generally. Through these partnerships, Project *Mecistops* not only has access to assess all of Cote d'Ivoire's national parks for crocodile reintroductions, but also has committed to incorporating OIPR staff into these efforts so that they may start to incorporate wetland-based law enforcement and the management and monitoring of other aquatic wildlife resources. The *Universite de Nangui-Abrogoua* (UNA), Cote d'Ivoire's second largest university. The UNA is home to Cote d'Ivoire's only wetlands and aquatic resources faculty and, as such, provides our project with the necessary platform to train the next generation of Ivorian natural resources managers. In addition, the diverse faculty and students in the aquatic resources faculty will ensure that our training efforts with the OIPR, and other agencies, can cover fisheries and environmental monitoring in addition to the charismatic aquatic megafauna.

We are continually working towards formalizing (and legalizing) our partnership with the Abidjan National Zoo. This is not only important for the day to day operations of the captive-breeding aspect, but also works to ensure the long-term future of the crocodile breeding colony, the structures at the zoo, and the *Ministere des Eaux et Forets'* (MINEF) commitment to endangered species conservation initiatives. The zoo director (Dr. Samouka Kané) has assured us of his commitment to a continued productive relationship with the zoo in the future. Despite the lack of formalization of the relationship, we have significantly advanced our captive-breeding, with nearly 50 babies successfully hatched in two breeding seasons, of which 80% are still alive, thriving, and approaching reintroduction size. This success is due largely to the effort put into capacity-building with the crocodile keepers and daily management of the crocodile colony. We brought specialist crocodile keepers from 5 American institutions to train the Abidjan National Zoo crocodile keeper team on all aspects of crocodile care, handling, training, incubation, and rearing. Additionally, the Abidjan National Zoo's crocodile program manager, DouéBarnabéDigbé, became the first African recipient of the Behler Scholarship and attended the AZA (American Association of Zoos and Aquariums) "Crocodile Biology and Captive Management" school at the St. Augustine Alligator Farm (SAAF) in March 2014. This course is the single most popular continuing education course offered for zoo keepers by the AZA. The SAAF is arguably the best zoological facility dedicated to crocodilians in the world and, additionally, Digbé had the chance to spend a week at the San Diego Zoo.

Our field surveys at 8 protected areas to date, covering nearly 1,000 km of waterways, are starting to provide the biological basis for reintroduction site selection. Data collected on anthropogenic activities are additionally helping us plan our work with communities and further narrowing the options for reintroduction site selection. And, like with the zoo, we have made significant headway in our training of Ivorian students and national parks staff. These

activities are providing a solid foundation from which we are strategizing our program for the next 3 – 5 years and what the key focus needs to be with OIPR and our other partners.

Finally, our project is providing significant support to young conservationists throughout the region, particularly in neighboring countries where we hope to expand our efforts in the near future. By supporting the 3<sup>rd</sup> WACA meeting of the CSG our project helped motivate the formalization of the Young Crocodile Specialists of West and Central Africa network.

**3C. Were there any unexpected impacts (positive or negative)?**

No.

*Note: Following the summary provided above, please use questions 3.1 to 3.5 to provide a detailed, technical response for results achieved from inception of SOS support to date. Provide responses within the context of stated project objectives, where possible. Attach annexes if necessary. Depending on the project, not all questions may be applicable.*

**3.1. SPECIES POPULATION - Did you stabilize or improve the conservation status of a species or important species population**

**a. Global or target population:**

*Note: Please state whether the project affected the global population or a target population of the target species. In the case of a target population please provide the estimated percentage of the global population affected.*

Our project is principally focused on local populations of the West African slender-snouted crocodile in Cote d'Ivoire, which we estimate houses 40 – 70% of the global population of this Critically Endangered species. To date, our activities have not quantitatively or biologically stabilized or improved the populations in the wild because reintroductions have yet to commence. However, as our project continues we are increasing awareness amongst the wildlife management authorities for the plight of crocodiles and, in doing so, are already seeing improvements in law enforcement and other such efforts are increasingly aware of crocodile and crocodile habitat management needs.

**b. Indicate type and level of improvement or decline within the context of the following parameters:**

- (i) numbers of individuals (use quantitative assessments, if available, otherwise state increasing, decreasing, or remaining the same over project period, with justification and methods);**

Likely remaining the same or declining over the project period. At this stage this is just an assumption that “life continued as normal” in Cote d'Ivoire and, as such, crocodiles continue to be persecuted and habitat continues to be lost, though we are now establishing a basis for evaluating population change in the future through survey work.

- (ii) population trajectory over a 5 year period from monitoring date as increasing, decreasing, or remaining the same (with natural ranges of variation taken into consideration; give quantitative estimates, if available).**

This question is not yet applicable to our project reporting, though we have now established the basis for monitoring future trends with our survey results.

**3.2. IUCN RED LIST STATUS - After project implementation, can the species globally be considered for a change of Red List status, either positive or negative? If shifts of status within a category are applicable, describe relevant Red List metrics used to support assertion. Provide quantitative data, if available.**

This question is not yet applicable to our project reporting, though since this species was evaluated for the 2014 Red

List, it is not likely to be considered for a change of status even where surveys conducted by our project are encountering more crocodiles than originally known about at the time of the Red List assessment. The reality is that this species will remain Critically Endangered until well after our reintroductions are successfully producing breeding adults in the populations and our efforts with OIPR and SODEFOR are producing changes in attitudes and management practices. Crocodiles have amazing capacity to recover, but on the time scale of 1 or more crocodile generations (> 15 – 30 years).

**3.3. CRITICAL HABITAT - Did your project improve the quality or condition of a threatened species' critical habitat within the project target area? Present in terms of the following parameters, where relevant:**

**(a) the total area (that is, the suitable habitat available to the target or global population);**

This question is not yet applicable to our project reporting since *in situ* activities have yet to reach an advanced stage.

**(b) condition (note, this must be defined for suitability for each target species; for example, degree of fragmentation, edge effects, impact of invasive species, etc.); and**

This question is not yet applicable to our project reporting since *in situ* activities have yet to reach an advanced stage.

**(c) estimated trajectory (that is, increasing, stable, decreasing) of critical habitat required by the population of the target species within the area addressed by the project.**

This question is not yet applicable to our project reporting since *in situ* activities have yet to reach an advanced stage.

**3.4. DIRECT THREATS - Did your project stop or reduce important direct threats to a threatened species within the target area? Please state if the direct threats are for: (i) the target species; (ii) its critical habitat, or both. Present in terms of the threats':**

**(a) intensity (that is, high, moderate, low with criteria tailored to threat);**

Our project has made considerable headway into understanding the existing direct and indirect threats to crocodiles in Cote d'Ivoire. These include incidental by-catch in artisanal and commercial fishing, direct hunting, habitat loss, and inadequate protected areas management practices by OIPR and SODEFOR. While this knowledge has enabled a foundation for the next stage of our work, this question is not yet applicable to our project reporting since *in situ* activities have yet to reach an advanced stage.

**(b) distribution (that is, widespread, common, localized); and**

See above.

