

ENTOMOLOGY 2025 STRATEGIC PLAN
October 30, 2019

Purpose

Improve the quality of life of the people of Arizona and the world by generating, disseminating, and applying information about insects.

2025 Vision (each component below is reflected in a specific strategic goal)

1. The quality and impact of our research will be recognized in Arizona, nationally & globally.
2. Our IPM programs will be implemented in Arizona and other regions worldwide and will promote better health, protect the environment, and boost the economy.
3. We will engage undergraduate students with active-learning courses and mentoring to help them succeed in the fourth industrial revolution (4IR).
4. The graduate program in Entomology & Insect Science (EIS) will attract the best students; students completing EIS degrees will be in high demand by employers.
5. Our outreach programs will educate, delight, and connect community members with Entomology, CALS, and the University of Arizona.
6. The UA Insect Collection will be the best source of specimens from the Sonoran Desert Region and a global center for specimen-based insect research.
7. Our programs will be well supported by private donors, as well as by governmental agencies.

Mission

- Conduct outstanding research to better understand insects and their impact on humanity
- Provide distinguished education in insect biology
- Provide innovative solutions to address critical issues such as food security and vector-borne diseases
- Develop and deploy the most advanced technologies and progressive IPM programs in the world to minimize the negative impacts of insects and maximize their positive impacts
- Provide outstanding outreach programs about insects accessible to all community members

Shared Values

- Respect for all people
- Collaboration among department members
- Collaboration within & across disciplines with others in CALS, UA, and other institutions
- Put knowledge to work to improve lives
- Serve our profession and the people of Arizona and the world
- Excellence in all pursuits
- Passion for achieving positive outcomes
- Work hard and have fun doing what we love to do
- Provide value for resources invested in Entomology
- Develop programs with local and global relevance
- Take advantage of our desert environment & position in the front line of climate change

1. RESEARCH STRATEGIC GOAL: Increase Entomology research productivity 30% by 2025.

A. Current situation and gap between current and desired situation

Outstanding, cutting-edge research is our hallmark and the core strength that underlies excellence in our instruction, Extension and outreach. We aim to capitalize on this core strength to increase Entomology research productivity 30% by 2025. Our internationally recognized research must rise to meet the challenges of climate change and a rapidly increasing human population. These challenges demand innovative interdisciplinary research to lead the way in combating crop pests, biomedical pests, invasive species, and the decline in biodiversity.

B. Strategies to achieve goal

1. Target critical global issues with research led by our faculty and their collaborators
2. Retain current faculty who have outstanding research productivity
3. Recruit new faculty with outstanding research productivity
4. Increase research productivity of current faculty
5. Enhance collaborations in the Dept. and with others (UA, national, and international)
6. Strengthen research infrastructure including support staff and facilities

C. Actions

Time Period (Fiscal Years)

- Continue building interdisciplinary teams to address global challenges 2020-25
- Reward faculty achievement with merit raises and promotions..... 2020-25
- Nominate faculty for awards to recognize their outstanding achievements 2020-25
- Enhance mentoring of faculty by head and outstanding peers..... 2020-25
- Encourage and reward productive team efforts 2020-25
- Recruit faculty in areas with strong extramural funding prospects: mitigating .. 2020-25 effects of climate change on biodiversity, pollinators, and food security; invasive species; insect genomics and bioinformatics; and insects of biomedical importance.
- Obtain more funding from international sources 2020-25

D. Inputs needed to achieve the goal

- 6 tenure-track faculty lines (0.80 FTE research, 0.20 teaching): \$510K salary per year + ERE; startup of \$1.8M
- Research support staff: 12 FTE, \$480K salary per year + ERE
- Repair or replace shared research equipment: \$20K per year

E. Objective metrics that will be used to track progress towards attaining goal

- Extramural research funding per faculty research FTE per year
- Publications listed in Web of Science per faculty research FTE per year
- Citations per departmental publication in Web of Science
- Faculty honors and awards

Note: We expect 4-5 current tenure-track faculty will leave the department by 2024. Thus, filling the 6 requested faculty lines would slightly increase the number of tenure-track faculty.

2. IPM STRATEGIC GOAL: By FY25, greatly enhance effectiveness of Integrated Pest Management (IPM) research, education, and Extension programs in Arizona for teaching students and stakeholders, and for addressing health, environmental, and economic problems caused by pests.

