

Economic Analysis for the Imperiled Species Management Plan

with Statement of Estimated Regulatory Costs

Environmental Economics, Inc.

This analysis provides supporting information, methods, and data for potential economic impacts when implementing the FWC Imperiled Species Management Plan. It also provides the detail to support the Statement of Estimated Regulatory Costs as advertised in the Florida Administrative Weekly.

CONTENTS

GLOSSARY OF ACRONYMS	2
ECONOMIC IMPACTS OF CHANGES TO LISTING STATUS ASSOCIATED WITH THE IMPERILED SPECIES MANAGEMENT PLAN	2
BACKGROUND	2
BENEFITS AND COSTS: A FRAMEWORK AND TAXONOMY	3
INITIAL REVIEW	6
ECONOMIC IMPACTS OF CHANGES TO LISTING STATUS.....	13
COSTS TO FWC	13
COSTS TO NON-FWC AGENCIES AND PRIVATE BUSINESSES.....	22
CHAPTER 120.54(3) (B) COMPLIANCE (BURROWING OWL, SHORE BIRDS, AND WADING BIRDS).....	27
SUMMARY AND CONCLUSION	29
LITERATURE CITED	30
APPENDIX I. FWC STAFF SALARIES	31

TABLES

TABLE 1. TAXONOMY OF POSSIBLE COSTS (C) RESULTING FROM IMPLEMENTATION OF THE IMPERILED SPECIES MANAGEMENT PLAN	4
TABLE 2. TAXONOMY OF POSSIBLE BENEFITS (B) OF IMPLEMENTATION OF THE IMPERILED SPECIES MANAGEMENT PLAN	5
TABLE 3. AN EVALUATION OF PROPOSED CHANGES TO RULES IN THE FLORIDA ADMINISTRATIVE CODE WITH RESPECT TO ECONOMIC IMPACTS.	9
TABLE 4. ESTIMATED GRANT REQUESTS - ONE TIME EXPENDITURES.	15
TABLE 5: ANTICIPATED FWC RESOURCE COMMITMENT BY INTEGRATED ACTION.	18
TABLE 6 – RESPONDENT CATEGORIES	22
TABLE 7 – RESPONDENT LIST OF ACTIVITIES.....	23
TABLE 8. RESPONSES TO KEY SURVEY QUESTIONS FOR CHANGES TO THE BURROWING OWL	23
TABLE 9. RESPONSES TO KEY SURVEY QUESTIONS FOR CHANGES TO THE SHORE BIRD.....	24
TABLE 10. RESPONSES TO KEY SURVEY QUESTIONS FOR CHANGES TO THE WADING BIRD.....	24
TABLE 11. ANNUAL COST AND REVENUE ESTIMATES FOR PRIVATE BUSINESS RESULTING IN CHANGES TO THE BURRING OWL REGULATIONS.	25
TABLE 12. ANNUAL COST AND REVENUE ESTIMATES FOR PRIVATE BUSINESS RESULTING IN CHANGES TO THE SHORE BIRD REGULATIONS. ...	25
TABLE 13. ANNUAL COST AND REVENUE ESTIMATES FOR PRIVATE BUSINESS RESULTING IN CHANGES TO THE WADING BIRD REGULATIONS.	26
TABLE 14. STATEWIDE ANNUAL ECONOMIC IMPACT FROM BURROWING OWL ISMP BASED UPON THE BUSINESS SECTORS OF CONSTRUCTION, MINING, AGRICULTURE AND CONSULTING SERVICES (PRELIMINARY ESTIMATES).	26
TABLE 15. STATEWIDE ANNUAL ECONOMIC IMPACT FROM SHORE BIRD ISMP BASED UPON THE BUSINESS SECTORS OF CONSTRUCTION, MINING, AGRICULTURE AND CONSULTING SERVICES (PRELIMINARY ESTIMATES).....	26
TABLE 16. STATEWIDE ANNUAL ECONOMIC IMPACT FROM WADING BIRD ISMP BASED UPON THE BUSINESS SECTORS OF CONSTRUCTION, MINING, AGRICULTURE AND CONSULTING SERVICES (PRELIMINARY ESTIMATES).....	26

Glossary of Acronyms

AHRES: Aquatic Habitat and Restoration
CPS: Conservation Planning Services
CR: Community Relations
FFM: Freshwater Fisheries Management
FFR: Freshwater Fisheries Research
FWC: Florida Fish and Wildlife Conservation Commission
FWRI: Fish and Wildlife Research Institute of FWC
HSC: Habitat and Species Conservation
IPM: Invasive Plant Management
LE: Law Enforcement
MFM: Marine Fisheries Management
OED: Office of the Executive Director
OPAWVS: Office of Public Access and Wildlife Viewing
SCP: Species Conservation Planning
SERC: Statement of Estimates Regulatory Cost
WHM: Wildlife Habitat Management

Economic Impacts of Changes to Listing Status Associated with the Imperiled Species Management Plan

Background

Florida's Imperiled Species Management Plan (ISMP) is intended to benefit the citizens of Florida and may result in measurable economic benefits, such as financial gains to wildlife-dependent businesses or the restoration of diminished ecological-services. However, the ISMP will also entail costs, including agency administrative and management related expenses, and may also impact private businesses and other economic interests. On either side of the ledger, policy makers should consider both the marginal benefits (improvements) and marginal costs of their proposed action as part of their policy evaluation. *Marginal benefit* refers to amount people are willing to pay or give in order to obtain additional goods or services. *Marginal costs* are those costs associated with producing additional units of goods or services. This analysis will focus on the marginal costs associated with protecting or managing species, as well as those costs that go beyond existing costs related to these species.

With good record keeping, many historic cost data for agencies are relatively easy to document. Even though finding cost data for private concerns may entail extensive surveys and complex analyses to reliably document, they are typically obtainable. Estimating the economic benefits of marginal improvement in ecological services is more problematic. It is difficult to identify and tie an ecosystem's component services to human values. Even if these services are important to humans, if they lack clear markets it may be difficult to assign them monetary value. In spite of these difficulties the economic theory and methodology to support the effort is well established and widely cited in the literature

(Bateman et al., 2002; Champ, Boyle and Brown, 2012). It is likely that even a piecemeal approach, if well planned, could provide a reasonable estimate of both marginal costs and benefits.

Concern over regulatory cost is formally addressed in Chapter 68A-27, F.A.C., stating, “[t]he management plan shall ... consider and evaluate anticipated economic, ecological and social impacts of implementing, or not implementing the management plan including a projection of costs of implementing the management plan and identification of the funding sources for the cost as determined through involvement of affected stakeholders and public input.” Chapter 120.54(3) (b), F.S., encourages all new or changed administrative rules to undergo a process to determine the estimated action’s regulatory costs. In some circumstances this is required with the completion of a SERC. There are no commensurate statutory requirements for addressing marginal benefits; consequently, most economic analyses focus exclusively on changes in marginal costs. Although the ISMP will involve multiple rule changes, the SERC focus is on Rule 68A-27.003, F.A.C. This rule contains the list of state-Threatened species. A total of 23 species will be added to this list, and 2 will be removed. As a result of their change to state-Threatened species, the 23 newly added species may have some additional permitting and conservation measures that are described in the ISMP or the associated permitting guidelines.

The ISMP is a new, comprehensive conservation approach to address Florida’s imperiled wildlife species and therefore, there is little historical data upon which to project future cost estimates. Given this, more precise estimates of costs to implement the plan will be incorporated as part of the ISMP’s five-year formal review.

Benefits and Costs: A Framework and Taxonomy

To help clarify some of the misinterpretation surrounding economics and costs vs. benefits, a simple taxonomy is included below.

Costs associated with the ISMP can be defined as simply the amount paid or charged for something, or the loss resulting from an action. Costs can be further refined into several subcategories. The funds paid directly for a project (or action) can be termed direct costs and include all direct expenditures. However, most projects also involve costs and/or losses that are less obvious; these can be considered indirect costs. Some of the more important indirect costs include the costs or losses that result by foregoing another action or choice (opportunity cost), a measure of the ripple effect of redirected costs through an economy (economic impacts), and perhaps the most underrepresented of all costs, negative externalities. In the case of negative externalities, these are costs (losses) incurred by third parties not directly related to the project and can include both measureable losses and non-measureable losses, such as lost ecological services. An example of this could be the lost real estate value suffered by home owners adjacent to a noisy new airport or reduced biodiversity resulting from excessive use of pesticides.

Like any public project, the ISMP entails costs of all types. The direct costs are often obvious and easily measured. Less obvious, but nonetheless important, are opportunity costs. These include the cost of redirecting labor and funds from other useful activities to support the ISMP. Other indirect costs, including the economic impacts of redirecting funds and any negative externalities, are even more

obscure, but still worth acknowledging when present. They include the overall effects on the economy at-large by redirecting funds from one business sector to another (economic impact) and any possible externality suffered by unwitting third parties.

Not all costs are easily measurable. In many cases negative externalities are poorly understood and when they involve non-marketable goods and/or services, it is difficult to place a monetary value on their effect. On the other hand, other indirect costs are readily measurable and should be included within a benefit/cost analysis (BCA) or SERC. The opportunity costs accrued by an agency when it redirects labor and capital is often simple to document and should be measured whenever possible. To help guide this effort, Table 1 groups the basic types of costs and their typical availability. This can be viewed as the guiding taxonomy or framework for conducting either a BCA or SERC. This taxonomy allows for the systematic accounting for all costs and helps policy makers identify both the strengths and shortcomings in their final report.