**(c) area affected over time (that is, expanding, decreasing, stable using defined boundary) of 1-3 major, direct threats to the target species within the projects' target areas.**

See above.

**3.5. ENABLING CONDITIONS - Did your project contribute to improving, no impact on, or worsening enabling conditions that facilitate successful conservation for threatened species? Present in terms of the degree (that is, favorable, neutral, unfavorable) to which local socio-economic, political, and cultural conditions (that is, 'enabling conditions') contribute to the probability of success for conservation of the**

target species with the project area. Protected area tracking protocols are required, where applicable (consult with the SOS Secretariat on the appropriate PA tracking tool to use). Applicable metrics include:

**(a) legislative tools associated with species' protection (poor, fair, good, very good;**

We were consulted by the directrice of the Direction de la Faune, the body responsible for drafting wildlife laws, about the level of protection which should be afforded to *Mecistops cataphractus* in Cote d'Ivoire and, as a result, the species will continue to be listed as *Integrally Protected* – the highest level afforded species nationally. Additionally, we ensured that the wildlife species list is up to date with the latest crocodile taxonomy, ensuring that the country is meeting its obligations to international conventions to which it is signatory (e.g., CITES). We hope that as our project advances we will find ourselves in a stronger position to influence other policies related to crocodiles and wildlife management in Cote d'Ivoire and throughout the region.

**(b) financing for conservation (poor, fair, good, very good – based on available resources for conservation, sustainable financing mechanisms are developed and in place, public-private partnerships, positive benefits for community livelihoods, etc.);**

Our project has been successful in raising an additional \$105,000 USD over the past year to ensure the viability of our project for the next 3 – 5 years. Funding from SOS enabled us to establish a base level of infrastructure that ensures this continued funding can be attributed nearly 100% to on ground activities, both directly related to crocodiles and related to protected areas management. We hope to use this as a base of funds to leverage funding to implement additional PA management aspects in collaboration with OIPR and our to be chosen local communities.

**(c) wildland or protected area management effectiveness (poor, fair, good, very good – based on PA tracking tool indices applied to target area); and**

We have mildly influenced protected area management effectiveness by showing our OIPR colleagues the benefit of certain activities – e.g., night patrols and having a permanent presence in wetland areas. However, this aspect of our project is only in its fledgling stages and we hope to build on our results the past two years to develop more concrete objectives with OIPR and SODEFOR.

**(d) existence of robust conservation strategy or Action Plan for the species or critical habitat (poor, fair, good, very good – based on important features such as priority areas identified and ranked, representation analysis complete, thresholds of habitat and species population size and condition identified, conceptual model and conservation action plan developed, actions prioritized and results chains elaborated, monitoring program).**

Development of crocodile management plans both for Cote d'Ivoire and for the region are planned activities for the next phase of the project. The activities conducted and results collected during phase 1 provide the necessary foundation.

#### ***4. Lessons Learned***

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

**a. Project Design Process:**

*Note: Please describe what aspects of the project design contributed to its success or caused any shortcomings*

The project design aspect that contributed most to this project's success was ensuring the involvement of local authorities, including OIPR, la Direction de la Faune, UNA, and ZNA, from the very beginning. By signing long-term, renewable, collaborative agreements with these partners, we not only ensured the project ran smoothly, but also that representatives of these agencies are involved in the project and enthusiastic to be involved in its second phase.

The project design aspect that contributed the most significant shortcoming was the reliance on some of these authorities to react to the project proposals in "western" time. The reality is that government authorities in West Africa operate on a different timelines than what the rest of us would like, which can often cause delays in what was planned for implementation. This isn't so much a lesson learned as a lesson poignantly reinforced.

**b. Project Implementation:**

*Note: Please describe what aspects of the project execution contributed to its success or caused any shortcomings.*

The project implementation aspect that contributed most to its success is the same discussed for the planning – ensuring that we implemented this project as much as possible, almost entirely actually, with our local partners. While western personnel can support successful conservation initiatives in West Africa, if they do not have local buy in, interest, and action they will not be sustainable.

The implementation aspect that created the biggest shortcoming was finding the necessary in-country fiduciary to receive and manage funds. Projects being supported from the USA can be severely hampered by post-911 laws and it is advisable to work this out well in advance of project implementation.

### 5. Additional Funding

**Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of the SOS investment in this project. Use the following categories:**

**(i) Project co-financing (Other donors or your organization contribute to the direct costs of this project)**

This project received co-financing in the form of in-kind salary contribution from SFM Safari Gabon for the PI's (M. Shirley and E. Fairet), Université de Nangui-Abrogoua (A. Ouattara), and the Ivorian Ministère des Eaux et Forêts (R. Champion) totaling \$36,500.

We received \$37,312 from donor contributions towards the 3<sup>rd</sup> West and Central African Regional IUCN/SSC Crocodile Specialist Group meeting. Donors included the Crocodile Specialist Group, La Ferme aux Crocodiles (France), the St. Augustine Alligator Farm (USA), German Reptile Leather Association (Germany), San Diego Zoo (USA), Zoo Leipzig (Germany), and contributions from 9 private individuals.

We received in-kind support from the Zoo National d'Abidjan including their daily maintenance of crocodiles and crocodile-related facilities at the zoo, as well as \$15,000 from private Abidjan business donations that went towards the rehabilitation of zoo facilities, including for the benefit of the crocodiles. In addition to this, we receive in-kind donation of fish from HydroFish and a private zoo volunteer funded the construction of an outdoor rearing enclosure for the baby crocodiles to serve as an interim enclosure whilst awaiting final approval for funding from the San Diego Zoo.

Finally, the San Diego Zoo provided \$5,000 to establish a record keeping system, including PIT tagging of all adult crocodiles, a computer, and genetic analysis of relatedness amongst our breeding stock.

**(ii) Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this SOS funded project.)**

As a result of the successes with this SOS funded phase of our project, we have been successful in leveraging additional funds including from the Future for Nature awarded to M. Shirley (50,000 euros), Christmas CrocFest (\$34,000), San Diego Croctober Fest (\$9,000), and San Diego Zoo (\$5,000). In addition, the anticipated contribution of \$24,000 from the San Diego Zoo for the reconstruction of the crocodile rearing facility is still guaranteed pending final agreement with the Ministry.

**(iii) Regional/Portfolio leveraging (Other donors make large investments in a region because of SOS investment or successes related to this project.)**

Not yet.

***6. Sustainability/Replicability***

**Summarize the success or challenge in achieving planned sustainability or replicability of project components or results. Summarize any unplanned sustainability or replicability achieved.**

The single greatest challenge to planning sustainability with this project, and with any project of this kind in this region of the world, is achieving full support from in-country partners. While our project has had great success in this respect attracting the support of the Ivorian national parks agency and the UNA, we will not be fully sustainable until we finalize agreements with the Ministere des Eaux et Forets for the captive-breeding program at the zoo. We have, thus far, been lucky in receiving the full cooperation of the zoo staff and its director, but we do not consider this arrangement sustainable, or even fully secure, as yet.

