

## PROJECT SUMMARY

### **Project Title: Review and Update of Non-mollusk Invertebrate Species in Greatest Need of Conservation**

**Applicant Information:** Board of Trustees University of Illinois at Urbana-Champaign

**Principle Investigator:** Leon C. Hinz Jr., INHS

**Goals and Objectives:** 1) Review all SGNC listing criteria for currently listed non-mollusk invertebrate species using criteria in Illinois Wildlife Action Plan, 2) Assess current status of species populations, 3) Review criteria for additional species for potential listing as SGNC, 4) Assess stressors to species previously reviewed, 5) Complete draft updates and revisions of IWAP Appendix I and Appendix II for non-mollusk invertebrates.

**Proposed Grant Period:** August 1, 2013 – July 31, 2014

**Amount Requested (Planning Grant):** INHS will provide in-kind match of \$20,000 during the 12 month project period from staff salary and associated benefits plus unrecovered F&A.

	<b>Total Federal</b>	<b>Total Non-Federal</b>	<b>Total Cost</b>
<b>Year One Funding</b>	\$60,000	\$20,000	\$80,000
<b>Year Two Funding</b>	\$0	\$0	\$0
<b>Total Funding</b>	\$60,000	\$20,000	\$80,000

**States and Partners Involved:** Illinois Department of Natural Resources and Illinois Natural History Survey (PRI/UIUC).

**Summary Statement:** More than half of Illinois' Species in Greatest Need of Conservation (SGNC) are invertebrates (58%) yet the status of the vast majority of these and other invertebrate species has been incompletely assessed in the Illinois Wildlife Action Plan. This project will use existing information to review, update and revise the list of non-mollusk invertebrate SGNC (e.g., crustaceans, insects) for the IWAP (Appendix I). Further, an assessment of the status, distribution, and stressors of these invertebrates will be drafted for incorporation into the IWAP where appropriate data are available (Appendix II).

## **Review and Update of Non-mollusk Invertebrate Species in Greatest Need of Conservation**

**Project Number: T-88-R-1**

### **Need:**

Illinois' Action Plan acknowledges that for invertebrates other than mussels information is lacking "making it difficult to determine species in Greatest Need of Conservation, and to evaluate stresses that may be affecting those species" (State of Illinois 2005, p. 53). The Action Plan goes further and states that "the Species in Greatest Need of Conservation list for invertebrates should be regarded as preliminary and only reflecting species known to be rare, threatened or endangered" (State of Illinois 2005, p. 30), that "the selection criteria have been least-thoroughly applied to invertebrates" and that "augmenting information on invertebrate species will be important for updates to the plan" (State of Illinois 2005, p. ix).

The invertebrates of Illinois include a large number of species that are globally rare (86 spp. have G1—G3 rank) and/or are listed as threatened (5 ST) or endangered (18 SE, 3 FE, 2 FC). Since these rankings are criteria for inclusion invertebrates represent more than ½ of Illinois' Species in Greatest Need of Conservation (403 spp. vs. 286 vertebrate spp.) even though the vast majority of invertebrate species have not been adequately assessed within the Action Plan.

This is reflected in their listing within Appendix I (State of Illinois 2005, p. 294) where many habitat associations are missing and most criteria are not evaluated. Additionally, Appendix II (State of Illinois 2005, p. 310) which describes the status, objectives, and stresses on species in greatest need of conservation and their habitats does not include any invertebrates that are not mussels although there are hundreds of non-mussel SGNC listed in Appendix I.

The IWAP presumes that the stresses on invertebrates are similar to those of other species (State of Illinois 2005, p. 53) and therefore invertebrates are protected by Actions for other species. No Actions associated with conservation of invertebrates beyond those that may assist their populations through broad habitat improvements targeted on other species (e.g., reduce sedimentation in rivers) are listed in the IWAP. However, there is evidence to suggest that some stressors may impact invertebrate populations differently than other species in similar habitats. For example, the control of invasive species or agricultural pests (e.g., use of fire or insecticides) to maintain desired plant communities may impact non-target invertebrates in unanticipated ways (e.g., above ground bumblebee nests or non-active overwintering insects could be impacted during these treatments). These stressors are not currently considered in the IWAP.

