

# THE GOLDEN GOOSE AWARD

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## **GOLDEN GOOSE AWARD TO “SEX LIFE OF THE SCREWWORM” RESEARCHERS WHOSE WORK LED TO BREAKTHROUGH PEST CONTROL TECHNIQUE**

**Despite decades of ridicule for the focus of their work, two researchers behind the study of the sex life of the screwworm fly will be saluted at a September award ceremony**

Edward F. Knipling and Raymond C. Bushland will be posthumously honored later this year for their study of the [“sex life of the screwworm fly.”](#) The U.S. Department of Agriculture-funded work led to a novel pest control technique and the eradication of the screwworm fly in North and Central America, saving ranchers in the South and consumers billions of dollars over the past 50-plus years.

The [Golden Goose Award](#) honors scientists whose federally funded work may have been considered silly, odd, or obscure when first conducted but has resulted in significant benefits to society. Knipling and Bushland are being cited for research that led to the “sterile insect technique,” in which lab-raised and sterilized male insects are used to overwhelm and eventually eradicate native pest populations. The technique has been heralded as “the only truly original innovation in insect control in [the 20<sup>th</sup>] century,” and continues to inform ongoing fights against other agricultural pests and insects carrying infectious pathogens, including the tsetse fly and the *Aedes aegypti* mosquito — the primary culprit in transmission of the Zika virus.

“Screwworm research may sound like a joke, but it isn’t. It saved the livestock industry billions and is giving us a way to fight Zika,” said Rep. Jim Cooper (D-TN), who first proposed the Golden Goose Award. “We should trust our scientists more than our politicians when it comes to research priorities.”

The two entomological researchers will be honored along with two other teams at the fifth annual Golden Goose Award Ceremony at the Library of Congress on Sept. 22. Descriptions of past winners can be found [at the Golden Goose Award website.](#)

“Sometimes offbeat, quirky-sounding science is the best science, paving the way for discoveries years down the road which can revolutionize medicine, physics, biology, technology and how we view the world,” said Rep. Randy Hultgren (R-IL), a supporter of the Golden Goose Award since its inception in 2012. “Given the recent rise of infectious diseases like the Zika virus, developing eradication programs for carrier pests is a much-needed field of scientific research. Even though ‘worms’ might make some members of Congress — as well as the public — a little squeamish or skeptical of the research we invest in, these studies by Drs. Edward F. Knipling and Raymond C. Bushland have clearly paid off. I applaud them for their groundbreaking work.”

Though most Americans today are not familiar with the screwworm fly, prior to the 1960s, ranchers in the southern U.S. were locked in a constant struggle against the deadly insect. Female screwworms lay their eggs in the wounds of cattle, livestock, and even humans. The eggs hatch into maggots that feed on wounded flesh. The maggots can kill a full size cow in less than two weeks. The pests cost ranchers hundreds of millions of dollars each year in lost livestock and pest management prior to Knipling and Bushland's innovative "sterile insect technique."

Working at field stations in Texas and Florida in the early 1930s-1950s, Knipling, Bushland, and their colleagues did much of their research on a shoestring budget and in the face of ridicule. When they shared their idea to use sterilized males to overwhelm wild screwworm flies and cause the population to collapse through natural mating behavior, their approach was met with skepticism from peers who said "you just can't castrate enough flies." Inspired by the work of Nobel Laureate geneticist Hermann J. Muller, the two demonstrated that they could inflict mass sterilization of insects through irradiation — a feat widely lauded as one of the most important developments in pest control and one of the first peaceful uses of nuclear radiation.

In 1953, after an unexpected request from a Dutch official on the island of Curacao, the researchers completed the first, full-scale field test of the technique on the island. After just three months, not a single sterile egg could be found on the island. The much maligned technique worked even better than predicted.

The USDA, with support from state governments and local communities, launched a larger scale effort to eradicate the screwworm fly throughout the southern U.S. By 1982, the screwworm fly had been eradicated across the United States. Since then, the USDA has partnered with countries throughout Central America to wipe out the flies to Panama, where today it maintains a border zone to prevent reinfestation from South America. The eradication effort has cumulatively saved U.S. meat and dairy suppliers billions of dollars over the past 50-plus years, thanks to a modest investment of \$250,000 in basic research on screwworm flies.

Knipling and Bushland's work predated the late Sen. William Proxmire's "Golden Fleece Award," which was intended to highlight the wasteful excesses of federal spending, but frequently targeted federally funded research. Nevertheless, the "sex life of the screwworm fly" has long been a favorite target of Members of Congress eager to denounce "Washington waste."

"As the only Ph.D. physicist in Congress, I applaud Drs. Knipling and Bushland for their creative and groundbreaking government-funded research. Their research saved the U.S. livestock industry billions of dollars over the last fifty years, and it inspired Nebula Award winning science fiction. Their research is used today for controlling Zika-carrying mosquitos, and it continues serve as an inspiration for cutting-edge research on gene drives," said Rep. Bill Foster (D-IL), Golden Goose Award supporter and former high-energy particle physicist.

Knipling and Bushland were honored with the 1992 World Food Prize for their groundbreaking work—just one of many accolades the two have received in recognition of their contributions to pest control and the eradication of screwworm fly in North and Central America.

The work has given U.S. consumers an estimated 5 percent reduction in the price of supermarket beef. In the developing world, the pest control technique is a crucial component of food security and public health. The international screwworm eradication program is now cited as a text-book example of basic science producing enormous returns.

### **About the Golden Goose Award**

In 2012, a coalition of business, university, and scientific organizations created the Golden Goose Award, conceived by Rep. Jim Cooper (D-TN) as a strong counterpoint to the citations of basic research as wasteful federal spending by the likes of Sen. William Proxmire (D-WI) and his Golden Fleece Award. Learn more at <http://www.goldengooseaward.org/history/>.

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