Table 1. Taxonomy of possible costs (C) resulting from implementation of the Imperiled Species Management Plan

I. Program Development and Implementation Costs	II. Indirect Costs from the program (almost never considered)
<p>1. Direct Costs</p> <ul style="list-style-type: none"> i. Directly budgeted agency expenditures made for the program ii. Direct costs to outside firms and other public agencies 	<p>1. Economic impact from successfully implementing the program: <u>negative</u> impacts on business sectors – impact on economic growth (gross domestic product)</p>
<p>2. Opportunity Costs (not directly identified in program budget)</p> <ul style="list-style-type: none"> i. Agency costs in redirected labor and capita ii. Outside of agency costs in labor and capital 	<p>2. Negative externalities from successfully implementing the program: indirect costs</p> <ul style="list-style-type: none"> i. Lost use value (directly measurable) ii. Lost non-use value (indirectly measurable)

Summary: *C* denotes “cost”

- CI.1 –ISMP direct costs –both
 - CI.1.i within FWC, and
 - CI.1.ii outside FWC
- CI.2 – ISMP opportunity costs – both
 - CI.2.i within FWC, and
 - CI.2.ii outside FWC
- CII.1 –Economic impact of redirecting funds among sectors within the economy from a successful ISMP
- CII.2 –Negative externalities - Non-market value of the opportunity-cost of lost ecological services from a successful ISMP
 - CII.2.i – Lost use value

CII.2.ii – Lost non-use value

The benefits resulting from the ISMP are often referred to as the consumer’s surplus or the value generated by this good or service to its user(s). These represent the value imperiled species provide to people who value these animals and/or their associated habitat. When the good or service is privately produced it is considered private profit. In the case of most (if not all) imperiled species, no profits are generated to the regulatory agency and these benefits are captured by the consumers of benefits associated with the ISMP. Much like costs, benefits can be valued both directly and indirectly. In the case of *direct benefits*, there are analytical procedures to measure the impact of these benefits and their ripple effect through an economy. In the case of the ISMP, these benefits would include improvements to an economy resulting from the implementation of the ISMP and the restoration of one or more imperiled species. There are also *indirect benefits* that typically lack market value. In this case these benefits would include items such as improved ecological services and other non-market amenities such as improved wildlife viewing and hunting, for example.

Reporting benefits resulting from the ISMP is not required by the SERC; however, they are necessary to complete any BCA and useful to assist policy makers to see a more complete picture of their policy decisions.

Table 2. Taxonomy of Possible Benefits (B) of implementation of the Imperiled Species Management Plan

I. Direct Project Benefits	II. Indirect Benefits
<p>1. Added , improved or restored marketable goods/services</p> <ul style="list-style-type: none"> i. Direct effects (\$) ii. Positive impact on economy 	<p>1. Added, improved or restored non-marketable goods/services</p> <ul style="list-style-type: none"> i. Use value (Directly measureable) ii. Non-use value (Indirectly measureable)

- Summary:
- BI.1 – Direct project benefits
 - BI.1.i – Direct economic effects – directly measureable economic benefits accruing to private firms and/or people as a result of the ISMP
 - BI.1.ii – Positive economic impact on economy – the indirect and induced economic effects also known as the economic ripple effects resulting from the actions in BI.1.i
 - BII.1 – Indirect project benefits
 - BII.1.i – Gained use value – value gained by people who use the resource benefited by the project – no actual transfer of money
 - BII.1.ii – Gained non-use value – value gained by people who do not directly use the resource benefited by the project – no actual transfer of money

In Florida, Statement of Estimated Regulatory Costs (SERC) requirements are limited to documenting the incremental changes in costs and do not address the larger welfare picture. As a result, a SERC will only track actual direct and indirect costs. More specifically, the criteria established by the SERC as prescribed by Section 120.54(3) (b), Florida Statutes, would limit cost items to CI.1, CI.2 and CII.1 in Table 1.

By statute the SERC must adhere to the following format.

- An economic analysis showing whether the regulatory action directly or indirectly [CII.1]:
 - Has an adverse impact on economic growth.
 - Has an adverse impact on private sector job creation or employment.
 - Has an adverse impact on private sector investment in excess of \$1 million in the aggregate within 5 years after implementation of the rule.
 - Has an adverse impact on business competitiveness, including the ability of persons doing business in the state to compete with persons doing business in other states or domestic markets, productivity, or innovation in excess of \$1 million in the aggregate within five years after the implementation of the rule [CII.1].
 - Is likely to increase regulatory costs, including any transactional costs, in excess of \$1 million in the aggregate within five years after the implementation of the rule [CI.1, CI.2].
- A good faith estimate of the number of individuals and entities likely to be required to comply with the rule, together with a description of the types of individuals likely to be affected by the rule [CI.2].
- A good faith estimate of the cost to the agency, and to any other state and local government entities of implementing and enforcing the proposed rule [CI.1, CI.2].
- Estimate of any anticipated effect on state or local revenues [CII.1].
- A good faith estimate of the transactional costs likely to be incurred by individuals and entities, including local government entities, required to comply with the requirements of the rule. As used in this section “transactional costs” are the direct costs that are readily ascertainable based on standard business practices and include filing fees, the cost of obtaining a license, the cost of equipment required to be installed or used or procedures required to be employed in complying with the rule, additional operating costs incurred, the costs of monitoring and reporting and any other costs necessary to comply with the rule [CI.1, CI.2].
- An analysis of the impact on small businesses as defined by s.288.703 and an analysis of the impact on small counties as defined in s.120.52. The impact analysis for small business must include the basis for the agency’s decision not to implement alternatives that would reduce adverse impacts on small businesses [C.II.1].
- Any additional information that the agency determines may be useful.

Initial Review

Methods

Statements of estimated regulatory costs require an estimation of all marginal costs related to the implementation of the ISMP. These costs include those identified above as direct costs within FWC (CI.1.i) and by other businesses and agencies (CI.1.ii) as well as opportunity costs to FWC (CI.2.i) and others (CI.2.ii).

FWC staff biologists and a non-agency economist reviewed the 33 proposed Florida Administrative Code rule changes associated with the Imperiled Species Management Plan to identify those which might trigger an economic cost of \$1 million over five years (or \$200,000 annually). For rule changes thought likely to pass the SERC threshold, a more detailed analysis was deemed warranted and data necessary to complete the SERC collected.

Results

Because most of the species proposed for listing are either range-limited or cryptic, of the 33 proposed changes, only one rule change was considered likely to warrant a formal SERC; the others were considered unlikely to increase marginal costs to the level statutorily significant. Within this proposed rule change, there were three species or groups of species to be added to Florida's Endangered and Threatened Species List under rule 68A-27.003 which may result in an economic impact more than \$1 million over five years (or \$200,000 annually) as defined in Section 120.54(3)(b), F.S. For the purposes of the analysis, these species/species groups were identified as the burrowing owl, shore birds, and wading birds. Following statutory protocol, FWC conducted a preliminary SERC to estimate both the direct and opportunity costs associated with this proposed rule change.

The ISMP covers 37 Threatened species; 14 of these are already included as Threatened, while 23 were formerly Species of Special Concern that, when evaluated in 2010, were found to meet the criteria for Threatened status. For many citizens, increasing protections for 23 species in the state may cause some concern; however, the specific impacts of these status changes need to be considered on a species by species basis. For example, 14 of the 23 species with increasing protections are *range limited*, meaning that they are found in a small portion of the state with limited economic, social, or ecological impacts from a statewide perspective. Four of the species will fall into the cryptic species policy, which outlines the importance of seeking information on cryptic species over regulation of take. Fourteen of the species are included by the water management districts and DEP as wetland dependent; for these species, the ISMP provides a new streamlined approach to consider regulatory processes that address wetlands and incorporate protections for state-listed species. If the permits issued by other agencies adequately address the requirements for issuing a listed-species take permit, then these regulatory processes will fulfill the requirements of 68A-27, F.A.C., with no additional application process. Eight species with increasing protections are also petitioned for federal listing. Although increasing state regulations may have some cost to the citizens of Florida, the development of the ISMP, with conservation actions and regulatory approaches explained, may help preclude federal listing, which may be a cost-savings to the state. Table 3 summarizes these potential considerations for assessing impacts of changes in listing status.

Some rule changes reduce or eliminate regulation, thus providing a direct benefit to the citizens of Florida. The addition of a section to Rule 68A-16.003 that allows take of inactive nests of all birds will align that rule with the ISMP policy on single-use nests for state-designated Threatened species, and eliminate the need for entities to get permits to remove these inactive nests. Another change within the rule structure is to allow management plans or permitting guidelines to provide authorizations for certain activities. These authorizations are in lieu of any permitting needs, and should streamline regulation associated with some actions that also benefit human safety, such as right of way maintenance that improves sight lines and sign visibility for drivers in areas occupied by listed species. And finally, by adding human safety as a potential reason for issuing intentional take permits, FWC can increase their capacity to respond effectively to situations where listed species and human safety are in conflict.

Another potential benefit of the ISMP is the overlap between 18 species included in this plan that also have been petitioned for federal listing with the US Fish and Wildlife Service. Before recommending final listing actions, the USFWS can consider the regulatory approaches and conservation actions

outlined in this plan and the individual Species Action Plans, and these documents can help to preclude federal listing. Regulatory actions associated with federally listed species are typically much higher than those associated with state-listed species, so precluding federal listing would be a benefit to the citizens of Florida.