The Illinois State Wildlife Grant Program has funded one project (ILSWG T-38-P-001) that begins to address the status and availability of information on non-mollusk invertebrates. Dietrich (2013) reports on insect SGNC represented in the INHS collection and developed an

internet accessible database containing information on these specimens. Insect SGNC were represented by 1417 specimens of 118 insect SGNC in the INHS collections. Zero specimens of the remaining 229 insect SGNC were included in the collection and therefore no additional information on these species was made available during this project.

The IWAP states that “Organizing available knowledge and completing additional surveys to better determine the statewide status of invertebrates will be important for updates to the Illinois Plan/Strategy” (State of Illinois 2005, p. 16) and that “Assessing the stresses to the other invertebrate species in greatest need of conservation will be important for updates to the Illinois Plan” (State of Illinois 2005, p. 17).

This project will address existing knowledge gaps in the Illinois Wildlife Action Plan for non-mollusk invertebrates (Crustaceans, Insects, Flatworms, Millipedes, Arachnids) by providing additional information and draft updates and revisions to the SGNC list for these taxa. This will include an evaluation of the Habitat Association and all listing criteria (Appendix I) plus the development of Status, Objectives, and Stresses (Appendix II) for current SGNC. We will also provide suggested changes (additions/removals) to the SGNC list where supporting information is available.

### **Objectives:**

The primary objective of this project is the direct refinement and revision of the status, objectives, and stresses for non-mollusk Species in Greatest Need of Conservation listed in the Illinois Wildlife Action Plan (State of Illinois 2005). We aim to further revise the IWAP by integrating non-mollusk invertebrates by more completely evaluating these species as SGNC (Appendix I). This includes additional evaluation of criteria 3-9 and updating information on these species in Appendix II (Status, Objectives, and Stresses to Illinois Wildlife) where they are not currently represented.

Objective 1. Review all SGNC listing criteria for currently listed non-mollusk invertebrates (update Appendix I. A separate effort is underway to update the Mollusk SGNC). Listing criteria for over 370 currently listed species will be evaluated during the first two quarters of this project (details are described in Job 1 and the Project Schedule).

Objective 2. Assess current status of SGNC invertebrates (update Appendix II) where data are available and identify where data gaps exist. The statewide status of over 370 currently listed species will be evaluated during the first two quarters of this project (details are described in Job 2 and the Project Schedule).

Objective 3. Review criteria for additional species for potential listing as SGNC (revise Appendix I) using available data from existing databases (e.g., IDNR Natural Heritage Database and INHS collections), literature review, and other sources (e.g., consensus of taxonomic experts). Species identified by taxonomic experts and review of existing databases will be evaluated during the second and third quarters of this project (details are described in Job 3 and the Project Schedule).

Objective 4. Assess stressors of species previously reviewed (revise Appendix II) and identify data gaps. Stressor identification for over 370 currently listed species will be completed during the second and third quarters of the project (details are described in Job 4 and the Project Schedule).

Objective 5. Complete Final Report and revisions of Appendix I and Appendix II for non-mollusk invertebrate Species in Greatest Need of Conservation in the IWAP. These efforts will update and revise the listing criteria, status, and stressors associated with over 370 SGNC in the Illinois Wildlife Action Plan. Draft revisions of Appendix I and Appendix II will be completed during the final two quarters of the project (details are described in Job 5 and the Project Schedule).

#### **Anticipated Outcomes and Benefits/Products:**

This project will reevaluate non-mollusk invertebrate species for listing as SGNC (Appendix I) and provide an update and revision of the status, distribution, and stresses for these species (Appendix II) appropriate for a revision of the Illinois Wildlife Action Plan.

We will assign habitat associations, identify stressors, evaluate rarity, develop distribution maps, and estimate changes in distribution between historic and recent collections data for over 370 species currently listed in the IWAP as well as additional species that may meet one or more of the listing criteria.

Expected outputs associated with this project include:

1. Maps of species distributions of currently listed species (County or HUC12).
2. Draft revision of Appendix I (ready for public comment)
3. Draft revision of Appendix II (ready for public comment)
4. Suggested focal species for major habitat types
5. Identification of knowledge gaps in our ability to assess invertebrates
6. Suggested Actions for campaigns focused on conservation of invertebrates
7. Suggested modifications to Appendix I (removals or additions)
8. List of species of concern that have a significant lack of information (criterion 8).