***7. Safeguard Policy Assessment***

**Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project. This should be extracted from the responses provided in the Safeguards Aspects for SOS grants form submitted with past interim reports. Attach any additional document required.**

The predominant environmental safeguard actions required for our project involved the interaction with live, wild animals. To safeguard this aspect, we received research permits from the Ministere de la Renseignement Superieur et de la Recherche to cover all our research activities anywhere in Cote d'Ivoire, as well as from the Societe de la Developpement des Forets (SODEFOR) to authorize our activities in the classified forests. And, we signed a long-term collaborative agreement with the Office Ivoirien des Parcset Reserves (OIPR) that authorizes all of our work in the protected areas. Copies of all relevant permits, authorizations, and collaborative agreements can be provided upon request. In addition, we provided extensive training of all project staff (both wild and zoo based) to ensure the maximum level of security and well-being both for the crocodiles and the staff. In addition, wild animal mortality was limited by limiting the number of individuals captured to the minimum needed, and utilizing standard crocodilian capture techniques employed by government agencies and NGO's all over the world including hand grabbing, pole-snaring and research darting. These techniques are the industry standard due to the low probability of mortality.

Our activities to date provide a base for strengthening protected areas management through capacity-building with

protected areas staff and increased data from which to conduct biomonitoring and law enforcement. Our next steps will be to carry out socio-economic and cultural surveys that will focus on: diversity and weight of various activities as livelihoods strategies, with a special focus on fishing and hunting, area of vulnerability and needs in the area (e.g. access to education or medical assistance, unemployment, etc...), local perception, acceptance and investment in wildlife conservation, local perception and acceptance of crocodilians, and current human-wildlife interactions including conflicts. To better safeguard this aspect, we will organize meetings with local community, local government, and wildlife authority representatives to discuss the aim of the project, the possible impacts for the local population and mitigation strategies. In doing so, we will be in a position to provide advice to park authorities to improve the spatio-temporal aspects of management, especially as applies to the natural resources in the park that the community relies upon, so as to minimize negative impacts on local livelihoods. We will also be in a position to work with the local communities ensuring their voice in continued aspects of crocodile management where appropriate.

**8. Additional Comments/Recommendations**

**9. Information Sharing and SOS Policy**

SOS is committed to transparent operations and to helping Civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our website, [www.saveourspecies.org](http://www.saveourspecies.org) and publicized in our newsletter and other communications.

Please include your full contact details below:

|  |   |
|--|---|
| Name:                                  | Matthew H. Shirley  |
| Organization name and Mailing address: | Rare Species Conservatory Foundation<br>P.O. Box 1371, Loxahatchee, FL 33470, USA |
| Tel:                                   | +241 (0)4894572, +225 59130457  |
| Fax:                                   | N/A   |
| E-mail:                                | mshirley@rarespecies.org  |

**Additional 2016 activities:**

Extensive crocodile research was carried out in Cote d'Ivoire during the year 2016. Nationwide surveys were implemented in 3 different national parks, 2 community reserves, and 3 classified forests. These surveys facilitate the development of distribution- and habitat-suitability models for the slender-snouted crocodile, as well as inform reintroduction and conservation planning. A slender-snouted radio telemetry project was also initiated, including successful first tagging of this species. Several West and Central African colleagues were supported to attend the 24th Working Meeting of the IUCN/SSC Crocodile Specialist Group in Skukuza, South Africa in May 2016. The 2016 research year was considered a great success, working with local partners and helping develop capacity among African counterparts, including the Ivorian government stakeholders and national students.

*MacArthur Foundation Grant 106560-0: Plant Red List Assessment for the Lake Victoria Basin*

**Initiated 2015**

**Research proposal:**



## ***I. RATIONALE***

This proposal from the Rare Species Conservatory Foundation on behalf of the East African Plant Red List Authority, a volunteer network of the Species Survival Commission (SSC), seeks to prevent or reduce biodiversity loss, specifically plant diversity, and ecosystem degradation and to sustain ecosystem services for human wellbeing in the Lake Victoria Basin.

The Lake Victoria Basin holds a diverse range of vascular plant species, including endemics, and habitats that provide regionally important watersheds. The current portfolio of Important Biodiversity Areas will benefit from a comprehensive analysis of regional plant diversity including locations of endemics and regionally threatened plant species. Plants provide a wide range of vital resources to rural populations in addition to the important ecological services provided by forest habitats.

This project proposal addresses the loss of plant diversity through the following activities:

1. Application of the IUCN Red Listing process to the flora of the Lake Victoria Basin to provide an assessment of biodiversity loss (specifically plant extinction patterns), priorities for species conservation and complementary data for plants to add to the Important Biodiversity Area analysis for the Lake Victoria Basin.
2. The project will pull together the first regional assessment for plant conservation needs in the Lake Victoria Basin. This provides a stronger data set for protected area planning in the Lake Victoria Basin.
3. The proposal will build and strengthen the regional network of plant conservationists.
4. The produced Red List of Threatened Plants will provide a basis for reviewing protection measures for threatened wild plants in the Lake Victoria Basin.
5. Under collected sites/locations of important plant diversity in the Lake Victoria Basin will be identified and two will be subject to field survey.

The Lake Victoria Basin is undergoing massive changes in land use and the expansion of large-scale agriculture e.g. oil palm plantations. In addition the surviving habitat areas are under increasing threat from small-scale agriculture, wood and charcoal harvesting etc. Under projected scenarios for climate change there is an imperative to retain watersheds (e.g. upland forest areas) as services that can buffer water supplies during fluctuating rainfall regimes.

The project serves the MacArthur Foundation's Conservation and Sustainable Development (CSD) strategy and to the specific grant guidelines for the Lake Victoria Basin. The project directly serves **The Foundation's overall goal for the Great Lakes region to prevent or reduce biodiversity loss and ecosystem degradation and to sustain ecosystem benefits for human wellbeing.**

The project will deliver the objectives of the Great Lakes Initiative through the following activities.

### **Understand and respond to increased environmental pressures from development and climate change impacts**

1. Using the IUCN Red Listing process identify priority plant species and areas for conservation and develop data sets that can be used for protecting and restoring biodiversity and ecosystem services and provide a reference for monitoring the impacts of climate change and development.
2. Identify and plan for the conservation of plant diversity in the Lake Victoria Basin and identify, maintain and expand Key Biodiversity Areas and Climate Resilient Altitudinal Gradients.
3. Using a selected study site within the Lake Victoria Basin to work with stakeholders to explore the links between biodiversity, ecosystem services and expected changes caused by development and climate change.

### **Assist the rural poor in managing their resources for multiple benefits**

1. Focus will be given to plant groups that have a traditional and indigenous value, notably medicinal, food, crop wild relative species.

2. Using a selected study site within the Lake Victoria Basin to work with stakeholders to explore the links between biodiversity, ecosystem services and expected changes caused by development and climate change.

## 2. **PROJECT OR PROGRAM DESCRIPTION**

### **SCOPE**

The Plant Red List Assessment covers the plant diversity and associated habitats of the Lake Victoria Basin and is focused on using Red Listing as a tool and resource for understanding and responding to biodiversity loss driven by economic development and climate change impacts. Specifically the project will develop a data set, IUCN red list of vascular plants for the Lake Victoria Basin that will directly guide the conservation of high biodiversity watersheds, landscapes and priority sites.