A. Current situation:

- Cooperative Extension and research programs in IPM have garnered national and international recognition for their development and deployment of new strategies with large impacts on the economy, environmental protection, & society (e.g., > \$500 million saved since 1996 in Arizona alone).
- Key IPM faculty have left in the past decade (Dennehy, Byrne, Baker) and 2-4 of the remaining five Extension faculty are likely to leave by 2025.
- An internationally recognized graduate IDP in Entomology & Insect Science, with undergrads and graduate students actively engaged in fully integrated research/Extension programs giving them practical experience addressing real-world challenges.
- Capacity to create a premier U.S. center for IPM research, education, and Extension is incomplete, but would attract major funding, the best scientists, science, and students of IPM, and would generate solutions to society's pressing needs for safe and secure food, fiber, and healthy environments.

Desired situation:

- A world-class student-centered graduate and undergraduate IPM educational program (IDP) that capitalizes on the high profile research and Extension programs currently in place.
- Stable funding for students engaged in interdisciplinary problem-solving programs.
- An interdisciplinary synergistic approach that enables a fully collaborative environment across unit boundaries and enhances our effectiveness at winning major grants and having major impacts.
- Establish the UA as a premier center for IPM research, education, and Extension that impacts the future of the science and its application and implementation, and supplies the workforce needed to educate a generation of students that will face daunting food security, safety, and environmental challenges posed by pests and pest-related risks.

Gaps:

- New IPM teaching personnel are needed to develop the interdisciplinary curriculum that provides the third leg of our integrated research, education, and Extension IPM center.
- Investments have been made to establish cooperative teams including numerous units from within and external to CALS that work collaboratively with broad national networks, but the human assets employed to coordinate and link multiple groups across the state are funded solely by grants and contracts, thus program stability is constantly under threat.
- New IPM research and Extension personnel to fuel innovation in science and implementation.

B. Strategies to achieve goal

1. Recruit and retain outstanding faculty, other appointed personnel & classified staff in IPM.
2. Create a fertile environment for the development of translational sciences needed to support IPM.
3. Leverage resources from gifts/grants/contracts to support staffing needs (50% share of each).
4. Partner with allied colleges (e.g., Public Health, Pharmacy, Medicine, etc.), departments and units with similar interests to develop an IPM curriculum and to forge strong interdisciplinary relationships in research and Extension (Entomology (lead), Biosystems Engineering, Agricultural & Resource Economics, School of Natural Resources & the Environment, Plant Sciences,

Environmental Science, Experiment Station (MAC, YAC, SAC, CAC), County, and statewide Tribal Cooperative Extension Offices).

5. Develop courses (Gen Ed IPM, Advanced Topics in IPM, structural IPM, Medical & Veterinary IPM).
6. Establish new Extension IPM programs to meet stakeholder needs (e.g., Greenhouse, Small Farms, Commercial Horticultural IPM).
7. Establish stable funding for graduate student Extension assistantships & undergraduate research & Extension internships.

C. Actions

Time Period (Fiscal Years)

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|---|---------|
| Secure 50% CALS/State funding of salary + ERE for highly productive appointed personnel who are now 100% grant funded | 2021-25 |
| Hire IPM faculty (80% research:20% teaching) & 1 research specialist..... | 2021 |
| Offer 100 level IPM Gen Ed course | 2021 |
| Offer specialized 400/500 level IPM courses (e.g., Biocontrol, Urban IPM)..... | 2022 |
| Hire IPM faculty (80% Extension:20% teaching) & 1 research specialist..... | 2022 |
| Establish three IPM RA/TAships..... | 2022 |
| Hire IPM faculty (80% Extension:20% research) & 0.5 Extension educator | 2023 |
| Establish two IPM Extension Assistantships | 2021 |
| Hire IPM faculty (80% Extension:20% research) & 0.5 Assistant in Extension | 2024 |

D. Inputs needed to achieve the goal

- Research/teaching faculty in IPM (2; \$170K salary per year + ERE)
- Classified staff (2 @ 3 years each; \$390K total)
- Graduate assistantships (2 RA/TAs; \$50K/yr)
- Cross unit agreements to mentor students
- Extension/research faculty in IPM (2; \$170K salary per year + ERE)
- Assistant/Associate in Extension (appointed, 4 @ 0.5 FTE; \$130K salary per yr + ERE)
- Extension assistantships (2 Ext. Asst.; \$50K/yr)
- Undergrad summer internships (2@ 0.5; \$4K/yr)
- One-time startup cost for 4 IPM faculty \$800K