## **Approach:**

This study will be completed by staff of the Illinois Natural History Survey in Champaign and Springfield, in cooperation with the IDNR Office of Resource Conservation's Watershed Protection Section.

### **Job 1. Review all SGNC listing criteria for currently listed non-mollusk invertebrates (Update and Revise Appendix I including habitat association).**

We will use existing databases (e.g., IDNR Natural Heritage and INHS Collections) and conduct literature reviews to assemble information on currently listed target species. Habitat Types will correspond with those used by the Illinois Natural Areas Inventory and refined by the working group (see page 6 for potential working group members). Habitat Associations will be assigned to each species based on findings from the literature and reviewed. The eight Illinois SGNC criteria will be evaluated for each species. Where insufficient information exists for evaluation of Habitat Association, or any of the eight criteria, it will be noted as an information gap.

*Criteria 1 and 2:* We will use information from the Illinois Endangered Species Protection Board (<http://www.dnr.illinois.gov/ESPB/Pages/default.aspx>) and NatureServe Explorer (<http://www.natureserve.org/explorer/>) to determine listing status and global ranking.

*Criterion 3:* Results of Job 2 (see below) will be used to assess rarity for species being reviewed.

*Criterion 4:* We will use information from the Illinois Natural Areas Inventory Update (<http://www.inhs.illinois.edu/research/inai/index.html>) and recent work on describing aquatic habitats from an ongoing SWG project (T-75-P-001) to estimate the approximate statewide availability of macrohabitat types. The relative abundance of the macrohabitat type associated with a species Habitat Association will be used to evaluate this criterion.

*Criteria 5 and 6:* We will use NatureServe Explorer Distribution Maps and other available information to examine endemism, disjunct population status, and the proportion of the species range that resides in Illinois. The working group will develop definitions by consensus for application of these criteria to the species reviewed.

*Criterion 7:* We will use fidelity to the Habitat Association, and other information identified from the literature review (e.g., identification as a keystone species) to assess each species status as an indicator of other species with which they share habitat. The working group will attempt to identify representative species for each macrohabitat type.

*Criterion 8:* The availability of information uncovered during the literature review and the number and distribution of known locations for each species within Illinois will be used to inform the evaluation of this criterion. The working group will develop a definition for affirmation of this criterion by consensus of its members.

**Job 2. Assess the status of each species being reviewed (Appendix I, criterion 3).**

Although most current SGNC were assigned Criteria 3 (rare or significantly declined) the nature of this status has not been defined in the IWAP. Statewide distribution maps will be constructed for each species from the existing georeferenced databases where sufficient information exists. Rarity will be evaluated based on the statewide distribution (e.g., number of known locations). Declines in distribution will be assessed using collection records summarized for a landscape unit (e.g., county or HUC8) and categorized by broad time intervals (recent vs. historical). The working group will establish consistent definitions for rarity and declines in distribution for non-mollusk invertebrates that will set the standards for these evaluations.

**Job 3. Review criteria for additional species for potential listing as SGNC**

We will review the Illinois Endangered and Threatened Species list and NatureServe Rankings for additions since IWAP development. Recent research and assessment information (e.g., Cameron et al. 2011, Grixti et al. 2009, DeWalt et al. 2005, DeWalt and Grubbs 2011, IESTAC 2008) will also be used to select additional species for review. The methods described in Job 1 and Job 2 will be conducted for these species.

**Job 4. Assess stressors of species previously reviewed.**

Appendix II of the IWAP does not currently include any information on habitat stresses, community stresses, population stresses, or direct human stresses for invertebrates other than mussels.

We will use our literature review and consensus within the working group to identify statewide stressors for each of the species previously reviewed. Statewide conservation objectives for each reviewed species will also be identified by the working group. Where insufficient information is available to identify stressors with confidence this will be noted as an information gap. As part of this Job we will develop a list of suggested Actions for each of the Habitat Based Campaigns (i.e., Grasslands, Forests, Wetlands, Streams) in the IWAP that focus on invertebrate conservation.

**Job 5. Complete Final Report and draft revisions of Appendix I and Appendix II for non-mollusk invertebrates.**

Provide a final report that includes documentation of approaches, methods, and results of this project. Draft updates and revisions of the Status, Conservation Objectives, and Stresses (Appendix II) for over 370 non-mollusk invertebrate Species in Greatest Need of Conservation (Appendix I) will be provided in a form ready for public comment and further review by the IDNR and the Wildlife Action Plan Team.

