Provost's Initiative for Undergraduate Research Collaboration Award Application for Summer 2018

Name of Faculty Applicant:

Have you conducted collaborative research with students in the past? If so, please list your past experiences.

Although I have conducted many collaborative research projects with undergraduates , this project represents the first time I've sought summer

been with graduate student collaborators at other institutions but I am eager to develop a research program closer to **set in the set of the se**

RESEARCH MENTOR

Indicates co-author on a publication or submitted/in preparation manuscript.

* Indicates co-author on a presentation at a scientific conference.

[†] Indicates student presented research at an undergraduate research conference.

@ Indicates student entered a graduate school program

Research Culminating in a Senior (or Honors) Thesis (n = 18)

2010-2011: #*Nate Banet (@ M.S. Fisheries & Aquatic Biology, Univ. of Minnesota)

2009-2010: Dan Prahl

2008-2009: Joe Hanson-Hirt

2007-2008: [†]Devon Johnstone

2006-2007: [†]Corey Kaleshnik (@ D.P.T.)

2004-2005: Michelle Hotchko (@ M.S. Nutrition Bastyr U)

2003-2004: Graham Linck (@ D.P.T. Univ. Nevada Las Vegas), †Leilani Nussman

2001-2002: #Abbey Davis (@ M.S. Wash. State U.), #Leslie Davis (@ M.S. Wash. State U.), *Jennifer Fortin (@ Ph.D. Wash. State U.), *Alissa Gjelten (@ D.P.T. Pacific U.)

2000-2001: [†]Alex Coverdill (@ Ph.D. Univ. Wash.)

1999-2000: *[†]Joe Baker, ^{*†}Susie Imholt (@ M.S. Western Washington U.)

1998-1999: [†]Angela Hager (@ J.D. Vermont Law)

1997-1998: *[†]Julie Kurkinen (@ M.A.T. Univ. Portland)

1995-1996: *Ann Savage, *Rachel Zierzow (@ Ph.D. Univ. Texas)

SHORT-TERM RESEARCH PROJECTS (N = 42)

2017-2018: Evan Schatz (tree swallows – river campus), Owen Phinney (restoration ecology – river campus)

2016-2017: Asch McDonnell (river campus eagles), Sam Margheim (river campus mink)

2010-2011: Haleigh Grant

2008-2009: Olivia Bentley, Jeff Buckingham, Nick Calais, Joey Pagano, Billy Pedey, Mackenzie Reminger-

- Carpenter, Kathryn Willison
- 2007-2008: [†]Megan Heberle, Claire James, Devon Johnstone, Jenn Sheedy, Megan Seymour

2006-2007: Tommy Pham, Erin Schmidt, [†]Margie Young

2005-2006: Michael VanSooy, Sean VanSooy

2004-2005: Kyle Gallagher

2003-2004: †#*Robert Fridinger (@ M.S. Univ. Alaska Anchorage), Sara St. James

2002-2003: [†]Luke Fanning, [†]Christian Hildebrandt, [†]Jessica VanDervolgen, [†]Krista Henning (@ D.C. Western States Chiropractic)

2001-2002: Tom Fisher, Mike Lyons, Maureen Toomey

2000-2001: Joe Massoth, Beth Stroebe

1999-2000: *Alec Bailey (@ D.V.M. Oregon State), Caleb McMahan 1998-1999: Sergio Crespo (@ M.D. Univ. S. Calif.), *Matt Roscoe, Tia Sharpe 1997-1998: Aron Hunter, Gretchen Sanders, David Wilkinson

Name of Student Applicant:

Have you worked with this student applicant before on research? Is so, please describe your past experiences. If you have not worked with this student, please explain why this student is appropriate for this project and whether this student has prior experience collaborating on faculty research with someone else.



We were both inspired to create our own project on the river campus after seeing how much avian activity was happening throughout the spring and summer. We saw a lot of swallows there, including hole-nesting Tree Swallows and Purple Martins. It is signed up for research credit (BIO 493) with me Fall 2017 and Spring 2018 to work on project proposal and set up a Tree Swallow colony (20 nest boxes). At the suggestion of we are also setting up housing for a Purple Martin colony (16-32 gourd nests) because they are declining across the country and will soon remove the pilings they are currently nesting in to make way for a boat dock. If n has not conducted research with anyone else. This will be first research project. We've worked well together during weekly meetings and occasional weekend fieldwork to bring research proposal to fruition.