E. Objective metrics that will be used to track progress towards attaining goal

- Number of IPM undergraduate and graduate students recruited to & graduated from IDP programs
- Number and amounts of grants awarded to IPM faculty
- Number and % of IPM graduates placed in career-track positions (near 100%)
- Number of professional continuing education units offered (CEUs) and delivered (No. of participants)
- Economic and social impacts of our IPM programs (\$ saved, pesticide use reductions)
- Increased security and safety of food and fiber supply produced in Arizona
- Number of peer-reviewed publications created each year
- Number of awards and honors received by IPM faculty
- Successful and continuing leverage of staff resources (classified staff > 3yrs; 2@0.5 Extension educators)
- Interest in and extramural support for fellowships, internships, assistantships, and endowments

Notes

The investment in human capital is a ca. \$500K per year with one time costs of another \$390K in staff support. Leveraged returns on this investment will easily be 3-fold & costs mostly offset by IDC returns to University [average annual grants (realistic, initially): \$250K/yr/faculty or \$1M/yr; average IDC rate %30 or \$300K/yr; (ideally and over time) \$3M/yr total with ca. \$1M/yr in IDC].

- Federal re-organization of IPM funding under a consolidated “Crop Protection” line of the USDA will increase visibility and funding for this vital program, and increase and standardize IDC to 30% equivalent to an effective rate of 42.65% of TDC (from previous 0–22% depending on sub-program).
- USDA’s National Institute for Food and Agriculture (NIFA) has created the Agriculture and Food Research Initiative (AFRI) competitive grants program that now rewards large, collaborative, team-based, and integrated (research, education, Extension) projects. Many awards are in the millions of dollars and at least 30% of funds from this program will be allocated to the Extension components. IPM, as a practical science that can fully articulate with Extension implementation programs, will have many new opportunities for funding through this program. A premiere IPM center for research, education, and Extension at UA would be ideally positioned to capture major resources from this program. Current IDC cap at 30% for this program, but many believe that future authorizations of this program will increase this cap in the future. http://www.csrees.usda.gov/business/awards/indirect_cost.html

3. UNDERGRADUATE ENGAGEMENT STRATEGIC GOAL: Increase the yearly undergraduate student credit hours taught 30% by FY2025.

A. Current situation and gap between current situation and desired situation

The Department of Entomology more than doubled the yearly undergraduate student credit hours (SCH) it teaches during the past decade, but would like to do more to provide students with a common foundation of competencies and skills to help them succeed in the 4IR. Accordingly, we aim to increase SCH taught 25% by FY2022. We have increased the number of undergraduate students mentored by faculty in our research labs, which strengthens the students' critical thinking skills, engages them in cutting edge research, and makes them more employable. Because of the exceptional benefits of this mentoring, we also seek to expand our impact in this area.

B. Strategies to achieve goal

1. Increase the percentage of undergraduate courses taught through active learning to 60% by FY2021 and 75% by FY2022.
2. Increase faculty mentoring of undergraduate students in Entomology laboratories
3. Implement a certificate program in Entomology
4. Develop a minor in Entomology

C. Actions

Time Period (Fiscal Years)

- Support faculty to incorporate active learning in their courses..... 2020-25
- Appoint a departmental coordinator for undergraduate research..... 2020-21
- Revise certificate program proposal (if needed) after receiving UA feedback....2020-21
- Produce and submit proposal for minor in Entomology.....2020-21
- Reward faculty for undergraduate teaching and mentoring.....2020-25

D. Inputs needed to achieve the goal

- Faculty effort in incorporating active learning in their courses
- Faculty effort in mentoring students in their laboratories
- Approval by UA of the certificate proposal we submitted in 2016, with potential revisions by faculty to meet new guidelines, if needed

E. Objective metrics that will be used to track progress towards attaining goal

- Undergraduate SCH taught per academic year
- Percentage of undergraduate courses taught through active learning
- Number of undergraduate students mentored by faculty per year in Entomology laboratories
- Presentations by undergraduate students at scientific meetings
- Awards won by undergraduate students
- Journal articles coauthored by undergraduate students

4. GRADUATE PROGRAM STRATEGIC GOAL: Double the stable funding for Entomology & Insect Science (EIS) graduate students by FY25.