**Additional Potential INHS Working Group Members:** Brian Anderson, Kelly Estes, Sam Heads (Orthoptera), Mike Jeffords, Geoff Levin, Sue Post, Chris Taylor (Crustaceans), Steve Taylor (spring and cave invertebrates), Mark Wetzel (Annelida).

## Literature Cited:

- Cameron, S.A., J.D. Lozier, J.P. Strange, J.B. Koch, N. Cordes, L.F. Slotter, and T.L. Griswold. Patterns of widespread decline in North American bumble bees. 2011. Proceedings of the National Academy of Sciences 108: 662-667.
- Colla, S.R., and L. Packer. 2008. Evidence for decline in eastern North American bumblebees (Hymenoptera: Apidae), with special focus on *Bombus affinis* Cresson. Biodiversity Conservation 17: 1379-1391.
- DeWalt, R.E. and S.A. Grubbs. 2011. Updates to the stonefly fauna of Illinois and Indiana. Illiesia: International Journal of Stonefly Research 7: 31-50.
- DeWalt, R.E., C. Favret, and D.W. Webb. 2005. Just how imperiled are aquatic insects? A case study of stoneflies (Plecoptera) in Illinois. Annals of the Entomological Society of America 98: 941-950.
- Dietrich, C.H. 2013. Historical Occurrence & Present Status of Insect Species in Greatest Need of Conservation. Final Report to Illinois Department of Natural Resources (Project Number: T-38-P-001). Illinois Natural History Survey, 1816 S. Oak St., Champaign, IL 21820.
- Grixti, J.C., L.T. Wong, S.A. Cameron, C. Favret. 2009. Decline of bumble bees (*Bombus*) in the North American Midwest. Biological Conservation 142: 75-84.
- IESTAC 2008. Status evaluation and suggested changes for Illinois Threatened and Endangered Invertebrates. Report to Endangered Species Protection Board from Invertebrate Endangered Species Technical Advisory Committee.
- State of Illinois. 2005. The Illinois comprehensive wildlife conservation plan and strategy – version 1. Prepared by the Illinois Department of Natural Resources and approved by the U.S. Fish and Wildlife Service. [Now known as the Illinois Wildlife Action Plan or IWAP].

**Location:**

This project will be completed by INHS staff in Springfield and Champaign with the assistance of IDNR staff in Springfield.

**Compliance:**

The IDNR will use its CERP (Comprehensive Environmental Review Process) as a tool to aid the Department in meeting NEPA compliance for the project outlined under this grant proposal. It is the Department's policy to require CERP applications for all land distributing activities unless those activities are covered by CERP exemptions.

All planned activities will also be in compliance with the Endangered Species Act. All determinations and documentation will be in accordance with the current established U.S. Fish and Wildlife Service protocols for section 7.

All planned activities will be in compliance with the National Historic Preservation Act and the Council on Historic Preservation Act. All determinations and documentation will be in accordance with the terms of the Programmatic Agreement, as amended, effective September 23, 2002.

**Budget Justification:**

*IDNR Project Support:* This project supports the IDNR's Wildlife Action Plan. To promote coordination with IDNR personnel, one part time project staff member will be located at the IDNR headquarters in Springfield. The IDNR will provide project staff office space and other supplies and items necessary to support the project. Examples include telephone, computer support (e.g., printer, network, and email access), motor pool, etc. Additional staff will be located at the INHS on the campus of the University of Illinois in Champaign.

*Salaries and Wages:* We request a total of \$35,661 to support one half-time and one part time research scientist for the duration of the project. We also request a total of \$10,900 to support a graduate student for one semester. The salaries of Leon Hinz and R. Edward DeWalt will be used for cost sharing and are paid from INHS operating funds and are at no cost to the sponsor.

*Fringe Benefits:* We request a total of \$11,714 in Fringe benefits in accordance with those budgeted for wages. Fringe benefits will be paid at a rate of 44.67% for Professional staff, and 5.99% for Graduate Research Assistants at INHS/UIUC. Rates have been negotiated by the University of Illinois at Urbana/Champaign.