Title of Proposal: The Effect of Weather Conditions on Reproductive Success of Tree Swallows and Purple Martins

Are other funds available for this project with this student? The department has already paid for the 20 Tree Swallow nest boxes and the state of the poles for gourds will be set in buried concrete). I am applying for a grant from The Small Projects and Community Events (SPACE) Program to fund Purple Martin gourd nests

(\$900). The department will provide funds to purchase temperature-monitoring probes for nests. The department has two video cameras to record feeding behavior at nests.

Does your academic unit provide funding, beyond supply budget, in the summer for either faculty members or students engaged in collaborative research? There is no department funding for student or faculty stipends for summer research.

Project Details

I. Please provide a brief summary of the proposed research project. Please include the goals for the project and the goals for the student.

Tree Swallow (left) and Purple Martin (right)



Ruthven Park Nature Blog

Cavity nesting species need help as forested habitat shrinks and competition for remaining holes to raise their young increases. Aggressive introduced species, especially House Sparrows and European Starlings, increasingly supplant native species. By providing housing for Tree Swallows and Purple Martins, we will actively contribute to their conservation. Accessible housing will also easily allow us to monitor the behavior of each species.

Swallows are dependent upon insects they catch aerially. Weather conditions, especially cold temperatures, wind, and rain, strongly reduce the availability of insects to swallows. We will monitor each nest to assess activity patterns of adults, nest temperature, feeding rate and development of chicks, and fledging success. Weather conditions will be recorded throughout the study. By establishing a consistent set of observations and using standardized forms for submission to Project Martinwatch and Golodrinas de las Americas (Tree Swallows) we'll be contributing to international datasets. I will also be able to observe trends in both species over the coming years as UP develops the River Campus and as our regional climate continues to warm.

II. Describe why this is an impactful project for the student at this time in their education and why a 6-week summer experience would be valuable (versus an independent research experience (493) during the academic year). is planning to go to graduate school in preparation for a career as a research biologist heavily involved in fieldwork. needs to learn how to do each of the elements of a successful field study including: setting up the field site, recording behavioral observations, obtaining weather readings, data entry, statistical analysis, writing scientific papers, and perhaps most importantly, troubleshooting. will gain confidence in his skills and become more independent and self-motivated. One of the criticisms I received from my PhD mentor when my research student became his graduate student was that our students needed to be more self-sufficient and require less direction and prodding. Developing a fairly low-stakes project on campus (vs. research on difficult-to-obtain samples from far-flung locations across the globe) affords students like the opportunity to learn from mistakes and think creatively about ways to address problems that invariably come up in field studies. The nature of this project necessitates summer research as the breeding season runs from May through July.

III. Please explain why you believe this student is the right student to conduct intensive research? To what extent can she/he work independently? has done a fine job so far working independently. I've been meeting with him weekly since August and each week I give an assignment to complete before our next meeting and he always does each assignment. also occasionally reminds me of an assignment I gave myself that needs to be completed so verv good at keeping both of us on track towards our goals. very enthusiastic about learning and highly motivated for graduate school and research. During the academic year, we're limited by what we can do in the field while we wait for the birds to return from their wintering grounds in Central and South America. Once is trained in each of the aspects of the study, I fully to be able to function on own conducting the surveys, collecting data, and expect observing behavior.

IV. What are the specific roles and duties of the student with regard to this project? Stating the student will read/write/conduct research is insufficient. Please be specific with regard to the particular skills and tasks the student will be conducting. After ensuring all of the nests are installed properly and actively keeping predators and competitors out, will be on the river campus daily, monitoring each species. will walk the line of 20 Tree Swallow boxes, unscrewing the side door to check on contents every 3 days for each nest box to avoid disturbing them too often. Once chicks hatch, they will be measured (leg length, wing length, and weight) to determine growth rate. Video cameras will be set near each nest box to record visitation frequency by parents during incubation and chick feeding. will watch these videos to record the behavioral data. Internal nest box temperatures will be recorded daily using remote Bluetooth download to an iPhone to avoid disturbing the nest. weather station data will be recorded. Each of the variables collected for both species will be entered into an Excel database and exported to SPSS for statistical analysis to determine which variables are most associated with robust chick growth and fledging success. This system also encourages experimental manipulations in future years, examining for example the effects of light pollution on nests placed near overhead streetlights or the integration of stress during poor feeding conditions as measured by corticosterone hormone levels in a few feathers plucked from the back of a chick. will also gain experience evaluating the mountains of scientific papers on Tree Swallows in

particular and placing findings in the larger context of studies across the country. I also expect to present findings in talks during one or both semesters during senior year, culminating in a senior thesis.