Table 3. An Evaluation of Proposed Changes to Rules in the Florida Administrative Code with Respect to Economic Impacts.

a. May Result in Economic Impacts per Section 120.54(3)(b), Florida Statutes

Rule Title/Division/Chapter/Section	Rule/ Subsection/ Paragraph/ Sub-paragraph	Summary of change	Economic Impact
68A-27.003 Designation of Endangered and Threatened Species; Prohibitions	(2)(e)	Add the American oystercatcher, black skimmer, Florida burrowing owl, little blue heron, Marian's marsh wren, reddish egret, roseate spoonbill, Scott's seaside sparrow, tricolored heron, Wakulla seaside sparrow, and Worthington's marsh wren to the list.	Species to be added to the Florida's Endangered and Threatened Species List under rule 68A-27.003 may result in an economic impact more than \$1 million over five years (or \$200,000 annually) as defined in Section 120.54(3)(b), F.S. A more detailed analysis will be conducted to evaluate the level of economic impacts prior to final rule adoption. If that additional analysis shows that the impact will exceed \$1 million over five years (or \$200,000 annually), a Statement of Regulatory Cost (SERC) will be completed and included in the final rule noticing process. Some of the species proposed for listing, such as the Scott's seaside sparrow, Wakulla seaside sparrow, and Worthington's marsh wren are range limited and the estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.

b. Estimated Economic Impact Will Not Meet the Impact Thresholds as Defined in Section 120.54(3)(b), Florida Statutes

Rule Title/Division/Chapter/Section	Rule/ Subsection/ Paragraph/ Sub-paragraph	Summary of change	Economic Impact
68A-27.003 Designation of Endangered and Threatened Species; Prohibitions	(2)(new paragraph)	Add the Florida bog frog and Georgia blind salamander to the list. Requires adding a new paragraph for amphibians to subsection.	The Florida bog frog is considered "range limited" and only occurs in wetlands on the Eglin Air Force Base installation in Florida's western Panhandle. The Georgia blind salamander is considered a cryptic species and the proposed policy "Permitting Standards for Incidental Take of Cryptic Species" applies. Estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.

	(2)(new paragraph)	Add the Black Creek crayfish and Santa Fe cave crayfish to the list. Requires adding a new paragraph for crustaceans to the subsection.	The Black Creek crayfish and Santa Fe cave crayfish are both considered "range limited" species. Estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.
	(2)(c)	Add the bluenose shiner, saltmarsh topminnow, and southern tessellated darter to the list.	The bluenose shiner, saltmarsh topminnow, and southern tessellated darter are all considered "range limited" species. Estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.
	(2)(d)	Add the Barbour's map turtle, Florida Keys mole skink, and Florida pine snake to the list.	The Barbour's map turtle is considered a "range limited" species. Impacts could result in possible reduction of "deadhead logging" practices, but co-occurs with federally listed mussels where other regulations apply and address the turtle. The Florida Keys mole skink and Florida pine snake are both considered cryptic species. The mole skink occurs in Monroe County and local permitting for impacts to tropical hardwood hammock would also cover. The pine snake gains benefit from gopher tortoise management/protections. Possible minimization from the commensals guidelines for gopher tortoises. Estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.
	(2)(f)	Add the Sanibel Island rice rat and Sherman's short-tailed shrew to the list.	The Sanibel Island rice rat is considered a "range limited" species, occurring almost solely on public lands on Sanibel Island, Florida. The Sherman's short-tailed shrew meets the ISMP cryptic species policy. Potential impacts to both of these species would be addressed through DEP's wetland permitting process. Estimated economic impact would not meet the impact thresholds as defined in Section 120.54(3)(b), F.S.

c. Will Not Result in an Economic Impact per Section 120.54(3)(b), Florida Statutes

Rule Title/Division/Chapter/Section	Rule/Subsection/Paragraph/Sub-paragraph	Summary of change	Economic Impact
68A-9.002 Permits to Take Wildlife or Freshwater Fish for Justifiable Purposes	(1)	Add language for "other federal authorizations."	No economic impact.
68A-12.004 Possession or Sale of Birds or Mammals; Taxidermy Operations and Mounting Requirements	(11)(b)1.	Change Rule 68A-13.002 to Rule 68A-16.001 in the subparagraph.	No economic impact.
68A-16.003	New section	Add section that no state permit is needed to take inactive nests, or parts thereof, of birds not listed in 68A-27.	No economic impact. Will ease the regulatory burden on some entities.
68A-25.002 General Provisions for Taking Possession and Sale of Reptiles	New subsection	Add a subsection or add language to an existing subsection to prohibit the take and possession of peninsula ribbon snakes and red rat snakes in the Lower Keys.	No economic impact (rule change does not change current requirements for these species).
	(6)(a)2.d.	Add the Lower Keys population of the striped mud turtle to the list of turtles that may not be taken from the wild.	No economic impact (rule change does not change current requirements for this species).
68A-26.002 Regulations Relating to the Taking of Amphibians	(1) or new subsection	Add language that excludes Pine Barrens treefrogs and gopher frogs from the rule allowing take of frogs.	No economic impact (rule change does not change current requirements for these species).
68A-27.0012 Procedures for Listing and Removing Species from Florida's Endangered and Threatened Species List	(4)	Remove the subsection.	No economic impact.
68A-27.003 Designation of Endangered and	Title	Rule title should be "Florida's Endangered and Threatened Species List; Prohibitions."	No economic impact.

Threatened Species; Prohibitions	(2)(a)	Add language: "or when such conduct is authorized in a management plan" to exempting conduct authorized by management plan from the prohibition on take, possession, or sale of a Threatened species.	No economic impact. Eliminates regulatory requirements by allowing activities to be authorized in management plans without permitting requirements.
	(2)(d)	Remove the Lower Keys populations of the Peninsula ribbon snake and striped mud turtle from the list.	No economic impact.
	(2)(f)	Remove the Florida mastiff bat from the list.	No economic impact (is now listed as threatened under the Endangered Species Act).
	(2)(g)	Remove the pillar coral from Florida's Endangered and Threatened Species List.	No economic impact (is now listed as threatened under the Endangered Species Act).
68A-27.005 Designation of Species of Special Concern; Prohibitions; Permits	(1)	Remove the subsection.	No economic impact.
	(2)(b)	Remove the bluenose shiner, saltmarsh topminnow, southern tessellated darter, Lake Eustis pupfish, and mangrove rivulus from the Species of Special Concern list.	No economic impact.
	(2)(c)	Remove the Florida bog frog and Georgia blind salamander from the Species of Special Concern list.	No economic impact.
		Remove the Pine Barrens treefrog and gopher frog from the Species of Special Concern list.	No economic impact.
	(2)(d)	Remove the Barbour's map turtle, Florida Keys mole skink, and Florida pine snake from the Species of Special Concern list.	No economic impact.
		Remove the Lower Keys population of the red rat snake and Suwannee cooter from the Species of Special Concern list.	No economic impact.

	(2)(e)	Remove the American oystercatcher, black skimmer, burrowing owl, little blue heron, Marian’s marsh wren, reddish egret, roseate spoonbill, Scott’s seaside sparrow, tricolored heron, Wakulla seaside sparrow, and Worthington’s marsh wren from the Species of Special Concern list.	No economic impact.
		Remove the snowy egret, white ibis, brown pelican, and limpkin from the Species of Special Concern list.	No economic impact.
	(2)(f)	Remove the Sanibel Island rice rat, Sherman’s short-tailed shrew, and Florida mouse from the Species of Special Concern list.	No economic impact.
	(2)(g)	Remove the Florida tree snail from the Species of Special Concern list.	No economic impact.
	(2)(h)	Remove the Black Creek crayfish and Santa Fe cave crayfish from the Species of Special Concern list.	No economic impact.
68A-27.007 Permits and Authorizations for the Take of Florida Endangered and Threatened Species.	(2)(a)	Add language to allow intentional take for human safety.	No economic impact. Reduces regulatory requirements and improves agency capacity to respond to human safety issues.
	(2)(b)	Remove the language that specifies a different permit issuance standard for the blackmouth shiner, striped mud turtle, Florida mastiff bat, and pillar coral.	No economic impact.
	(2)(f)	Add “Intentional” in front of “take” at the beginning of the sentence.	No economic impact.

Economic Impacts of Changes to Listing Status

Costs to FWC

Methods

The direct costs to FWC were estimated via an internal FWC budget review of all anticipated labor and capital costs related to implementing the ISMP. Likewise, FWC estimated any anticipated redirection of existing labor and capital assets and reported these as agency opportunity costs.

Results

The Florida Legislature approved in state fiscal year 2013-2014 an appropriation of **\$443,000** to improve the Commission's ability to manage and conserve Florida's threatened and nongame fish and wildlife species, with a goal of reducing the number of state Threatened species. Of this appropriation, \$136,000 are considered start-up costs and non-recurring. These funds provide the ability to contract with universities and private firms, to hire Other Personal Services staff, and to purchase supplies, equipment, and vehicles to:

- 1) Develop and implement management plans that will result in effective management of state-Threatened species, removal of species from the state Threatened and Species of Special Concern lists, and prevention of new listings;
- 2) Develop and implement research and monitoring programs to determine the status of wildlife populations that are Threatened or in danger of becoming Threatened and develop effective management actions to ensure their recovery and conservation; and
- 3) Implement conservation actions, such as habitat management, population management, and providing landowner incentives that will result in the recovery and conservation of these species.