*Travel:* We request a total of \$2,000 to reimburse staff and collaborators for expenses associated with coordination meetings and workshops. We anticipate 4 coordination meetings and 2-3 workshops that will require travel to Springfield or Champaign from locations throughout Illinois. These funds will be used to cover food, lodging, and mileage using the appropriate allowable state rates.

*Materials & Supplies:* We request a total of \$400 to provide support for general office supplies associated with expected project activities.

*Contractual Services:* We request \$225 for Contractual Services over the project period. These funds are mainly needed for software licensing.

*Equipment:* We request no funds for equipment.

*Facilities and Administrative Costs:* We request \$10,000 to offset facilities and administrative costs at the rate of 20% of direct costs. Rates have been negotiated by the University of Illinois at Urbana/Champaign.

PROJECT BUDGET Expense Line Item	Year 1 Springfield			Year 1 Champaign			Project Total		
	Request	Match	Total	Request	Match	Total	Request	Match	Total
<b>SALARIES &amp; WAGES</b>									
Professional	\$4,555	\$1,322	\$5,877	\$20,206	\$265	\$20,471	\$24,761	\$1,587	\$26,348
GRA - academic yr	\$0		\$0	\$10,900		\$10,900	\$10,900	\$0	\$10,900
GRA - summer (no classes)			\$0			\$0	\$0	\$0	\$0
Student Hourly - part time student			\$0			\$0	\$0	\$0	\$0
Student Hourly - full time student			\$0			\$0	\$0	\$0	\$0
Non-student hourly			\$0			\$0	\$0	\$0	\$0
<b>Total Salaries &amp; Wages</b>	<b>\$4,555</b>	<b>\$1,322</b>	<b>\$5,877</b>	<b>\$31,106</b>	<b>\$265</b>	<b>\$31,371</b>	<b>\$35,661</b>	<b>\$1,587</b>	<b>\$37,248</b>
<b>FRINGE BENEFITS</b>									
Professional @ 44.67%	\$2,035	\$591	\$2,625	\$9,026	\$118	\$9,144	\$11,061	\$709	\$11,770
GRA - ac yr @ 5.99%	\$0	\$0	\$0	\$653	\$0	\$653	\$653	\$0	\$653
GRA - summer (no classes) 13.64%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Fringe Benefits</b>	<b>\$2,035</b>	<b>\$591</b>	<b>\$2,625</b>	<b>\$9,679</b>	<b>\$118</b>	<b>\$9,797</b>	<b>\$11,714</b>	<b>\$709</b>	<b>\$12,423</b>
<b>Total Salaries, Wages, &amp; Fringe Benefits</b>	<b>\$6,590</b>	<b>\$1,913</b>	<b>\$8,503</b>	<b>\$40,785</b>	<b>\$383</b>	<b>\$41,168</b>	<b>\$47,375</b>	<b>\$2,296</b>	<b>\$49,671</b>
<b>TRAVEL</b>									
Out of state	\$0		\$0			\$0	\$0	\$0	\$0
In state	\$0		\$0	\$2,000		\$2,000	\$2,000	\$0	\$2,000
<b>Total Travel</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$2,000</b>	<b>\$0</b>	<b>\$2,000</b>	<b>\$2,000</b>	<b>\$0</b>	<b>\$2,000</b>
<b>MATERIALS &amp; SUPPLIES -</b>									
General	\$0		\$0	\$400		\$400	\$400	\$0	\$400
Publication costs (reprints/page costs)			\$0			\$0	\$0	\$0	\$0
<b>Total Materials &amp; Supplies</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$400</b>	<b>\$0</b>	<b>\$400</b>	<b>\$400</b>	<b>\$0</b>	<b>\$400</b>