The thematic focus is the conservation of plant diversity and plant resources. The Red Listing of vascular plants for Eastern Africa is progressing but not completed. To date the East African Plant Red Listing Authority has assessed 1600 plant species. This project will assess 450 plant species, an estimated 10% of the Lake Victoria Basin. The candidate species will comprise endemics and regionally restricted and threatened species. This evaluation will allow for the better identification of Key Biodiversity Areas and the identification of Important Plant Areas.

Wild plant resources provide basic and fundamental services to rural communities. The vegetation of the Lake Victoria Basin is essential for providing a range of key ecosystem services to the 30 million inhabitants of the basin, these include the supply of timber (for artisanal and commercial use), charcoal, medicinal plants, wild vegetables, bush meat, and importantly the regulation of watersheds. These benefits to rural communities are being threatened by habitat clearance for timber extraction, mining and intensive agriculture.

### **TARGETS AND OUTCOMES**

The overall goal of the project is to produce an assessment of the conservation status/extinction risk for 450 plant species that will provide guidance on priorities for species and habitat conservation. The long-term goal is to conserve the plant diversity and ecosystem services of the Lake Victoria Basin.

The primary conservation targets are the threatened and endemic plant species of the Lake Victoria Basin. Currently the portfolio of Key Biodiversity Areas does not adequately reflect plant diversity.

The longer-term outcomes for this project include:

- Accurate data driven assessment of species status that is used to guide species and habitat conservation investments
- Red List assessments are adopted as working tools by government institutions and conservation groups to develop conservation and resource management strategies that reduce biodiversity loss and sustain ecosystem services
- Key Biodiversity Areas, and specifically Important Plant Areas, in the Lake Victoria Basin are protected, with opportunities taken to restore natural capital for the benefit of biodiversity and human communities.
- Plant diversity data is included in regional biodiversity assessments.

### **CONTEXT**

The Lake Victoria Basin contains the largest lake in Africa and supports around 30 million people, with a population growth over 6% per year. The forest habitats of the Lake Victoria Basin have suffered massive loss and still are threatened by wood fuel harvesting, with a large proportion of the rural populations in the region using wood fuel for domestic energy needs. Illegal logging is also prevalent in the Lake Victoria Basin. There are projected increases in new areas of intensive agriculture that threaten key habitats e.g. palm oil.

Red Listing undertaken to date by the East African Plant Red List Authority has identified a large number of taxa threatened with extinction within Eastern Africa. 1669 taxa have been assessed in eight workshops, 59% of the species assessed using the IUCN criteria are threatened with extinction (VU, EN and CR). However, very few of the species in the Lake Victoria Basin have been assessed (*circa* 30 to date).

A study by Kalema and Beentje (Conservation Checklist of the Trees of Uganda, Royal Botanic Gardens, Kew 2012) identifies species of conservation concern:

- *Uvariadendron magnificum* Verdc. Endangered. A Ugandan endemic restricted to the Lake Victoria Basin, recorded from two disjunct localities, Kasyoha-Kitomi Forest Reserve and Lutoboka on Ssesse Island. Threatened by forest loss, oil palm expansion and tourism development.
- *Diospyros katendei* Verdc. Critically Endangered. Only known from a single collection in the Kasyoha – Kitoma Forest Reserve in 1987. Possibly Extinct.
- *Ficus katendei* Verdc. Critically Endangered. Known from only two collections, one from Bwindi and the other from Kasyoha-Kitomi Forest Reserve.
- *Gomphia mildbraedii* (Gilg.) Verdc. Critically Endangered. Known from only three historic collections, two from the Democratic Republic of Congo prior to 1913, one from Uganda in 1941.
- *Encephalartos equatorialis* P.J.H. Hurter. Critically Endangered. Cycad endemic to one unprotected site in Uganda, Thruston Bay, less than 400 wild plants survive, threatened by collecting and habitat loss.
- *Senecio navugabensis* C. Jeffrey. Extinct? Endemic to Lake Nabugabo, not seen for years, may be extinct.

A number of widespread species have undergone significant declines largely because of over-harvesting; these include *Dalbergia melanoxylon*, *Warburgia ugandensis*, *Prunus africana*, *Vitellaria paradoxa* and *Lychnodiscus cerospermus*.

While the Lake Victoria Basin contains a significant and regionally important set of plant diversity the distribution and status of the flora has not been adequately incorporated into regional analyses and the identification of Key Biodiversity Areas, Alliance for Zero Extinction sites and Climate Resilient Altitudinal Gradients. Given the economic importance of wild collected plant products to the 30 million inhabitants of the Lake Victoria Basin we propose that this study is essential to the conservation planning of the region.

Plant conservation is historically under resourced in Eastern Africa and this project will provide a valuable opportunity to consolidate professional linkages between plant conservationists and will provide the necessary information to support plant conservation initiatives involving government entities and importantly guide environmental impact assessments linked to natural resource extraction e.g. oil and mineral.

Tropical evergreen forest has suffered extensive clearance in the project area, this reducing habitat for a wide variety of species, promoting local extinctions and reducing ecosystem services to local communities. This loss of natural capital has been particularly marked in Uganda and Rwanda with their high population densities and history of intensive agriculture.

External factors that could influence the delivery of the project include access to research permits for work in Uganda and Tanzania. We have excellent relations with the relevant authorities and do not anticipate any problems. We are concerned about political instability spreading into the Lake Victoria Basin and its impact on travel and fieldwork.

## STRATEGY AND ACTIONS

Botanical diversity has traditionally been under valued and under assessed for African regional conservation initiatives. To ensure that data derived from plant conservation assessments are incorporated into regional reviews we need to undertake a regional Red Listing initiative for the Lake Victoria Basin. This will allow the incorporation

of plant data into regional conservation planning and ultimately into national conservation measures within the Lake Victoria Basin. Effective plant and habitat conservation will be profoundly hampered without this investment.

This project will fill an important gap in the analyses used to produce the MacArthur Foundation Conservation Strategy for the Great Lakes Region of East and Central Africa and provide information to guide conservation at the species and habitat level. The Red List assessment will provide a list of species that can be incorporated into national legislation and go towards national delivery of the Global Strategy for Plant Conservation. To proceed we need to know how many plant species are threatened with extinction, where are they and what is the status of their wild populations.

#### **Project Deliverables**

- Red List Assessment of endemic plant species (450 species including the 109 plant species used in the regional analysis of KBAs in the Lake Victoria Basin.)
- Red List Assessment of threatened non-endemic plant species (150 species)
- Review of Key Biodiversity Areas and Climate Resilient Altitudinal Gradients based on Red List results
- List of Alliance for Zero Extinction sites in Lake Victoria Basin
- List of potential Important Plant Areas for Lake Victoria Basin
- Field Assessment of two under collected and poorly known Key Biodiversity Areas/Important Plant Areas
- Management plan for a selected Key Biodiversity Area/Important Plant Area or CRAG with a specific focus on securing biodiversity and ecosystem services.
- Regional workshops and outreach events with local universities, conservation groups etc.