An additional **\$798,675** in federal grant funding from the State Wildlife Grant program was secured and provides five years of funding to support the development and initial implementation of the ISMP (through June 30, 2016).

Over the next five years, additional grant funding opportunities will be sought to ensure that the goal, objectives, and conservation actions of the ISMP are achieved. These efforts will entail an indeterminate sum of FWC matching funds and time commitments for writing and managing grant proposals, estimated to be **\$111,000**. The total funds needed from grants, excluding the FWC RFP opportunity costs, is estimated to be **\$4,085,000**. These are funds that will not be available for alternative FWC purposes and considered opportunity costs. Examples of funding sources that could be sought include the State Wildlife Grant program administered by FWC, one or more of the National Fish and Wildlife Foundation grant programs, the Fish and Wildlife Foundation of Florida's Conserve Wildlife Tag grant, the U.S. Fish and Wildlife Service's Section 6 Conservation Grants, Habitat Conservation Planning grant, or similar activity. Table 4 below lists expected one-time grant requests by SAP action.

In addition to the initial startup costs for the ISMP, FWC will redirect funds from other purposes to assist in its implementation. To estimate these recurring costs, the agency conducted an in-house review of its anticipated changes in marginal costs to both labor and capital in the form of conservation actions. Conservation actions will serve to achieve the objectives and actions outlined in the Integrated Conservation Strategy and Species' Action Plans. These actions are best accomplished by applying an adaptive management approach that allows for easy adjustments to policies, guidelines and techniques based on observed conservation benefits. With the ISMP initiative, Table 5 details the anticipated FWC resource commitment and opportunity cost by action. In total, when combined with funds allocated to support new grants, FWC anticipates redirecting at least **\$2.6 million** in resources to support the ISMP

over the next 10 years. This is a measure of the indirect agency costs that would be committed to this effort and not available for other FWC functions.

Table 4. Estimated grant requests - one time expenditures.

Integrated Strategy 1 – Data Gaps; Integrated Actions 1.1 – 1.3

SAP Action	Estimated Grant Request	Grant Proposal Cost¹
Alligator Snapping Turtle Action 12	\$10,000	\$1,500
Florida Bog Frog Action 5	\$15,000	\$1,500
Sanibel Island Rice Rat Action 10	\$20,000	\$1,500
Florida Burrowing Owl Action 5	\$25,000	\$1,500
Everglades Mink Action 19	\$25,000	\$1,500
Homosassa Shrew Action 7	\$25,000	\$1,500
Limpkin Action 14	\$25,000	\$1,500
Sherman’s Short-tailed Shrew Action 7	\$25,000	\$1,500
Striped Mud Turtle Action 11	\$40,000	\$1,500
Gopher Frog Actions 9, 10, 11	\$50,000	\$1,500
Osprey Action 4	\$50,000	\$1,500
Florida pinesnake Actions 6, 9	\$50,000	\$1,500
Southern Tesselated Darter Actions 6, 7, 8, 9, 10	\$50,000	\$1,500
Big Cypress Fox Squirrel Actions 6, 7, 8, 9	\$100,000	\$1,500
Crystal Darter Actions 15, 16, 17, 18	\$100,000	\$1,500
Wading Birds Action 29, 30	\$100,000	\$1,500
Keys Reptiles Action 5	\$5,000	\$1,500
Brown Pelican Actions 11, 12, 13, 14, 16, 18, 19, 20	\$10,000	\$1,500
Black Creek Crayfish Actions 7, 8	\$25,000	\$1,500
Crystal Darter Action 10	\$25,000	\$1,500
Sherman’s Fox Squirrel Actions 6, 7, 8	\$25,000	\$1,500
Florida Burrowing Owl Actions 4, 7, 9, 10	\$50,000	\$1,500
Florida Sandhill Crane Action 12	\$50,000	\$1,500
Florida Tree Snail Action 11	\$50,000	\$1,500
Keys Reptiles Action 6	\$50,000	\$1,500
Saltmarsh Songbirds Actions 7, 8,	\$50,000	\$1,500
Limpkin Action 10, 11, 12, 15, 16	\$55,000	\$1,500
Homosassa Shrew Actions 2, 6, 8	\$100,000	\$1,500
Wading Birds Actions 27, 28	\$100,000	\$1,500
White-crowned Pigeon Actions 1, 2, 7, 8, 14, 17	\$200,000	\$1,500
Homosassa Shrew Action 8	\$25,000	\$1,500
Big Cypress Fox Squirrel Action 4, 5, 10, 12, 14, 15	\$50,000	\$1,500

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Florida Sandhill Crane Action 10	\$50,000	\$1,500
Sherman's Fox Squirrel Actions 5, 11, 14	\$50,000	\$1,500
Bluenose and Blackmouth Shiners Actions 2, 3	\$50,000	\$1,500
Harlequin Darter Actions 1, 2, 6, 7, 8, 9	\$100,000	\$1,500
Imperiled Beach Nesting Birds Actions 20, 21, 24, 26	\$100,000	\$1,500
Subtotal	\$ 1,930,000	\$ 55,500

Integrated Strategy 3 – Habitat Monitoring; Integrated Actions 3.4

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Florida pinesnake Action 17	\$15,000	\$1,500
Alligator Snapping Turtle Action 1	\$50,000	\$1,500
Homosassa Shrew Actions 3, 5, 6, 8	\$50,000	\$1,500
Barbour's Map Turtle Action 1	\$100,000	\$1,500
Wading Birds Action 21	\$100,000	\$1,500
Subtotal	\$315,000	\$ 7,500

Integrated Strategy 4 – Threats to Species; Integrated Actions 4.1-4.5

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
White-crowned Pigeon Action 13	\$75,000	\$1,500
Saltmarsh Songbirds Action 14	\$20,000	\$1,500
Brown Pelican Action 21	\$50,000	\$1,500
Saltmarsh topminnow Actions 9, 10, 11, 12	\$100,000	\$1,500
Striped Mud Turtle Action 5	\$20,000	\$1,500
Subtotal	\$ 265,000	\$ 7,500

Integrated Strategy 5 – Habitat Management; Integrated Actions 5.1-5.3

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Saltmarsh Songbirds Actions 2, 3	\$30,000	\$1,500
Limpkin 1, 2, 5, 12	\$50,000	\$1,500
Gopher Frog 2, 3, 4	\$100,000	\$1,500
Imperiled Beach Nesting Birds Actions 6, 7	\$100,000	\$1,500
Brown Pelican Action 5	\$50,000	\$1,500
Imperiled Beach Nesting Birds Action 39	\$50,000	\$1,500
Short-tailed Snake Action 1, 2	\$50,000	\$1,500
Keys Reptiles Actions 1, 2	\$100,000	\$1,500
White-crowned Pigeon Actions 4, 7	\$25,000	\$1,500
Limpkin 4, 7	\$50,000	\$1,500
Alligator Snapping Turtle Action 3	\$50,000	\$1,500
Subtotal	\$ 665,000	\$ 16,500

Integrated Strategy 6 – Protect/manage habitat; Integrated Actions 6.2-6.3

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Florida tree snail Action 1	\$100,000	\$1,500
Florida pinesnake 1, 2, 3	\$100,000	\$1,500
Sherman’s Fox Squirrel Action 2	\$75,000	\$1,500
Big Cypress Fox Squirrel Action 2	\$100,000	\$1,500
Subtotal	\$ 375,000	\$ 6,000

Integrated Strategy 7 – Population interventions; Integrated Actions 7.2-7.4

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Brown Pelican Action 2	\$25,000	\$1,500
Imperiled Beach Nesting Birds Action 5	\$50,000	\$1,500
Imperiled Beach Nesting Birds Actions 11, 37	\$50,000	\$1,500
BCC 3	\$25,000	\$1,500
Bluenose and Blackmouth Shiners Action 8	\$25,000	\$1,500
Subtotal	\$175,000	\$ 7,500

Integrated Strategy 8 – Incentives; Integrated Actions 8.1-8.2

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Crystal Darter Action 2	\$25,000	\$1,500
Wading Birds Actions 35, 36, 37, 38	\$75,000	\$1,500
Subtotal	\$100,000	\$ 3,000

Integrated Strategy 9 – Influencing; Integrated Actions 9.2

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Everglades Mink Action 1	\$ 50,000	\$1,500
Subtotal	\$ 50,000	\$ 1,500

Integrated Strategy 10 – Law and Policy; Integrated Actions 10.2

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Bluenose and Blackmouth Shiners Action 6	\$25,000	\$1,500
Subtotal	\$25,000	\$ 1,500

Integrated Strategy 12 – Land/water transition; Integrated Actions 12.2

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Suwannee Cooter Actions 17, 18, 19	\$50,000	\$1,500
Subtotal	\$50,000	\$ 1,500

Integrated Strategy 13 – Conservation Stewardship; Integrated Actions 13

SAP Action	Estimated Grant Request	Grant Proposal Cost ¹
Southeastern American Kestrel Actions 7, 8, 26	\$45,000	\$1,500
Big Cypress Fox Squirrel Actions 7, 21, 22, 23	\$100,000	\$1,500
Subtotal	\$145,000	\$ 3,000

¹ The estimate of grant proposal costs are reflected in the development of requests for proposals by FWC staff and calculated at \$25 per hour multiplied by 60 hours of labor.

Table 5: Anticipated FWC resource commitment by integrated action.