A. Current situation and gap between current situation and desired situation

The Graduate Interdisciplinary Program in Entomology & Insect Science (EIS) is nationally recognized as excellent and attracts outstanding students. In the past 15 years, 94% of students completing MS or PhD degrees in our graduate programs (EIS and its previously separate parent programs Entomology and Insect Science) obtained positions related to their graduate training. Enrollment in EIS has remained stable at ~30 students, with the largest single year intake (10) in AY19-20. Yet, funding for students is unpredictable, which threatens future recruiting and the long-term success of the program. Although faculty grants support some students, the largest single funding source now is via TAs for undergrad courses that we do not control (i.e., Introductory Biology courses in the College of Science). We are grateful for CALS support for GAs, but this has declined in the past few years from about 3 to 1 GA per year. In recent years, larger enrollment classes taught by our faculty have modestly increased our CALS funded TAs. To attain the desired situation of a standing enrollment of 30 or more fully funded EIS students, we aim to double funding from stable sources.

B. Strategies to achieve goal

1. Increase support of RAs via increased faculty research grants (see Research Goal)
2. Improve online interface with potential students and the general public
3. Build enrollment in frequently taught general education courses to earn TA support according to the CALS formula (each 60 students = 0.25 TA).
4. Solicit donors for endowments for student-invited speakership (Hagedorn) and student cash award to honor Genevieve Comeau (in progress)
5. Build support for first and second year students to apply for outside graduate fellowships (NSF, NIH, USDA)
6. Shift recruiting strategy to prioritize PhD over MS students to align with the new CALS first year funding formula providing 0.5 GA per 3-year rolling average number of first year PhD students (and none for MS students).

C. Actions

Time Period (Fiscal Years)

- Increase donor base and obtain donations for supporting students 2020-25
- Develop the spring EIS seminar as a short research proposal writing seminar 2020-21
- Increase enrollment in frequently taught general education courses to earn TA support according to the CALS formula (each 60 students = 0.25 TA).....2020-25

D. Inputs needed to achieve the goal

- Faculty effort in increasing extramural grant funding with support for RAs
- Faculty effort in recruiting and mentoring EIS PhD students
- Efforts of department members and Advisory Board to develop donor base for student endowments: Attractive brochures, displays for Insect Festival, and websites
- Faculty teaching effort in large undergraduate courses
- CALS/UA increase in funding per year for GAs from current \$27K to \$66K
- CALS/UA support of TAs for 4 large undergrad courses, \$60K per year

E. Objective metrics that will be used to track progress towards attaining goal

- Funding of EIS students from faculty research grants, CALS RA and TA support and endowments
- Fully funded EIS students (total number and %)
- EIS degrees granted per year
- Increased proportion of EIS PhD students enrolled per year
- Papers published by EIS students
- Presentations by EIS students at scientific meetings
- Awards won by EIS students
- Job placement of EIS graduates

- **Note:** Core and joint Entomology faculty are the major advisors for nearly all EIS students.

5. OUTREACH STRATEGIC GOAL: Double the number of people served each year by FY25 through sustainable outreach programs to meet public demand for insect information, to support K-12 science education, and to connect underserved communities to UA Entomology and CALS.

A. Current situation and gap between current situation and desired situation

We deliver outreach via 3 main programs: Insect Discovery, the Arizona Insect Festival, and the UA Insect Collection (UAIC). Insect Discovery serves ca. 2,000 K-8 students yearly and teaches ca. 25 UA undergraduate and graduate students how to communicate science to the public. More than half of the students served are from low-income and minority communities. Since the first Arizona Insect Festival in 2011, this festival has grown to an annual event attracting over 3,000 visitors and involving more than 250 participants from within the university as well as the community. During the past year, associates of the UAIC delivered 25 presentations on insects to community groups and responded to 3,000 insect identification inquiries from the public. Despite the success of our current outreach programs, an enormous community demand remains for information about insects and for insect-related science enrichment for K-12 education. Moreover, these programs are supported largely by temporary extramural funding. To solve the problem of unstable funding and to capitalize on the opportunity to connect better with the community, we aim to obtain long-term funding and double the number of people served by Entomology outreach programs.