#### **Project Outcomes**

- Significantly improved understanding of the conservation status and distribution of the threatened and endemic plant diversity of the Lake Victoria Basin, the first regional assessment for the Lake Victoria Basin
- Strengthened regional identification of Key Biodiversity Areas
- Better national and regional recognition of the area's unique biodiversity
- Improved capacity for regional conservationists, foresters, communities and land managers.

#### **Project Work Plan**

**Objective 1: Increase use and access to sound scientific information (Red Listing of Plant Species) to guide management actions to reduce the loss of biodiversity**

**Activity 1.** Establish project steering committee, all existing and active members of the East African Red List Authority. Initial meeting to be tagged onto first Red List workshop. PY1 Q 1.

- Mr. Quentin Luke (Kenya), Principal Investigator and Project Manager, chair of the East African Plant Red List Authority
- Dr James Kalema (Uganda),
- Dr Henk Beentje (Netherlands), Research Associate, Royal Botanic Gardens, Kew
- Dr Roy Gereau (USA) Missouri Botanical Garden, USA
- Dr Mike Maunder (UK), Tropical Conservation Institute, College of Arts and Sciences, Florida International University
- Dr Paul Reillo, (USA) *Ex Officio*, Executive Director of the Rare Species Conservatory Foundation and Co-Director for the Tropical Conservation Institute, Florida International University

**Activity 2.** Undertake a comprehensive review of existing plant conservation status resources, conservation plans etc for the Lake Victoria Basin and geo-referencing of herbarium records. PY1 Q 1.

**Activity 3.** Hold regional planning meeting with other MacArthur Lake Victoria Basin grantees to coordinate activities (Quentin Luke to attend). PY1 Q 1.

**Activity 4.** Undertake three workshops in Entebbe for the Lake Victoria Basin. Geo-referenced data from regional and international herbaria will be incorporated into SIS project database and analyzed using the protocol developed and tested by the East African Plant Red List Authority.

Workshop 1. PY1 Q 1. Regionally threatened species (150 species). 10 participants representing the steering committee and 6 invited regional botanists. Student and faculty participation from Makerere University at all workshops will be encouraged. Craig Hilton Taylor from SSC Red List Unit will participate in first workshop.

Workshop 2. PY1 Q 2. Regionally Endemic Plant Species (225 species). 10 participants representing the steering committee and 6 invited regional botanists. Student and faculty participation from Makerere University at all workshops will be encouraged.

Workshop 3. PY1 Q 3. Regionally Endemic Plant Species (225 species). 10 participants representing the steering committee and 6 invited regional botanists. Student and faculty participation from Makerere University at all workshops will be encouraged.

**Activity 5.** PY1 Q 4. Submit results from Workshop 1, 2 and 3 to IUCN Red List Office. Review undertaken by IUCN office (*circa* 2 weeks work by Red List Office).

**Objective 2. Undertake field survey of Important Plant Areas in the Lake Victoria Basin with aim of securing under recognized areas of conservation importance. PY1 and PY2.**

**Activity 6.** Undertake Field Survey of 2 poorly documented sites (PY1 Q 4 and PY2 Q 1). Based on data produced by workshops field investigations will be undertaken for two sites that hold poorly documented plant diversity and are likely to represent a Key Biodiversity Area and/or Climate Resilient Altitudinal gradient. Each field survey will comprise one week in the field with a total party of *circa* 5 people. Student and faculty participation from relevant regional conservation agencies and universities will be encouraged.

**Objective 3. Incorporate Plant Red List assessments into regional conservation analyses and strengthen regional capacity for conservation**

**Activity 7.** Produce analysis of Red List Assessments to review new and existing Alliance for Zero Extinction sites, proposed Important Plant Areas and Key Biodiversity Areas (PY2 Q2).

**Activity 8.** Concluding one-day workshop with University of Makerere on plant conservation issues and priorities in the Lake Victoria Basin (PY2 Q4).

**Activity 9.** Produce report on plant conservation in Lake Victoria Basin to be published by SWARA, the magazine of the East African Wildlife Society (PY2 Q 3).

**Objective 4. Improve management of an important biodiversity site through incorporating scientific information on plant diversity conservation into the management of ecosystem services.**

**Activity 10.** Undertake a study of the conservation management of a selected site (likely to be a candidate Important Plant Area or Key Biodiversity Area) to establish improved management for biodiversity and ecosystem service conservation (PY2 Q2).

We plan to promote the red listing at the World Conservation Congress in 2016 and the IUCN/SSC Chairs Meeting in 2015. The red list will contribute to the ongoing Global Tree Campaign of FFI, BGCI and IUCN. We plan to publish at least one review paper in an international conservation journal (e.g. Oryx).

We will maintain close communications with other MacArthur grantees and plan for an annual planning meeting to coordinate activities.

## MONITORING AND EVALUATION

We will monitor and evaluate project implementation and delivery against the following criteria/indicators:

**Performance Indicator 1:** Number of documents and other sources reviewed and consulted for information on plant diversity status in the project area

**Performance Indicator 2:** Number of existing IUCN assessments reviewed and incorporated into SSC database.

**Performance Indicator 3:** Number of new IUCN assessments made for the Lake Victoria Basin.  
**Performance Indicator 4:** Number of Important Plant Areas identified.  
**Performance Indicator 5:** Number of Alliance for Zero Extinction sites identified.  
**Performance Indicator 6:** Number of Important Biodiversity Areas with added plant data.  
**Performance Indicator 7:** Number of economically and culturally important plant species that are Red Listed.  
**Performance Indicator 8:** Number of proposed new Climate Resilient Altitudinal Gradients  
**Performance Indicator 9:** Number of peer reviewed scientific publications  
**Performance Indicator 10:** Number of popular press and outreach events

Performance will be reviewed by the project management team on a quarterly basis.

### **3. ORGANIZATIONAL CAPACITY**

*The Rare Species Conservatory Foundation (RSCF) has a focus on the conservation management of threatened species and has a long history of engagement with conservation in East Africa. In particular the RSCF has been working on the conservation of East African montane habitats and in particular the conservation and recovery of the East African bongo.*

*The East African Plant Red List Authority was established in 2005 with a mandate from the SSC/IUCN to undertake Red Listing in the East African region and to support the regional implementation of the Global Strategy for Plant Conservation. The group has 14 active members who coordinate activities with 8 Eastern African countries and are drawn from the top regional botanical institutions (e.g. University of Addis Ababa, University of Nairobi, Makerere University, University of Dar es Salaam, Juba University, National Herbarium of Rwanda, National herbarium of Burundi, National Museums of Kenya, National Herbarium of Tanzania and the Okapi Wildlife Reserve in DRC); in addition there are 3 external members from extra-regional institutions (Royal Botanic Gardens, Kew; Missouri Botanical Garden and Florida International University). The project steering committee includes internationally recognized experts on the flora of East Africa.*

*To date eight workshops have successfully assessed over 1600 plant species. This group is one of the most active groups within the SSC and has developed significant expertise in Red Listing. The group has a detailed and intimate knowledge of the East African flora.*

*The East African Plant Red List Authority is based in Kenya (Nairobi) and is chaired by Kenyan national, Mr. Quentin Luke, a Research Associate of the National Museums of Kenya and recognized authority on East African botany and plant conservation. The Rare Species Conservatory Foundation and the East African Plant Red List Authority have not previously received funds from the MacArthur Foundation.*

The Project will maintain close communication with IUCN (Red Listing of Lake Victoria Aquatic Biota), Bird Life and other potential MacArthur grantees to ensure efficient operations and sharing of information. Through Dr James Kalema we will maintain a close working relationship with the University of Makerere and will encourage faculty and student engagement with the project. The East African Wildlife Society will be a key partner and will publish a project summary in their journal *SWARA*.