Integrated Strategy 1 – Data Gaps; Integrated Actions 1.1 – 1.3

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
FWRI	SCP/FFM	5,86	Bluenose and Blackmouth Shiners 10, 11	\$ 15,000
FWRI/HSC	SCP/WHM	5,60,75	Everglades Mink 10	\$ 25,000
FWRI	FWRI	62,65	Shorebirds 13,14,17,18,19,20,22, 25,26	\$ 50,000
FWRI	FWRI	22,62	SE American Kestrel 12, 13, 14, 15, 16	\$ 100,000
FWRI/HSC	SCP	4,22	Alligator Snapping Turtle 7	\$ 25,000
FWRI/HSC	SCP/WHM	5,60,13	Sanibel Island Rice Rat 2	\$ 10,000
HSC/FWRI	SCP/WHM	4,23,25	Striped Mud Turtle 1, 2	\$ 35,000
FWRI/HSC	CPS/AHRES/SCP/WHM	6,25	Wading Birds 11	\$ 40,000
			Subtotal	\$300,000

Integrated Strategy 3 – Habitat Monitoring; Integrated Actions 3.4

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP	5	Eastern Chipmunk 9	\$ 25,000
HSC/FWRI	SCP	6,28	Florida Sandhill Crane 11, 14	\$ 50,000
HSC/FWRI	FWRI	24,25,67	Key silverside 3, 4	\$ 25,000
HSC/FWRI	SCP/CPS/WHM	5,13,16	Sherman's Fox Squirrel 1, 3	\$ 75,000
HSC/FWRI	SCP	5,25	Sherman's Fox Squirrel 15	\$ 25,000
HSC/FWRI	SCP/WHM	6,62,63	Salt marsh songbirds 4, 5, 6, 10, 11	\$ 100,000
HSC/CR/FWRI	SCP	4,22	Short-tailed Snake 4	\$ 10,000
HSC/FWRI	SCP/CPS	6,63	Wading Birds 14, 20	\$ 25,000
HSC/FWRI	SCP/WHM	6,9,62	White-crowned Pigeon 3, 11, 12	\$ 25,000
			Subtotal	\$ 360,000

Integrated Strategy 4 – Threats to Species; Integrated Actions 4.1-4.5

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP	6,14	Burrowing Owl 2	\$ 15,000
HSC	SCP/CPS/LE	3,13	Florida Tree Snail 12, 21	\$ 25,000
HSC	SCP/FWRI/CR	85	Harlequin darter 16, 17	\$ 25,000

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP/CPS	6,7,8,9,10	Shorebirds 47, 48	\$ 25,000
HSC	SCP/CPS/AHRES	85	Key silverside 6	\$ 50,000
HSC	SCP/WHM	6,9,13,62	White-crowned Pigeon 3, 4, 5, 6	\$ 40,000
HSC	WIM/IPM/AHRES	77,82	Alligator Snapping Turtle 5	\$ 25,000
HSC	CPS/IPM/AHRES	12,13	Barbour's Map Turtle 5	\$ 25,000
HSC	SCP/WIM	5,78	Everglades Mink 3	\$ 25,000
HSC	SCP/WIM/IPM	3,80	Florida Tree Snail 3, 8	\$ 25,000
HSC	IPM/AHRES/WHM	13	Keys Herps 4	\$ 25,000
HSC	SCP/WHM/IPM	10,74	Pine Barrens Treefrog 2	\$ 40,000
HSC	WIM/IPM	79,82	Bluenose and Blackmouth Shiners 12	\$ 15,000
HSC	SCP/WIM/FWRI	6,78,62	White-crowned Pigeon 18	\$ 25,000
			Subtotal	\$ 385,000

Integrated Strategy 5 – Habitat Management; Integrated Actions 5.1-5.4

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP/WHM	4	Florida Bog frog 1	\$ 50,000
HSC	SCP/AHRES/CPS	85	Harlequin darter 3,4	\$15,000
HSC/FWRI	SCP	3,30	Santa Fe Cave Crayfish 1,7	\$ 15,000
HSC	SCP/AHRES/OED	6,71,72,76	Wading Birds 1,2,5,7,12	\$ 100,000
HSC	SCP/CPS	4	Georgia Blind Salamander 2,4	\$ 15,000
HSC/OPAWVS	SCP/WHM/FWRI	6,13	SE American Kestrel 4,7,8	\$ 75,000
FWRI	FWRI	22,62	SE American Kestrel 14	\$ 25,000
HSC	SCP/CPS/AHRES	6,71,76	Wading Birds 4,5,6,7,8,11	\$125,000
HSC	SCP/FWRI/CPS	85,17	Crystal Darter 5	\$ 25,000
			Subtotal	\$ 445,000

Integrated Strategy 6 – Protect/manage habitat; Integrated Actions 6.2-6.3

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP	6,13,15,14,17	Shorebirds 2, 3, 4	\$ 25,000
HSC	WHM/SCP	14,13	Suwannee Cooter 1	\$ 10,000
HSC	SCP/CPS/Legacy	6,13,73	Wading Birds 13	\$ 20,000
HSC/FFM	SCP/CPS/FWRI	84,85	Southern Tessellated Darter 1	\$ 20,000
			Subtotal	\$ 75,000

Integrated Strategy 7 – Population interventions; Integrated Actions 7.2-7.5

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC/LE/CR	SCP	6,70	SE American Kestrel 28,29	\$ 20,000
HSC	SCP/FWRI	6,64	Burrowing Owl 3	\$ 25,000

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
			Subtotal	\$ 45,000

Integrated Strategy 8 – Incentives; Integrated Actions 8.1-8.36

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP/CPS	85,12	Bluenose and Blackmouth Shiners 13	\$ 20,000
HSC	SCP/CPS/CR	5,60,49	Sanibel Island Rice rat 7,13	\$ 25,000
HSC	CPS	5,15	Big Cypress Fox Squirrel 20	\$ 15,000
HSC	SCP/CPS	6,8,11	SE American Kestrel 18,22,23,28	\$ 50,000
			Subtotal	\$ 110,000

Integrated Strategy 9 – Influencing; Integrated Actions 9.1-9.6

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP	5,10,15	Big Cypress Fox Squirrel 3	\$ 25,000
HSC	SCP/FWRI	85	Crystal Darter 1,3,5	\$ 25,000
HSC	SCP/CPS	11,12,13	Shorebirds 3,4,33	\$ 50,000
HSC	SCP/CPS/FWRI	85,12	Bluenose and Blackmouth Shiners 4, 5, 6	\$25,000
HSC/FWRI	SCP/CPS	6,28,62	Limpkin 18	\$ 30,000
HSC/FWRI	SCP/CPS	3,4	Georgia Blind Salamander 3	\$ 25,000
HSC	CPS	13	Florida Tree Snail 2	\$15,000
HSC	CPS/AHRES/IPM/WHM/FFM	11,12,13	Wading Birds 9	\$ 25,000
			Subtotal	\$ 220,000

Integrated Strategy 10 – Law and Policy; Integrated Action 10.2

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	SCP/CPS	6	Burrowing Owl 19	\$ 25,000
HSC	FWRI/SCP	11,12,13	Crystal Darter 4,5	\$ 25,000
HSC	SCP/LE	6,56,58	Wading Birds 33,34	\$ 25,000
			Subtotal	\$ 75,000

Integrated Strategy 11 – Prescribed Fire; Integrated Action 11.4

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	CR	49,50	Big Cypress Fox Squirrel 21	\$ 15,000

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	WHM/SCP/LAP	13	Florida Mouse 15	\$ 10,000
HSC	WHM/SCP/AHRES	13	Suwanee Cooter 3,4,6	\$ 25,000
			Subtotal	\$ 40,000

Integrated Strategy 12 – Land and Water Transition; Integrated Action 12.2

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC	CR/WHM/SCP	50,75	Everglades Mink 22	\$ 15,000
HSC	CPS/AHRES/SCP/MFM	13	Mangrove Rivulus 2	\$ 15,000
HSC/FWRI	SCP/CPS	85	Saltmarsh topminnow 1, 2, 3, 4	\$50,000
HSC	SCP/CPS	3,10,13	Santa Fe Cave Crayfish 2, 3, 14, 15	\$25,000
HSC/FWRI/FFM	FWRI/SCP/CPS	86	Southern Tessellated Darter 3,5	\$30,000
			Subtotal	\$ 135,000

Integrated Strategy 13 – Conservation Stewardship; Integrated Action 13

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
HSC/LE/CR	SCP	4,49,81	Barbour's Map Turtle 13,16,17,18	\$ 50,000
HSC/LE/FWRI	SCP/CR	6,65,49	Brown Pelican 15, 23,30,31,32,33	\$ 10,000
HSC/FWRI	SCP/FFR	68,83,85	Crystal Darter 21,24,26	\$ 25,000
HSC/CR	SCP	3,49	Florida Tree Snail 17, 18, 19, 20	\$ 25,000
HSC/CR	SCP	5,49	Homosassa Shrew 9, 12	\$ 15,000
HSC/LE/CR	SCP/WHM	9,12	Keys Herps 11	\$ 25,000
HSC/OPAWVS/CR	SCP	5,49	Sherman's Fox Squirrel 19, 20, 21	\$30,000
HSC/LE	SCP	6,49	White-crowned Pigeon 22, 23, 25	\$ 30,000
			Subtotal	\$ 210,000

Integrated Strategy 14 – Support and Infrastructure; Integrated Action 14.1-14.6

Lead FWC Division	Section	Staff Resource	SAP Action	Opportunity Cost
FWRI/HSC	SCP	18,19,32,33,46,47 48,51,56,57,58 68,69,70,80,83	Applies to all 49 Species Action Plans	\$ 121,000
			Subtotal	\$ 121,000

Costs to non-FWC Agencies and Private Businesses

Methods

To estimate the similar impact to agencies and businesses outside FWC, an internet-based survey instrument was designed and administered to a large number of regulatory agencies and interested businesses. The instrument was designed by a consulting economist and an email invitation containing the link to the instrument was sent to a dataset of 595 stakeholders maintained by FWC. This dataset is comprised of many private firms, resource-based interest groups and all regulatory agencies (local, state and federal) within Florida with a known interest in fish and wildlife related topics. As such, it is assumed that most of the potentially impacted parties within the regulated industry were included in the survey and in effect the sample frame of affected businesses and regulatory agencies. Email invitations and internet links were sent out to email addresses January 22, 2016, requesting recipients to participate in a survey. Emails returned as invalid addresses (n=38) or categorized as spam by the recipient's internet provider (n=45) were considered undeliverable and removed from the sample frame. The balance (n=512) were sent reminder invitations on January 26th and 28th. The survey was closed at midnight, January 29th. A copy of the survey instrument is available upon request from FWC.