B. Strategies to achieve goal

1. Provide opportunities for graduate students to increase expertise in outreach through paid positions, courses, and seminars
2. Enhance communication statewide among all UA insect-related outreach activities
3. Increase awareness and participation in Entomology outreach activities in low income and minority communities.
4. Establish endowments for Insect Discovery and the Insect Festival
5. Train K-12 teachers how to use insects to teach science
6. Develop online insect outreach materials to reach beyond the local community

C. Actions

Time Period (Fiscal Years)

- Contact UA faculty statewide to coordinate insect-related outreach programs 2020-21
- Catalog K-12 insect outreach resources online including links to programs 2020-21
- Recruit more undergraduate students to Insect Discovery preceptor course 2020-23
- Invite community organizations and businesses to sponsor the Insect Festival 2020-24
- Collaborate with TenWest and other organizations to publicize the Insect Festival, with special focus on Spanish-language media.....2020-25
- Enhance UAIC and Insect Discovery websites..... 2020-21
- Provide teacher training in using insects and insect collecting methods 2020-25
- Develop a graduate course in communicating science and public outreach 2021-22

D. Inputs needed to achieve the goal

- Funding for 2 new semesters of Outreach TAs per year (0.5 FTE) - \$32K per year
- Increased undergraduate volunteer involvement for course credit
- Faculty, student, and staff participation in annual Insect Festival
- Financial support for Insect Festival - \$20K per year until endowment is established

E. Objective metrics that will be used to track progress towards attaining goals

- Number of people served by Insect Discovery, Insect Festival, and UAIC
- Number of children in Title 1 and high minority enrollment schools participating in Insect Discovery.
- Number of visitors to the Arizona Insect Festival from zip codes in low-income, high minority neighborhoods
- Number and amounts of funded grants supporting outreach
- Number and amounts of donations supporting insect outreach as well as years of support (develop long-term sponsors)
- Number of insect-related K-12 programs statewide included in online outreach catalog
- Number of new collaborations among insect outreach programs
- Impact of Insect Discovery and other insect outreach programs on K-12 student learning based on teacher questionnaires

6. INSECT COLLECTION STRATEGIC GOAL: Make the University of Arizona's Insect Collection the world's best source of arthropod data and specimens from the Sonoran Desert Region, and a global center for insect research

A. Current situation and gap to desired situation

The 2 million specimens in the University of Arizona Insect Collection (UAIC) are a unique treasure for research, extension, education, and outreach focusing on biodiversity of the Sonoran Desert Region. Over the past six years we have: (1) moved the entire pinned collection into modern facilities, (2) improved visiting researcher facilities, (3) initiated an endowed visiting researcher program, (4) established a specimen-level database, Symbiota Collections of Arthropod Network (SCAN), which provides specimen-level data online via a Virtual Network linked to other arthropod collections around the world, (5) established a new lab within the footprint of the UAIC dedicated to extracting DNA from museum specimens, and (6) established an endowment designated to cover non-salary operating expenses for the collection.

We are well positioned to develop large-scale specimen-based projects related to biodiversity, pest management, invasive species, and/or the effects of climate change. Such projects will use the specimens in the UAIC to develop species occurrence maps and identification tools, including high-resolution images and species-specific DNA sequence data. In doing so, we will ultimately generate a new collection of total genomic DNA extracted from specimens curated in the UAIC. We will focus our initial efforts on two projects.

Project 1. Insects of Agricultural Importance in Arizona. We will network with UA Extension faculty and the USDA identifiers in Phoenix, Nogales, and Yuma to help us determine which species are of greatest concern to agriculture in Arizona and for which molecular-based identification tools would be most useful. [estimated 50 species and 1,000 specimens]

Project 2. Native Bees of the Sonoran Desert Region. With over 700 species of native bees, the Sonoran Desert Region is home to one of the highest diversities of bee species *in the world*. We need these important pollinators, and in many cases we don't even know their names. The UAIC maintains thousands of native bee specimens, representing 5 families, 65 genera, and approximately 520 species, many of which have been specialist-identified. The UAIC collection and the associated identification tools we are building will help researchers and conservationists to track and monitor the health of native bees of the Sonoran Desert Region. [estimated 520 species and 6,000 specimens]

These projects, and others like them, will position the UAIC as a leader in museum sciences, the Department as a global center for specimen-based insect research, and the University as a lead collaborator with other local education and agricultural institutions (USDA, Pima Community College, Arizona-Sonora Desert Museum).