We will invite participation in the site conservation management plan from KENWEB, a regional wetland conservation group and the Ugandan Wildlife Society, a national partner of the East African Wildlife Society (EAWLS). A member of the Florida International University tropical wetland team will participate in this workshop.

The IUCN/SSC Red List Office in Cambridge (UK) will be a key collaborator. Dr Craig Hilton Taylor will join the first workshop and will act as liaison for the inclusion of the assessments into the official IUCN Red List.

All field activities will be dependent upon receiving the appropriate permits from national scientific agencies.

#### 4. INTELLECTUAL PROPERTY (WORK PRODUCT)

The project will deliver a variety of materials including published reports, research studies, data sets, posters etc. We plan to use the East African Wildlife Society magazine SWARA as a venue. We will buy copies for free distribution to the audience in the region. Members of the East African Wildlife Society receive SWARA as a benefit of membership a relatively small number of copies are sold retail in the region. The Red List assessments will be held on a public database by the SSC.

We will work with the East African Wildlife Society to promote the value of plant diversity.

#### 5. INVOLVEMENT IN THE POLITICAL PROESS

*The project plans NO direct involvement in the political process.*

*Please answer YES or NO. If your answer to any of the following questions is YES, please also indicate all of the sections where these activities are described in the proposal (including budget).*

- *Do any of the activities of your organization include attempts to influence legislation, a specific legislative proposal not yet introduced; proposed treaties required to be submitted to the legislature for consent; referendums, ballot initiatives, and constitutional amendments placed on a ballot by petition? Please note that the term "legislation" includes legislation introduced in a legislative body. Legislative bodies include the US Congress or other national parliaments or congresses, state or provincial legislatures, or city/local councils. NO*
- *Will any of the requested project funds be used to communicate with members of a legislative body (or other persons who participate in the formulation of legislation) and state a position on specific legislation? NO*
- *Will any of the requested project funds be used to communicate with the general public regarding specific legislation and encouraging the public to take action with respect to such legislation? NO*
- *Will any of the requested project funds be used to prepare communications that would be considered to be a non-partisan analysis, study, or research (a full and fair analysis of the pertinent facts reflecting all sides of the issue that is made widely available to those on both sides of the issue) regarding specific legislation? NO*
- *Will any of the requested project funds be used to provide technical advice or assistance to governmental bodies or committees through testimony or other means regarding specific legislation? If yes, provide a copy of the previously received written request on behalf of the government body to provide the technical advice, such as a written invitation or letter from the government body that might request your organization or staff to testify before a legislative or congressional committee, or to provide assistance in reviewing or drafting legislation NO.*
- *Will any of the requested project funds be used to communicate with or educate members of a legislative body? If so, please explain. NO*
- *Will any of the requested project funds be used to participate or intervene in any political campaign on behalf of or in opposition to any candidate for public office (including publishing/distributing statements related to the campaign, paying compensation to campaign workers, conducting or paying expenditures connected with targeted voter registration drives, or making campaign contributions for candidates for public office)? NO*
- *Will any of the requested project funds be used to influence the outcome of any specific public election or carry on any voter registration drives? NO*

- ADDITIONAL CONSIDERATIONS

The project will take climate change into account in light of its potential impacts on habitats. The proposed project will not result in the resettlement or relocation of people. It is not anticipated that this project will result in the restriction of access to natural resources.

#### **KEY PROJECT STAFF**

**QUENTIN W. LUKE (Kenya)** is a botanist and conservationist with over 28 years experience in Africa. He has collected over 22,000 specimens and had 9 plant species named after him. Quentin's fieldwork has included Kenya, Tanzania, Uganda, Mozambique, Madagascar, Bioko, Sierra Leone, Mali, Democratic Republic of Congo, Ethiopia and Djibouti. Quentin has been closely associated with the conservation of the sacred Kaya forests of Kenya and is the founding Chair of the Eastern African Plant Red List Authority.

**JAMES KALEMA (Uganda)** is a botanist at Makerere University, Uganda, of remarkable field and herbarium experience. Trained at different times in conservation assessment by Kew, IUCN and National Museum Museums of Kenya, and in Biodiversity Informatics by Uganda National Council of Science and Technology under auspices of GBIF. Been assessing plant conservation status for eight years. A member of the Global Tree Specialist Group of IUCN and also serves on the East Africa Plant Red Listing Authority (EAPRLA). Participated in Implementation of the Global Strategy for Plant Conservation (GSPC) under JRS/Botanic Garden Conservation International (BGCI), with special emphasis on East African endemic and near-endemic taxa. Took part in the Vegetation and Climate change in Eastern Africa (VECEA) project, a joint project with the Department of Forest and Landscape, University of Copenhagen, Denmark. Participated in the design of Uganda's National Biodiversity Strategy and Action Plan (NBSAP) (under National Environment Management Authority) for implementation of the CBD. Currently involved in production of a Conservation Atlas of East African Acanthaceae: phytogeography and conservation, in partnership with the Botanical Museum of University of Copenhagen, Royal Botanic Gardens, Kew Herbarium and University of Dar es Salaam. Co-author with Henk Beentje of a Conservation Checklist of the Trees of Uganda. Member, Technical Committee on Biodiversity Conservation in Uganda; Man and Biosphere (MAB) Programme Committee of UNESCO in Uganda

**ROY GEREAU (USA)**, received his Master of Science degree in Biological Sciences from Michigan Technological University in 1978, and has been employed by the Missouri Botanical Garden since 1983, where he is Tanzania Program Director. His African botanical experience began with a plant collecting trip to the Omo River in Ethiopia in 1984, followed by a short exploratory visit to Tanzania, where he has worked extensively ever since, conducting botanical fieldwork throughout Tanzania as well as in Cameroon, Congo (Brazzaville), Democratic Republic of Congo, Ethiopia, Kenya, and Uganda. He has worked in liaison with the National Herbarium of Tanzania to establish a network of resident collectors throughout the country. His research work combines an interest in botanical exploration and inventory, phytogeographic studies, description of new species and systematic revisions, species distribution modeling, delimitation of tropical montane ecoregions, climate change impacts on plant species distributions, conservation assessments of targeted species, ex-situ conservation of threatened species, development of botanical gardens, and promotion of indigenous species for home gardens. He has worked with Tanzanian colleagues to produce floristic checklists of the Lake Nyasa Climatic Region, Minziro Forest Reserve, and Gombe National Park, and is currently completing a floristic checklist of the Eastern Arc Mountains. He has been a member of the Eastern African Plant Red List Authority (EAPRLA) since its formation in 2006, and has prepared the data for and participated in all eight EAPRLA plant conservation assessments workshops from 2006-2014. His 70 peer-reviewed publications include new Tanzanian species in the Annonaceae, Fabaceae, and Rubiaceae, the taxonomic revision of *Ancistrocladus* (Ancistrocladaceae), co-authorship (with Lovett, Ruffo & Taplin) of the *Field Guide to the Moist Forest Trees of Tanzania*, and authorship of the *Lake Nyasa Climatic Region Floristic Checklist*.