<b>CONTRACTUAL SERVICES -</b>									
General	\$0		\$0	\$225		\$225	\$225	\$0	\$225
Conference Registration Fees									
<b>Total Contractual Services</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$225</b>	<b>\$0</b>	<b>\$225</b>	<b>\$225</b>	<b>\$0</b>	<b>\$225</b>
<b>Total Direct Costs</b>	\$6,590	\$1,913	\$8,503	\$43,410	\$383	\$43,793	\$50,000	\$2,296	\$52,296
<b>Modified Total Direct Costs (MTDC)</b>	\$6,590	\$1,913	\$8,503	\$43,410	\$383	\$43,793	\$50,000	\$2,296	\$52,296
<b>F&amp;A (20% MTDC)</b>	\$1,318		\$1,318	\$8,682		\$8,682	\$10,000		\$10,000
<b>F&amp;A (24% MTDC Springfield; 58.6% MTDC Champaign)</b>		\$459	\$459		\$225	\$225		\$684	\$684
<b>Unrecovered F&amp;A (20% vs. 24% Springfield; 20% vs. 58.6% Champaign)</b>		\$264	\$264		\$16,756	\$16,756		\$17,020	\$17,020
<b>Total Proposed Project Budget</b>	<b>\$7,908</b>	<b>\$2,636</b>	<b>\$10,544</b>	<b>\$52,092</b>	<b>\$17,364</b>	<b>\$69,456</b>	<b>\$60,000</b>	<b>\$20,000</b>	<b>\$80,000</b>
	75.0000%	25.0000%		75.0000%	25.0000%		75.0000%	25.0000%	

\*MTDC: less exemptions (equipment over \$5000, tuition remission, leases/rentals, and each subcontract in excess of \$25K)

**Personnel:**

The personnel funds requested in this project will fund one half time research scientist to conduct analysis and one part time research scientist to manage the project. Additional funds will support a graduate student for one semester at the University of Illinois Urbana-Champaign. Other IDNR and INHS personnel listed below will provide additional support to the project.

The following personnel from IDNR Office of Resource Conservation (ORC), One Natural Resources Way, Springfield, IL 62702 will manage this project:

Ann Marie Holtrop  
IDNR Watershed Protection Section  
phone: (217) 785-4325  
email: [ann.holtrop@illinois.gov](mailto:ann.holtrop@illinois.gov)

**Additional personnel involved in this project at the same location include:**

Leon C. Hinz Jr., Ph.D.  
Illinois Natural History Survey  
Institute of Natural Resource Sustainability  
University of Illinois Champaign-Urbana  
phone: (217) 785-8297  
email: [leon.hinz@illinois.gov](mailto:leon.hinz@illinois.gov)

**Additional personnel involved in this project include:**

R. Edward DeWalt, Ph.D.  
Illinois Natural History Survey  
Prairie Research Institute  
University of Illinois Champaign-Urbana  
phone: (217) 244-7408  
email: [dewalt@illinois.edu](mailto:dewalt@illinois.edu)

Chris Dietrich, Ph.D.  
Illinois Natural History Survey  
Prairie Research Institute  
University of Illinois Champaign-Urbana  
phone: (217) 244-7408  
email: [chdietri@illinois.edu](mailto:chdietri@illinois.edu)

**Relationship to Other Grants:** The Illinois State Wildlife Grant Program has funded one project (ILSWG T-38-P-001) that begins to address the status and availability of information on non-mollusk invertebrates. Dietrich (2013) reports on insect SGNC represented in the INHS collection and developed an internet accessible database containing information on these specimens. Insect SGNC were represented by 1417 specimens of 118 insect SGNC in the INHS collections. Zero specimens of the remaining 229 insect SGNC were included in the collection and therefore no additional information on these species was made available during this project.

The IWAP states that “Organizing available knowledge and completing additional surveys to better determine the statewide status of invertebrates will be important for updates to the Illinois Plan/Strategy” (State of Illinois 2005, p. 16) and that “Assessing the stresses to the other invertebrate species in greatest need of conservation will be important for updates to the Illinois Plan” (State of Illinois 2005, p. 17).

This project will address existing knowledge gaps in the Illinois Wildlife Action Plan for non-mollusk invertebrates (Crustaceans, Insects, Flatworms, Millipedes, Arachnids) by providing information to update and revise the SGNC list for these taxa. This will include an evaluation of the Habitat Association and all listing criteria (Appendix I) plus the development of Status, Objectives, and Stresses (Appendix II) for current SGNC. We will also provide suggested changes (additions/removals) to the SGNC list where supporting information is available.

**Project Schedule:**

	08/13 – 10/13	11/13 – 1/14	02/14 – 04/14	05/14 – 07/14
Job 1. Review current species.	X	X		
Job 2. Assess Status of species.	X	X		
Job 3. Review additional species.		X	X	
Job 4. Assess stressors.		X	X	X
Job 5. Prepare Report and Documentation.				X