B. Strategies to achieve goal

1. We will expand the collection to include at least one specimen of every species in our two target groups (noted above).
2. We will enhance the UAIC by re-curating all specimens of the target species, following updated taxonomy. In the process, all specimen-level data, including georeferences, will be published in the SCAN database.
3. One specimen of every species in our target groups will be documented with high-resolution imagery. Total genomic DNA will be extracted from that specimen, archived in the collection, and aliquots of DNA will be made available to researchers upon request.
4. The barcode region of the mitochondrial gene COI will be PCR-amplified and sequenced for every target species. The DNA barcode will be published and made freely available to researchers, students, and the general public on the Barcode of Life Database (BOLD).
5. We will engage future scientists at the UA, Pima Community College, and Tucson Unified School District in the generation of DNA barcodes through course-based research experiences for undergraduates and high school students.
6. We will revive our established UAIC board of advisors to help guide transitions, connect with the larger community of systematists, and select annual Visiting Arthropod Systematists from applications.
7. Connect UA students, faculty, and staff with the local community of retired systematists and active amateur entomologists
8. Obtain funding from grants and donations to support needed personnel

C. Actions

Time Period (Fiscal Years)

- Specimen-level work as described above2020-21
- Update the UAIC website2020-21
- Expand the UAIC website to include these project descriptions and outputs2020-21
- Target systematists to apply for the Visiting Arthropod Systematist program2020-25
- Work with programmers to link SCAN and BOLD2020-21
- Enlist UAIC volunteers to help with UAIC projects2020-25
- Apply for funding to cover needed personnel2020-24

D. Inputs needed to achieve the goals

- Project Coordinator or postdoc (\$50K per year), 1.0 FTE (via fundraising efforts, internal grants at UA, and external NSF-ADBC or NSF-CSBR grant (\$300K, proposal in prep).
- Graduate Research Assistantship for collection support (\$20K per year) 0.5 FTE. Hiring graduate students will allow us to attain our goals while simultaneously training the next generation of museum specialists.

E. Objective metrics that will be used to track progress towards attaining goal

- Number of specimens re-curated, databased, published online.
- Number of UAIC specimen-related barcodes published online.

- Size of the UAIC Genomic collection and the number of loan requests received.
- Use of collection for local entomology meetings, sorting events by students, and outreach
- Number of research articles published using the UAIC.
- Amount of extramural resources obtained for projects.
- Number and scope of inter-institutional, regional, national, and international requests of UAIC and collaborations formed.

7. DEVELOPMENT GOAL: Raise \$2M from private donors to support our programs by FY25.

A. Current situation and gap between current situation and desired situation

The Department of Entomology fulfills UA's Land Grant mission by offering economically important research, extension and outreach to our state's stakeholders in agriculture, urban pest management, biodiversity conservation, and education. We are unique in UA and CALS because we focus on insects, which generate tremendous public interest. However, we receive little direct financial support from the public. We will connect with the community in new ways to increase stakeholders' financial support of Entomology & CALS.

B. Strategies to achieve goal

1. Increase visibility to stakeholders and all citizens of the state & region.
2. Connect with the community through events such as the Arizona Insect Festival, programs such as Insect Discovery, and resources such as the UA Insect Collection (UAIC).
3. Double the number of engaged alumni (e.g., service, advocacy, giving).
4. Increase alumni giving rate.
5. Maintain and enhance our high Department profile in local and national news.

C. Actions

Time Period (Fiscal Years)

- Work with the CALS Development Office to seek funding for our programs2020-25 (Insect Discovery, EIS grad program, UAIC, Insect Festival, etc.).
- Invigorate the Department **Advisory Board** to connect with the community and be ...2020-25 our advocates in diverse circles within the State (medicine, agriculture, pest management, etc.).
- **Renovate** the Entomology classroom (Forbes 412) and main business office2020-22 (Forbes 410) to project a more modern image to visitors.
- Work with CALS to build **appealing exhibits** in the main lobby of Forbes, in the2020-25 Student Union, and elsewhere on campus to highlight the accomplishments and activities of the Department and other CALS Departments.
- Enhance the **department website** with development goals and ways for.....2020-21 stakeholders to become involved with departmental activities.
- Hold regularly scheduled support-raising events such as the Insect Festival,2020-25 insect-themed social events, and high-end events with invited supporters and potential new supporters.

D. Inputs needed to achieve the goal

- Effort by faculty and other Department members to support development
- Effort by Entomology Advisory Board
- Part-time Entomology Development Coordinator who will increase our profile, organize fund-raising events, and garner new resources: \$30K per year
- Collaboration from CALS Development Office
- Funds for physical renovations, exhibit development, and IT support: \$15K per year

E. Objective metrics that will be used to track progress towards attaining goal

- Funds raised per year