**HENK BEENTJE (Netherlands)** holds a PhD from the University of Wageningen, Netherlands, and has worked on African plant systematics and conservation since 1975. He is the author of 140 papers and books including 'Kenya trees, shrubs and lianas' and (co-authored) field guides to the palms of Madagascar, the trees of Burkina Faso and the



mangroves of Africa. From 1997–2012 he was the editor of the Flora of Tropical East Africa at the Royal Botanic Gardens, Kew. Since 1999 he has been a member of the IUCN/SSC East African Plant specialist group (later Plant Red Listing Authority). He is fluent in English and Dutch, and his French is good. He has done fieldwork in seven Africa countries, and from 1984–1989 was employed at the East African Herbarium, National Museums of Kenya. From 1991–2013 he was employed at the Royal Botanic Gardens, Kew, from where he retired in 2013. He is currently engaged in Flora-writing, plant taxonomy, conservation Red Listing and working on various field guides.

**PAUL R. REILLO (USA)** received his Ph.D. from the University of Maryland (Zoology). Founder and President of the Rare Species Conservatory Foundation. Extensive fieldwork experience in North America, Caribbean and Latin America. Specialist focus on the conservation and recovery of threatened species with a special focus on forest antelope (bongo), neotropical primates and parrots. Field-oriented population biologist, ecological geneticist and environmental engineer. Technical expertise in field ecology, demographic and genetic analysis of small populations and animal husbandry.

**MIKE MAUNDER (UK)** is a conservationist and not-for-profit administrator serving as Associate Dean for Research Engagement, College of Arts and Sciences, Florida International University. Mike received his PhD in conservation genetics from the University of Reading. Mike has over 25 years experience in species and habitat conservation, conservation strategy and policy, institutional leadership and project management with extensive fieldwork and research experience in Middle East, Central and Eastern Africa, Caribbean and Pacific regions. Mike is a member of the East African Plant Red List Authority. Mike is a senior Editor for the international conservation journal *Oryx* and a founder board member of the Sheikh Mohamed bin Zayed Species Conservation Fund.

### III. Conservation Education Activities

In 2016, RSCF maintained relationships with domestic and international zoological institutions and agencies, and again overhauled its extensive, free-access web site ([www.rarespecies.org](http://www.rarespecies.org)). The site links to many conservation and environmental organizations, presents RSCF's mission and scope for all audiences, and discusses conservation initiatives in detail. The education section for children has been significantly expanded, and is now used by schoolteachers across the U.S. and internationally. The site is updated regularly, and provides access to in-house and published scientific papers and program documents. RSCF also maintains a real-time social media presence (e.g., FaceBook, Twitter). In addition, RSCF staff in 2016 presented lectures and seminars to scientific and lay audiences (e.g., local universities, nature centers, international conservation meetings and workshops), and RSCF's board members served as academic advisors for graduate-level university students. (*Please see discussion on RSCF's collaboration with Florida International University—Tropical Conservation Institute.*) During 2016, also RSCF continued sponsorship of the annual Caribbean Endemic Birds Festival on Dominica (see above).

### IV. Media Development

In the course of implementing its conservation programs, RSCF generates a large amount of data, video footage, photographs, and technical narrative. Integral to the research effort itself, these materials also provide the basis for information sharing with scientific and lay audiences. RSCF compiles media resources into comprehensive reference libraries of imperiled ecosystems and species, including images and event histories that document project timelines in their entirety. The more endangered the species, the more crucial the record. Project-site host governments are a further beneficiary of this media development initiative, many of them lacking the funds to document their own country's biological resources, and what is becoming of them.

RSCF partners draw upon raw material from RSCF's field research. Scientific media content is packaged for use by partners, and is seen in exhibits and educational materials suitable for diverse audiences (e.g., zoo visitors, students, professional educators, web site browsers, conservation organizations, governmental agencies). Findings are also shared with scientific colleagues through technical publications associated with *in situ* conservation initiatives,

propagation and other activities. RSCF is also acutely aware of the need to expand media programs and adapt/translate materials for educators, students and researchers at field project sites. RSCF's programs and field material are featured regularly in popular print and film, in addition to scientific publications for professionals. For example, RSCF's instrumental role in creating the world's first new national park of the millennium was presented in *Wildlife Conservation*, *National Geographic*, and *Palm Beach Illustrated*. Similarly, RSCF's work has been highlighted on *CNN*, and *National Geographic Today*, and the Dominica Program was the feature story for *Jack Hanna's Animal Adventures* season premier entitled, "In Search of the Sisserou".

RSCF regularly contributes feature articles and research papers to technical and lay journals. Similarly, the 2003-2004 bongo repatriation effort was featured on *CNN*, *BBC*, network television, the *New York Times*, multiple web news services (including *National Geographic* and *Time Magazine for Kids*), and over 30 newspapers across the U.S., Canada, Europe and Africa. During 2005, RSCF assisted the British Broadcasting Corporation while filming on Dominica, part of a multi-year, many-island documentary of the natural and geomorphological histories of the Caribbean; this series reached U.S. and European markets during 2010-2011. During 2006, RSCF participated in a novel, mini-documentary website campaign sponsored by Lincoln-Mercury and Amazon.com, entitled "My Dream". See [www.mydream.tv](http://www.mydream.tv) and the submenu "Give Back" / "Conserve an Endangered Species" to view the film and profile about RSCF programs. RSCF trustee Mark Davis, DVM compiled, directed and produced a multi-cultural wildlife documentary film, "Horns of Hope," which debuted in 2012 and has been shown in numerous public venues since. The film highlights the poaching plight of black rhino in Zimbabwe and a diversity of conservation and recovery strategies for Africa's premier flagship mammal species, including rhinoceros and bongo antelope; in addition it inspires environmental awareness through cultural, spiritual and scientific messaging.

Increasingly, social media has enabled RSCF to efficiently reach a broad audience with day-to-day video posts, staff blogs and contributions, photos, real-time dialogue with field staff, and related news stories. Some RSCF-generated videos have gone viral, while other material has been archived by network news organizations and conservation-themed websites and advocates (e.g., Arkive.org). RSCF staff continue to present at several local, national and international conservation venues and participate in nature documentary filming. RSCF staff, research associates and program partners published in technical peer-reviewed journals, popular magazines, local and regional newspapers, and in online forums. Please see RSCF's website for a complete and historical list of reprints, press releases, links and related materials.