For the preliminary economic impact analysis, the business sectors of construction, mining, agriculture and consulting services were used with the multipliers of 0.3 for indirect effects, 0.423 for induced effects and employment effects of 0.77 per \$100,000 of total effect. These multipliers were derived from a similar FWC SERC analysis for the 2012 Gopher Tortoise Management Plan and followed the commonly used IMPLAN input/output model procedure (IMPLAN Group, LLC).

Results

A total of n=123 valid responses were received from the email survey for a response rate of 24%. Overall, 50% of the respondents identified themselves as private firms (42% as small business – under 500 employees or gross revenues under \$5 million annually) and 41% were regulatory agencies (local, state or federal). The balance (8%) were “interested” individuals or environmental interest groups. Table 6 lists respondent by category type and includes average number of employees and revenue for private businesses. The most commonly identified business activity was consulting (45%) followed by land managing and permitting, environmental remediation and park management (34%, 26% and 22% respectively) (see Table 7).

Responses for several key survey questions regarding anticipated impacts from the ISMP are summarized in Tables 8, 9, and 10 for the burrowing owl, shore birds and wading birds respectively. Anticipated changes in costs and revenues are reported by species in Tables 11, 12, and 13 for the burrowing owl, shore birds and wading birds respectively.

Results by species for the preliminary economic impact analysis can be found in Tables 14, 15 and 16.

Table 6 – Respondent categories

Type	N	Percent	Avg. # Employees	Avg. Annual Revenue
All private business	62	50.4	855	\$29.4 million
Small business only	52	42.3	58	\$7.8 million
Large county/city govt.	18	14.6	NA	NA
Small county and cities ²	13	10.6	NA	NA

Type	N	Percent	Avg. # Employees	Avg. Annual Revenue
State govt.	10	8.1	NA	NA
Federal govt.	10	8.1	NA	NA
Other	10	8.1	NA	NA

² Small counties and municipalities approximated as having 500 or fewer employees

Table 7 – Respondent list of activities

Type of Activity	N	Percent
Consulting	56	45.5
Manage permitting and develop	42	34.1
Environmental remediation	32	26.0
Manage parks and sporting sites	27	21.9
Land development	25	20.3
Manage hunting and fishing	20	16.3
Forestry/Agriculture	20	16.3
Road and transportation	17	13.8
Mining	7	5.7
Power and gas	7	5.7
Military	2	1.6

Table 8. Responses to key survey questions for changes to the burrowing owl

Question	Private - Yes	Private - No	Private - NR	Public - Yes	Public - No	Public - NR
Does your agency/business work in the area of silviculture or Ag?	33.9	56.5	9.7	17.6	58.5	23.5
Will your silviculture or Ag business be affected by ISMP?	22.6	12.9	64.5	13.7	2.0	84.3
This change will impact my business or agency directly	32.3	45.2	22.6	27.5	39.2	33.3
This change will lead to increased costs to my business/agency	30.6	12.9	56.5	11.2	11.8	77.0
This change will lead to increased revenues to my business or agency	19.4	0	80.6	5.9	7.8	86.3
Will ISMP affect others in region?						
This change will lead to increased costs to others	35.5	1.6	62.9	25.5	7.8	66.7
This change will lead to lost use of other's property	27.4	NA	72.6	17.6	NA	82.4
This change will lead to increased revenues to others	17.7	17.7	64.5	2.0	5.9	92.2
Others likely impacted include recreationists, hunters and anglers	3.2	29.0	67.7	5.9	21.6	72.5
Others likely impacted include home owners	8.1	21.0	71.0	11.8	7.8	80.4
Others likely impacted include land developers	24.2	9.7	66.1	15.7	9.8	74.5
Others likely impacted include other public agencies	16.1	17.7	66.1	19.6	5.9	74.5

Question	Private - Yes	Private - No	Private - NR	Public - Yes	Public - No	Public - NR
Others likely impacted include other non-business and non-govt. groups	17.7	16.1	66.1	11.8	13.7	74.5

Table 9. Responses to key survey questions for changes to the shore bird

Question	Private - Yes	Private - No	Private - NR	Public - Yes	Public - No	Public - NR
Does your agency/business work in the area of silviculture or Ag?	NA	NA	NA	NA	NA	NA
Will your silviculture or Ag business be affected by ISMP?	NA	NA	NA	NA	NA	NA
This change will impact my business or agency directly	38.7	41.9	19.4	31.4	27.5	41.2
This change will lead to increased costs to my business/agency	16.1	22.6	61.3	19.6	9.8	70.6
This change will lead to increased revenues to my business or agency	16.1	4.8	79.0	5.9	7.8	86.3
Will ISMP affect others in region?						
This change will lead to increased costs to others	38.7	4.8	56.5	27.5	13.7	58.8
This change will lead to lost use of other's property	19.4	NA	80.6	11.8	NA	88.2
This change will lead to increased revenues to others	1.6	3.2	95.2	3.9	9.8	86.3
Others likely impacted include recreationists, hunters and anglers	11.3	25.8	62.9	15.7	13.7	70.6
Others likely impacted include home owners	16.1	21.0	62.9	15.7	13.7	70.6
Others likely impacted include land developers	12.9	3.2	83.9	7.8	19.6	72.5
Others likely impacted include other public agencies	24.1	11.3	64.5	23.5	2.0	74.5
Others likely impacted include other non-business and non-govt. groups	8.1	25.8	66.1	9.8	13.7	76.5

Table 10. Responses to key survey questions for changes to the wading bird

Question	Private - Yes	Private - No	Private - NR	Public - Yes	Public - No	Public - NR
Does your agency/business work in the area of silviculture or Ag?	27.4	43.5	29.0	11.8	35.3	52.9
Will your silviculture or Ag business be affected by ISMP?	17.7	14.5	67.7	7.8	3.9	88.2
This change will impact my business or agency directly	37.1	24.2	38.7	15.7	23.7	60.8

Question	Private - Yes	Private - No	Private - NR	Public - Yes	Public - No	Public - NR
This change will lead to increased costs to my business/agency	22.6	14.5	62.9	7.8	5.9	86.3
This change will lead to increased revenues to my business or agency	11.3	3.2	85.5	2.0	3.9	94.1
Will ISMP affect others in region?						
This change will lead to increased costs to others	21.0	4.8	74.2	5.9	3.9	90.2
This change will lead to lost use of other's property	14.5	NA	80.6	2.0	NA	98.0
This change will lead to increased revenues to others	9.7	11.3	79.0	3.9	0	96.1
Others likely impacted include recreationists, hunters and anglers	4.8	16.1	79.0	5.9	3.9	90.2
Others likely impacted include home owners	6.5	14.5	79.0	0	9.8	90.2
Others likely impacted include land developers	12.9	8.1	79.0	2.0	7.8	90.2
Others likely impacted include other public agencies	11.3	9.7	79.0	7.8	2.0	90.2
Others likely impacted include other non-business and non-govt. groups	4.8	1.6	93.5	3.9	5.9	90.2

Table 11. Annual cost and revenue estimates for private business resulting in changes to the burrowing owl regulations.

Upper and lower bounds are approximately 70% of the mean estimates.

Type	Estimated Avg. Annual Costs	Estimated Total Annual Costs	Estimated Avg. Annual Revenues	Estimated Total Annual Revenues	Revenues net Costs
All private business	\$32,000	\$2,530,000	\$13,000	\$650,000	(\$1,880,000)
Small business only	\$33,500	\$ 977,000	\$13,600	\$625,000	(\$352,000)
Public agencies (state/Fed)	\$26,250	\$ 656,000	\$500	\$ 6,250	(\$650,000)
Small counties/municipalities	\$4,600	\$ 215,000	\$0	NA	(\$215,000)

Total annual costs and revenues based on 15% of 11 small counties and 293 small municipalities being effected.

Table 12. Annual cost and revenue estimates for private business resulting in changes to the Shore Bird regulations.

Upper and lower bounds are approximately 80% of the mean estimates.