V. Please outline a tentative work plan (more detail is better) for research that demonstrates the appropriate time commitment for both faculty and student researcher. (Note. It is expected that regular face-to-face meetings and collaborative work time will take place with students.) Early March: install Tree Swallow nest boxes (20)

Early March. Install Thee Swallow hest boxes (20

Early April: install Purple Martin gourds (16-32) April: check all nests every 3 days for occupancy

Early May – End July: Summer research season. Weather conditions for daylight hours recorded daily from weather station. Check all Tree Swallow nests every 3 days. On a different

schedule, check Purple Martin nests every 5 days (entire colony needs to come down to check – more disturbance so fewer checks). On intervening days, two video cameras will be set-up at nests to record parental attendance patterns. Videos will be scored and data entered after field work for each day is complete. Literature search continues for portions of final paper. Late July: All data entered and statistical analysis completed.

Early August: Write paper.

Mid August: Paper completed.

Throughout project: meeting at least three times per week for field work, lab instruction, data analysis, discussion of progress and evaluation of each component.

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WH-1 R	AA	5/18	6/08	6/08	7/04	PMN 3E	7E	7E	7E	2E 5Y 1do	7Y NR	7Y	7Y NR	6Y	6Y	Ν	Ν	Ν	Ν	7	7	6
WH-2 E	SA	6/03	6/21	6/22	7/18	ST ND	HS ND	PM N	2E	4E	4E	4E	1E* 3Y 2do	1E/3Y NR	3Y	3Y NR	3Y	Ν	Ν	4	3	3
WH-3 C	A /?	6/04	6/24	6/24	7/20	х	PM N	Ν	1E	6E	6E	6E	3E 3Y HD	5Y/NR 1DY/D	5Y	5Y NR	5Y	4Y	Ν	6	6	4
WH-4 R	s s	5/31	6/19	6/19	7/15	х	PM N	Ν	5E	5E	5E	2E 3Y HD	5Y NR	3Y 2DY/D	3Y NR	3Y	ЗY	1Y	Ν	5	5	3
AG-1 C	A	5/26-30 6/10-12	6/10-14 6/27-29	6/28	7/24	х	PM N	1E	1E	OE	3E RA	3E	3E	3Y 1do	3Y NR	3Y	2Y NR	2Y	Ν	1 3	0 3	0 2
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Using th action y	Using the codes below, record exactly what you find in each compartment on every nest check and any action you may take. Using the laminated martin photos, record age of nestlings on first encounter. Nest Record Sheet Totals:													als:	31	29	22					

Sample data sheet: Project Martinwatch

A completed Project Martinwatch Nest Data Sheet from a hypothetical 4-unit wooden martin house that has one artificial gourd and one natural gourd hung underneath it. A data sheet for your site is on the back of this page, along with a key to the coding system.

Back						
* = See Comments on Back						
B = Banded						
RA = Renesting Attempt						
ST = Starling						
BB = Bluebird						
1						

VI. Please briefly describe your mentoring plan for the student. (Note: Students new to full-time research are rarely ready from the start of a project to work intensively on research for 35 hours per week. They often lack the planning and anticipation skills to acquire materials (reading/supplies) and/or the inquiry skills to make effective use of time on the project. Please describe the mentoring/development activities that will support your student's development and entre into the world of research. What will you do to help them be successful researchers/scholars? (Please see the following attachment that outlines the challenges of research and some mentoring examples http://www.cur.org/assets/1/7/333Spring13Pita11-

15.pdf). This project will stretch out across both summer sessions (12 weeks), affording more flexibility in how spends each day. This is helpful so can adapt to the weather conditions and patterns of activity of the birds. Some activities will be on a strict schedule where either or I must collect data on a given date, while other activities can be done in longer chunks of time on any date (e.g. scoring behaviors from video). We will have a near-daily presence on the River Campus which should also help deter vandalism. Once occupancy begins of the nesting sites, we will work from check-lists for nests needing measurements and fill in data forms, transferring information to Excel as we go. During the first summer session I will be teaching Ornithology. will have a chance to teach Ornithology students about project and show them how to complete each of the tasks, effectively recruiting and beginning the training for the following year's research students. I will train in each of the techniques he needs (for example, measuring birds) and continue to visit each nest box with him until I'm confident in his consistency and competence to do the work on own. We will meet at least two times a week inside to assess progress and address issues and at least two times a week I will be in the field with visiting each nest box. We will be full collaborative partners in this project.