## V. Facility Expansion

Thanks to a special grant from the Batchelor Foundation in Miami, in November 2007 RSCF formally expanded the Conservatory along its northwest boundary. The five-acre property includes a 2300 sq. ft. main structure, vehicle storage pole barn, and irrigation pond. As an expansion of the 20-acre Rare Species Conservatory, this addition enhances RSCF's wildlife conservation activities and facilities. During 2014, a number of construction and modification projects were completed, including:

- Re-design and completion of the breeding laboratory for the Florida Grasshopper Sparrow
- Expanded pygmy marmoset breeding enclosures and parrot fledgling enclosures
- Expanded bongo habitat, development of new bongo breeding group
- New hoofstock feeding structures, gates and pens

*Digital Imaging:* Thanks to a special grant, RSCF purchased a fully portable, Sound Eklon 1109G Digital Radiography System, to be shared cooperatively among local wildlife non-profit centers. The system comprises a suitcase-based computer and control system coupled to a digital imaging plate that allows both clinical and field-based x-ray imaging of small and large animals. Under an agreement with the Rainforest Clinic, based in Loxahatchee, patients from all local wildlife non-profits can benefit from the latest in digital x-ray imaging at no cost. In addition, the clinic provides an annual stipend to RSCF in consideration for providing digital imaging

services to regular clients. This technology provides limitless, film-free, fast, fine-detail, images that can be enhanced, saved and shared among researchers and veterinarians. Diagnostics are maximized while handling time is minimized, significantly reducing patient stress. During 2013, the digital radiography system was instrumental in guiding the full recovery of an orphaned bongo antelope calf, born with a broken distal metacarpal. The system has also been invaluable for diagnosing health issues in parrots and small primates since its deployment.

As a 25-acre facility, the Rare Species Conservatory represents the organization's international headquarters for wildlife conservation, which focuses on global biodiversity preservation. RSCF's interdisciplinary programs integrate applied field and clinical research on endangered species, propagation and management of critical, flagship species for repatriation and reintroduction, developing husbandry protocols for critical taxa, and implementing protected-area policies and strategies for long-term ecosystem conservation. RSCF also collaborates with scientific and governing authorities for wildlife in conservation hotspot zones, primarily in the tropics and neo-tropics, to develop tangible conservation solutions for imperiled species and habitats.

The Conservatory in Loxahatchee serves as a captive-breeding center and research complex, as it also provides a hub for international exchange and outreach to students, interns, collegial scientists and the general public. The Conservatory has become a technical hub for FIU's Tropical Conservation Institute (described above). Expanded facilities significantly enhance RSCF's conservation mission both locally and internationally, and facilitate existing and future programs to protect and restore the world's highest priority wildlife and natural areas. Please see RSCF's website at [for a detailed discussion about specific projects, organizational structure, and conservation strategies.](#)

## APPENDIX A: Board of Directors

**Paul R. Reillo, Ph.D., University of Maryland (Zoology).** Field-oriented population biologist, ecological geneticist and environmental engineer. Rare Species Conservatory Foundation founder and president. Technical expertise in field ecology, demographic and genetic analysis of small populations and animal husbandry.

**Richard D. Estes, Ph.D., Cornell University (Vertebrate Zoology).** Behavioral zoologist and ecologist. Specialist in field studies of large African mammals. Species Survival Commission Chairman for Antelope Specialist Group of the World Conservation Union (IUCN); Earthwatch Scientific Advisor; Associate, Harvard Museum of Cultural and Natural History.

**George Amato, Ph.D., Yale University (Biology).** Director and Affiliated Professor, Sackler Institute of Comparative Genomics, American Museum of Natural History. Adjunct associate professor at Columbia and Fordham universities, research associate in the Ecology and Evolutionary Biology Department of Yale University. Conservation geneticist specializing in non-invasive sampling techniques for endangered species, and monitoring the trade in endangered species products using DNA-based forensic science.

**Christopher Langen, Esq.** Attorney, parrot enthusiast and conservation devotee, having traveled to 26 countries to view parrots alone. Fluent in four languages, and provides both legal counsel to RSCF and international program perspective and expertise.

## APPENDIX B: Year-end, 2016 Animal collection at RSCF, maintained under USDA, USFWS, and Florida FWC licenses

|  |  |
|--|--|
| 2 <i>Iguana iguana</i> (common green iguana)                     | 1 <i>Amazona imperialis</i> (Imperial parrot)                              |
| 45 <i>Boocercus euryceros isaaci</i> (eastern bongo)             | 4 <i>Derophtus accipitrinus accipitrinus</i><br>(Guyana hawkheaded parrot) |
| 60 <i>Amazona rhodocorytha</i><br>(Red-browed Amazon parrot)     | 2 <i>Pionites melanocephala</i><br>(Black-headed caique)                   |
| 2 <i>Amazona vinacea</i> (Vinaceous Amazon parrot)               | 1 <i>Amazona brasiliensis</i><br>(Red-tailed Amazon parrot)                |
| 15 <i>Pionites leucogaster</i> (White-bellied caique parrot)     |  |
| 2 <i>Leontopithecus rosalia</i> (Golden Lion Tamarin)            |  |
| 4 <i>Leontopithecus chrysomelas</i> (Golden-headed Lion Tamarin) |  |
| 38 <i>Cebuella pygmaea</i> (Pygmy marmoset)                      |  |
| 5 <i>Aratinga guarouba</i> (Golden conure)                       |  |

### APPENDIX C: 2016 RSCF Physical Plant Inventory

- 25 landscaped acres, property and tangible-tax exempt (Palm Beach County, FL), fenced and cross-fenced (1.6 miles 8' fencing, mostly hi-tensile; .75 miles 4' fencing, hi-tensile)
- 12 interconnected hoofstock paddocks, with 8' gates, loading corrals, pole barns for feeding stations, troughs
- 1.5 acre mixed-species area, with 40 flights, including 13 walk-in, landscaped enclosures.
- 10 additional free-flight aviaries and stand-alone primate enclosures.
- 30'x12'x10' zoomesh primate enclosure
- 5 hurricane-proof bunkers (including, weaning, evacuation and workshop rooms)
- 3 hurricane-proof small animal breeding spaces (Florida Grasshopper Sparrow)
- 1 soft-sided outdoor sparrow aviary (for incoming wild birds)
- aviary kitchen/ food prep room
- dishwashing building
- hay and grain storage buildings
- reverse-osmosis water purification system (separate building)
- Sound Eklin 1109G portable radiography system (housed at Rainforest Clinic)
- office/lab with nursery, veterinary clinic, surgery and quarantine (600 sq.ft.)
- personnel quarters, with separate intern/guest accommodation (1300 sq.ft.)
- meeting, staff-support and laboratory space (2000 sq. ft.), including rearing laboratory
- technical equipment (e.g., incubators, brooders, video, computers, tranquilizer equip., respirator, anesthesia)
- shop and tools (tractor, 3 all-terrain vehicles, bushhog, mower, trimmer, auger, sub-soiler, hand tools, welder, specialty fencing tools, plumbing, electrical supplies, rolling stock, 2 golf carts, etc.)
- backup diesel and gasoline generators—stationary and portable.