Type	Estimated Avg. Annual Costs	Estimated Total Annual Costs	Estimated Avg. Annual Revenues	Estimated Total Annual Revenues	Revenues net Costs
All private business	\$ 26,300	\$1,096,000	\$ 11,500	\$527,000	(\$569,000)
Small businesses only	\$ 10,300	\$ 342,000	\$ 11,500	\$527,000	\$185,000

Type	Estimated Avg. Annual Costs	Estimated Total Annual Costs	Estimated Avg. Annual Revenues	Estimated Total Annual Revenues	Revenues net Costs
Public agencies (state/Fed)	\$ 18,200	\$ 750,000	\$ 500	\$ 2,000	(\$748,000)
Small counties/municipalities	\$ 8,300	\$ 470,000	\$ 0	NA	(\$470,000)

Total annual cost and revenues based on 46% of 8 small counties and 115 small municipalities being effected.

Table 13. Annual cost and revenue estimates for private business resulting in changes to the Wading bird regulations.

Upper and lower bounds are approximately 80% of the mean estimates.

Type	Estimated Avg. Annual Costs	Estimated Total Annual Costs	Estimated Avg. Annual Revenues	Estimated Total Annual Revenues	Revenues net Costs
All private business	\$ 22,000	\$1,008,000	\$ 11,000	\$ 420,000	(\$588,000)
Small businesses only	\$ 10,000	\$ 330,000	\$ 10,300	\$ 390,000	\$60,000
Public agencies (state/Fed)	\$ 17,600	\$ 293,000	\$ 0	NA	(\$293,000)
Small counties/municipalities	\$ 0	NA	\$ 0	NA	NA

Total annual cost and revenues based on 46% of 8 small counties and 115 small municipalities being effected.

Table 14. Statewide annual economic impact from burrowing owl ISMP based upon the business sectors of construction, mining, agriculture and consulting services (preliminary estimates).

Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Employment
All Businesses	-\$1,880,000	-\$ 564,000	-\$ 800,000	-\$3,244,000	-25
Small Businesses only	-\$ 352,000	-\$ 105,000	-\$ 140,000	-\$ 597,000	-5

Table 15. Statewide annual economic impact from shore bird ISMP based upon the business sectors of construction, mining, agriculture and consulting services (preliminary estimates).

Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Employment
All Businesses	-\$ 569,000	-\$ 170,000	-\$ 240,000	-\$979,000	-8
Small Businesses only	\$ 185,000	\$ 56,000	\$ 78,000	\$ 319,000	+3

Table 16. Statewide annual economic impact from wading bird ISMP based upon the business sectors of construction, mining, agriculture and consulting services (preliminary estimates).

Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect	Employment
All Businesses	-\$ 588,000	-\$ 175,000	-\$ 249,000	-\$1,012,000	-8
Small Businesses only	\$ 60,000	\$ 18,000	\$ 25,000	\$ 103,000	+1

Chapter 120.54(3) (b) Compliance (Burrowing Owl, Shore Birds, and Wading Birds)

The following are answers based on the results detailed in the sections above to the general question related to Florida Statute, Chapter 120.54(3) (b), **“Are the proposed revisions to the imperiled species management plan...**

“... likely to have direct or indirect adverse economic impacts on the economic growth, private sector job creation or employment, or private sector investment in excess of \$1 million in the aggregate within 5 years of implementation?”

The proposed revisions to the ISMP involve 33 rule changes, mostly involving range-limited or cryptic species with little to no anticipated impact to the economy of Florida (see Table 3 for species-by-species detail). The exception to this list is 68A-27.003 (2) (e), involving several species of birds, most notably the burrowing owl and several species of shore and wading birds. FWC believes the potential exists for these changes to pass the million dollar threshold established by Chapter 120.54(3) (b). A preliminary SERC of non-FWC agencies and private businesses has revealed the overall loss to Florida’s construction, mining and agriculture sectors could exceed \$5 million annually (\$25 million within five years of implementation), however this figure is likely biased high since FWC and the regulated community are still unclear on how the regulations will change. This uncertainty is reflected in comments on the survey and a wide range in cost estimates. Furthermore, it is expected that most of the economic loss experienced by these sectors will be captured by other sectors within the state’s economy with little to no overall adverse economic impact.

“likely to have an adverse impact on business competitiveness, including the ability of persons in the states to compete with persons doing business in other states or domestic markets, productivity, or innovation in excess of \$1 million in the aggregate within 5 years after implementation?”

The proposed revisions to the ISMP will not restrict the ability of Florida businesses to compete in other states or domestic markets. However, depending upon FWC’s choice of final management prescriptions, it is possible that the cost of construction and development along some coastal communities and areas frequented by the burrowing owl could rise. However, the full impact of these changes is not possible to estimate at the time of this report.

“... likely to increase regulatory costs, including transactional costs, in excess of \$1 million in the aggregate within 5 years after implementation?”

Changes in regulatory and transactional costs for permitting are undetermined at the time of this report.

“Provide a good faith estimate of the number of individuals and entities likely to be required to comply with the proposed revised ISMP together with a general description of the types of individuals likely to be affected by the plan.”

The proposed revisions to the ISMP will affect the business sectors of construction and land development, mining, agriculture and silviculture. It will also affect residential landowners located along many of the coastal areas of both the Atlantic Ocean and Gulf of Mexico, and those within the nesting areas of the burrowing owl, particularly the southern portion of the Florida peninsula.

“Provide a good faith estimate of the cost to the agency and to any other state and local government entities, of implementing and enforcing the provisions to the ISMP and any anticipated effect on state or local revenue.”

Over the next five years, FWC will seek to redirect \$4.1 million in grant funding to the ISMP. These efforts are expected to cost FWC an additional \$111,000 as a result of developing project proposals. Additionally, over the next 10 years FWC will dedicate \$2.6 million in resources presently used elsewhere within the agency (\$260,000 annually) towards the ISMP. In total, these actions represent an agency opportunity cost of approximately \$5.5 million over five years, or \$1.1 million annually.

Other public agencies (Federal, state and local) are expected to incur additional expenses related to the enforcement of the ISMP totaling \$1.5 million annually.

“Provide a good faith estimate of transactional costs likely to be incurred by individuals and entities including local government entities, required to comply with the requirement of the proposed revisions of the ISMP. As used in this section “transactional costs” are direct costs that are readily ascertainable based on standard business practices and include filing fees, the cost of obtaining a license, the cost of equipment required to be installed or used or procedures required to be employed, additional operating costs incurred, the cost of monitoring and reporting and any other costs.”

The survey instrument detailed in “Costs to non-FWC agencies and private businesses” above asked respondents to estimate their net increase in costs and/or revenues they would incur with the proposed rule changes associated with the ISMP. These costs would include any and all costs they believed relevant to complying with the rule. All costs and revenues reported in this report are good faith estimates of these transactional costs. See Tables 11 through 13.

“Provide an analysis of the impact on small businesses as defined by s.288.703 and an analysis of the impact on small counties and small cities as defined in s.120.52.

Using the definition of a small business as one employing fewer than 500 employees or earning under \$5 million per year, the impact of the ISMP is slightly negative. The loss expected by small businesses from the burrowing owl rule changes is approximately \$350,000 and two employees annually. However, the economic gains to small businesses from changes to shore and wading bird rules is approximately \$245,000 and one employee annually. On net, the changes from the ISMP should lead to approximately \$100,000 in direct loss and one fewer employee for Florida’s small businesses. These

businesses are primarily in the area of consulting services. The impact on small counties and municipalities are estimated to be \$680,000 annually or \$3.4 million during the first five years.

Summary and Conclusion

A large majority of respondents from both businesses and public agencies anticipated that the ISMP will not significantly impact the costs and/or revenues for themselves or others either directly or indirectly. While there were no significant differences in this opinion among the type of respondent or across the species which merited further consideration and a preliminary SERC, a small number of respondents did indicate the potential for relatively large costs related to the rule change. Regarding the burrowing owl regulatory change, private businesses estimated an annual increase of approximately \$2.5 million in related expenses. Similarly, private businesses expected to see annual increases of over \$1 million per year for both the shore and wading bird proposed rule changes. However, the impact of these anticipated costs differed significantly by the size of the business. Non-FWC public agencies anticipated for annual regulatory expenses to increase by \$650,000, \$750,000 and \$250,000 for the burrowing owl, shore birds and wading birds respectively.

The overall impact of the ISMP to Florida's economy is estimated to be slightly more than \$5 million annually, and will lead to an estimated 41 jobs lost. However, it must be stressed that this is primarily restricted to the construction, mining, and agriculture sectors. The consulting services sector will see a slight increase in revenue annually, and much of the remaining losses to the harmed sectors would likely translate to gains in other Florida business sectors, resulting in little or no net change in Florida's overall economy. Furthermore, the potentially affected businesses have an estimated gross revenue of over \$6 billion per year, and the impact of the ISMP should be less than 0.05% per year or 5 cents per \$100 of revenue.

It should also be noted that the rule related cost data vary widely by respondent. This might be due to the respondent's lack of familiarity in the proposed rule changes. As FWC provides more instruction and management specifics, the cost and revenue estimates will likely shrink and become more predictable. This uncertainty is also reflected in the survey responses. A reoccurring theme in comments throughout the survey reflected the respondents' lack of specific related knowledge and an acknowledgement that their responses were simply guesses at this point. Lastly, the potential impact of these proposed rule changes to homeowners has not been examined with this preliminary analysis. With the frequent use of residential yards and open grassy areas by the burrowing owl, this potential impact to human use should be considered as part of an overall SERC.

While costs are an important component in any economic analysis, they tell only half the story. Presumably, there will be benefits resulting from the ISMP as well. Some of these benefits include stabilized/improved ecological services, improved opportunities for viewing endangered/threatened wildlife, and the assurances that these species will remain an integral part of the Florida ecosystem. Some businesses surveyed cited their expectations for increased revenues. This is particularly true for small businesses. Survey respondents anticipate the burrowing owl rule to generate nearly enough revenue to match their increases in costs. For shore birds and wading birds, small businesses expect the changes to actually generate an annual net increase in revenue of \$185,000 and \$60,000 for these two groups of species respectively. While economic measurements of benefits from the ISMP are not reported here, they are nonetheless necessary components to any valid benefit/cost analysis, and can

be documented with well published methodology. It is important for decision makers to keep this larger picture in mind and not be persuaded by a plan's costs alone.

Literature Cited

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APPENDIX I. FWC Staff Salaries

	Position title	Salary + benefits	% of time on ISMP actions	Total salary cost to implement ISMP actions
1	BIOLOGICAL ADMINISTRATOR II	\$ 67,281.16	75%	\$ 50,460.87
2	OPS FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 44,730.00	56%	\$ 33,547.50
3	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 72,462.51	50%	\$ 36,231.26
4	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 63,200.39	50%	\$ 31,600.20
5	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 76,899.56	50%	\$ 38,449.78
6	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 63,200.39	50%	\$ 31,600.20
7	BIOLOGICAL ADMINISTRATOR II	\$ 77,497.30	30%	\$ 23,249.19
8	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 73,547.22	30%	\$ 22,064.17
9	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 73,547.22	30%	\$ 22,064.17
10	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 63,200.39	30%	\$ 18,960.12
11	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 67,105.79	25%	\$ 16,776.45
12	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 75,943.70	25%	\$ 18,985.93
13	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 63,200.39	25%	\$ 15,800.10
14	BIOLOGICAL ADMINISTRATOR II	\$ 77,387.27	15%	\$ 11,608.09
15	BIOLOGICAL ADMINISTRATOR II	\$ 71,390.73	15%	\$ 10,708.61
16	BIOLOGICAL ADMINISTRATOR II	\$ 67,281.16	15%	\$ 10,092.17
17	BIOLOGICAL ADMINISTRATOR II	\$ 78,286.64	15%	\$ 11,743.00
18	BIOLOGICAL ADMINISTRATOR III	\$ 85,199.91	50%	\$ 42,599.96
19	HABITAT & SPECIES CONSERVATION SEC LEADER	\$ 107,379.97	33%	\$ 35,435.39
21	PLANNER IV	\$ 56,998.57	10%	\$ 5,699.86
22	ASSOCIATE RESEARCH SCIENTIST	\$ 76,679.89	20%	\$ 15,335.98
22	ASSOCIATE RESEARCH SCIENTIST	\$ 76,679.89	20%	\$ 15,335.98
23	ASSOCIATE RESEARCH SCIENTIST	\$ 65,121.20	50%	\$ 32,560.60
24	ASSOCIATE RESEARCH SCIENTIST	\$ 77,528.68	10%	\$ 7,752.87
25	ASSOCIATE RESEARCH SCIENTIST	\$ 60,352.39	10%	\$ 6,035.24
27	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 72,962.41	10%	\$ 7,296.24
28	ASSISTANT RESEARCH SCIENTIST	\$ 67,713.50	25%	\$ 16,928.37
30	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 79,160.91	10%	\$ 7,916.09
31	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 68,112.97	20%	\$ 13,622.59
32	OPS PROTECTED SPECIES PERMIT ASSISTANT	\$ 43,849.60	20%	\$ 8,769.92
33	ADMINISTRATIVE ASSISTANT I	\$ 36,180.49	20%	\$ 7,236.10
34	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 53,772.13	20%	\$ 10,754.43
35	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 56,460.65	20%	\$ 11,292.13
36	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 57,579.32	20%	\$ 11,515.86
37	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 68,625.42	5%	\$ 3,431.27

	Position title	Salary + benefits	% of time on ISMP actions	Total salary cost to implement ISMP actions
38	RESEARCH ADMINISTRATOR II	\$ 92,300.00	5%	\$ 4,615.00
39	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 79,809.23	5%	\$ 3,990.46
40	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 78,100.20	5%	\$ 3,905.01
41	FISH & WILDLIFE RESEARCH INSTITUTE SEC L	\$ 99,400.09	5%	\$ 4,970.00
42	OPS FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 68,273.60	5%	\$ 3,413.68
43	OPS FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 53,676.00	40%	\$ 21,470.40
44	OPS FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 53,676.00	40%	\$ 21,470.40
45	OPS FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 51,120.00	40%	\$ 20,448.00
46	OPS COMPUTER SPECIALIST/DESKTOP SUPPORT	\$ 58,930.00	1%	\$ 589.30
47	OFFICE AUTOMATION ANALYST	\$ 57,358.17	1%	\$ 573.58
48	OFFICE AUTOMATION ANALYST	\$ 58,189.98	1%	\$ 581.90
49	PUBLIC INFORMATION SPECIALIST	\$ 65,075.19	10%	\$ 6,507.52
50	PUBLIC INFORMATION DIRECTOR	\$ 75,755.41	10%	\$ 7,575.54
51	OPS PUBLIC RELATIONS SPECIALIST	\$ 59,640.00	10%	\$ 5,964.00
52	ASSISTANT DIRECTOR OF COMMUNITY RELATION	\$ 78,100.20	3%	\$ 2,343.01
53	FISHERIES & WILDLIFE BIO SCIENTIST II	\$ 45,565.93	20%	\$ 9,113.19
54	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 67,105.79	20%	\$ 13,421.16
55	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 57,206.06	20%	\$ 11,441.21
56	SENIOR MANAGEMENT ANALYST SUPV	\$ 78,099.83	5%	\$ 3,904.99
57	GOVERNMENT OPERATIONAL CONSULTANT III	\$ 63,200.39	5%	\$ 3,160.02
58	GOVERNMENT OPERATIONAL CONSULTANT I	\$ 54,598.77	5%	\$ 2,729.94
56	LAW ENFORCEMENT OFFICER	\$ 64,038.29	20%	\$ 12,807.66
57	LAW ENFORCEMENT OFFICER	\$ 64,038.29	25%	\$ 16,009.57
58	LAW ENFORCEMENT CAPTAIN	\$ 75,059.52	10%	\$ 7,505.95
59	LAW ENFORCEMENT CAPTAIN	\$ 75,059.52	15%	\$ 11,258.93
60	RESEARCH ADMINISTRATOR II	\$ 83,070.00	15%	\$ 12,460.50
61	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 72,146.48	10%	\$ 7,214.65
62	RESEARCH ADMINISTRATOR II	\$ 83,070.00	25%	\$ 20,767.50
63	ASSISTANT RESEARCH SCIENTIST	\$ 67,713.50	20%	\$ 13,542.70
64	ASSOCIATE RESEARCH SCIENTIST	\$ 76,679.89	15%	\$ 11,501.98
65	ASSOCIATE RESEARCH SCIENTIST	\$ 73,904.61	15%	\$ 11,085.69
66	ASSOCIATE RESEARCH SCIENTIST	\$ 60,440.62	10%	\$ 6,044.06
67	ASSOCIATE RESEARCH SCIENTIST	\$ 82,587.46	5%	\$ 4,129.37
68	OPERATIONS & MGMT CONSULTANT II	\$ 66,984.69	1%	\$ 669.85

	Position title	Salary + benefits	% of time on ISMP actions	Total salary cost to implement ISMP actions
69	OPS SPECIES CONSERVATION SPECIALIST	\$ 51,716.40	20%	\$ 10,343.28
70	OPS SANDHILL BIRD COORDINATOR	\$ 36,420.00	25%	\$ 12,929.10
71	BIOLOGICAL ADMINISTRATOR III	\$ 87,850.40	5%	\$ 4,392.52
72	REGIONAL DIRECTOR	\$ 134,900.14	5%	\$ 6,745.01
73	BIOLOGICAL ADMINISTRATOR III	\$ 84,864.68	5%	\$ 4,243.23
74	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 61,336.30	5%	\$ 3,066.82
75	FISHERIES & WILDLIFE BIO SCIENTIST III	\$ 53,772.13	5%	\$ 2,688.61
76	BIOLOGICAL ADMINISTRATOR II	\$ 80,878.43	5%	\$ 4,043.92
77	BIOLOGICAL ADMINISTRATOR II	\$ 73,547.22	5%	\$ 3,677.36
78	BIOLOGICAL ADMINISTRATOR II	\$ 71,000.11	5%	\$ 3,550.01
79	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 63,200.39	5%	\$ 3,160.02
80	OPS EXOTIC PET AMNESTY PROGRAM SPECIALIST	\$ 51,716.40	5%	\$ 2,585.82
81	BIOLOGICAL ADMINISTRATOR III	\$ 79,135.07	5%	\$ 3,956.75
82	BIOLOGICAL ADMINISTRATOR III	\$ 85,126.44	5%	\$ 4,256.32
83	OPS FRESHWATER FISHERIES OUTREACH COORDINATOR	\$ 42,600.00	1%	\$ 426.00
84	BIOLOGICAL ADMINISTRATOR II	\$ 88,183.42	1%	\$ 881.83
85	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 60,776.00	50%	\$ 30,388.00
86	FISHERIES & WILDLIFE BIO SCIENTIST IV	\$ 75,151.40	1%	\$ 751.51
			TOTAL	\$ 1,341,795.26