

# Creation and Development of an Aerial Spray Program at Anastasia Mosquito Control District, St. Augustine, Florida

by Rui-De Xue, Richard Weaver and Dana Smith

Anastasia Mosquito Control District (AMCD) of St. Johns County, St. Augustine, Florida was formed on Anastasia Island in 1948 with the service covering 18 square miles. In the early 1960's, the district expanded to cover Ponte Vedra. In 1988, the district expanded once again, into the northern part of the county. And in 2002 the District expanded to cover the entire county's 609 square miles (Xue 2009). In 2016, the district moved to a new central location consolidating 4 substations. Because of the county-wide coverage and corresponding increase in service requests (Holt et al. 2011, Weaver et al. 2013, Weaver and Xue 2015), the district explored the creation and development of our own aerial capability beginning in 2003.

Former Director Robert Betts located a new Bell 206 helicopter and a skilled pilot in 2003/2004, but his proposal and recommendation was not approved by the Board. In 2005, the new Director, Dr. Rui-De Xue, continued to explore an aerial capability for operational efficiency through collaboration with Dr. James Brown, independent



Figure 1. AMCD's intended purchase of the Yamaha RMax drone in 2005.

consultant. Brown and Xue proposed purchasing a drone, a Yamaha RMax, with a 48 pound payload (Figure 1) to the Board after field testing and evaluation with the Navy Entomology Center of Excellence at Jacksonville's Cecil Airport. The Board sent the Director, two Station Supervisors, and



Figure 2. AMCD Program Review Committee (9 program Directors) in June 2006 (from right): Edsel Fussell (Florida Keys MCD), Gungye Hu (Hernando County MC), Frank Van Essen (Collier MCD), Ken Linthicum (USDA/CMAVE), James Clauson (DACs), John Smith (FAMU/PHEREC), Richard Smith (Jacksonville MCD), Richard Lobinske (Leon County MCD), Rui-De Xue (Anastasia MCD).

the Director of Finance to Tucson, Arizona to observe the drone spraying larvicides into a water treatment pond. The group recommended purchasing the drone, and the Board approved their recommendation.

In June, 2006, the District invited nine mosquito control directors/managers (Figure 2) from Florida to review the AMCD. The committee was not in favor of using a drone to start an aerial program, and recommended purchasing a conventional helicopter. AMCD appointed an aerial program

committee which included a Commissioner, Director, two staff members, and the St. Johns County Sheriff Department's Chief Pilot. The committee proposed the purchase of a \$1.8 million Bell 206 L4 after a survey, analysis study, and investigation. The Board approved the proposal and signed a purchase contract, but in 2007 a newly elected Board cancelled the contract because the purchase was made without competitive bids.

The new Board appointed an aerial program committee consisting of retired Col. Ron Radford from a citizens group as the committee Chair, Richard Smith, Superintendent and Pilot from Jacksonville MCD, William Reynolds from ADAPCO, and Dr. Xue. The committee recommended purchasing a used Bell 206 helicopter but continue to have an aerial contract for emergency service. In 2009, the Board invited Mr. E. John

Beidler and Dr. Dave Dame (Figure 3) to conduct an independent program review. An aerial capability and district

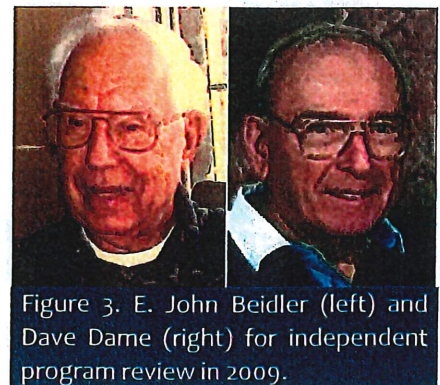


Figure 3. E. John Beidler (left) and Dave Dame (right) for independent program review in 2009.

centralization were recommended. The Board signed a contract with Southern Helicopter for larviciding and adulticiding hotspots, a contract that continued for several years. The Board subsequently contracted with Clarke Mosquito Control for large aerial and emergency aerial adulticiding. In 2016, the district merged the North Station and moved its Anastasia Island station to the new 18 acre complex located in central St. Johns County.



Figure 4. AMCD's aerial group (from right): A & P Mechanic Ralph Bruner, Chief Pilot & Aviation Manager Dana Smith, and Pilot Michael Phillips.

In October 2016, Hurricane Matthew brought countywide flooding and large mosquito outbreaks (Weaver et al. 2020). The contractors for aerial adulticiding were not available and the ground operation was insufficient to mitigate the situation quickly. This sparked numerous complaints, resulting in a petition from residents for AMCD to create an independent aerial spray program.

In 2017, the district appointed yet another aerial program committee, including Board member Gary Howell, Director Xue, Business Manager Richard Weaver, and two pilots from outside (Brad Gunn and Paul Leone).



Figure 5. AMCD's three Bell 206 B3 helicopters and hangar, 2021.

The Committee created the pilot job description and recommended the purchase of a surplus helicopter from Lee County Mosquito Control District using the Hurricane Matthew reimbursement money from the Federal Emergency Management Agency and the money derived from sale of the North Station property. In 2018, the district hired the first pilot, Mr. Paul Leone. However, Mr. Leone soon resigned to accept a position at another mosquito control program in August, 2019. Soon after Mr. Kevin Card then joined AMCD as a part-time pilot (1 day/wk) for four months, flying missions, and assisting the District with continued development of our aerial program. During the development phase of the program, the district conducted aerial larviciding of a few hundred acres. The District hired a full-time Airframe and Powerplant (A & P) Mechanic in September 2019, a part time pilot, Mr. Michael Phillips, in February 2020, and in April 2020 hired a full-time Chief Pilot and Aviation Manager, Mr. Dana Smith.

The district now conducts aerial larviciding for several hundred acres and adulticides more than ten thousand acres in hot spots. In December 2020, the Board approved the purchase of two additional used Bell 206 helicopters (\$180,000 each and spare parts) from military surplus using money originally budgeted for one commercially available Bell 206. In 2021, the District expanded aerial adulticiding to 59,408 acres.

AMCD presently has two pilots, one A & P Mechanic (Figure 4), and three helicopters (Figure 5). Chief Pilot and Aviation Manager Mr. Smith received the Special Districts Southeast Leadership Award from the Governmental Technology AT&T Program in November, 2021 (Figure 6) for his contribution in saving millions of dollars for the District and building the aerial program into a modern and efficient program.

AMCD experienced many political debates, audits, program reviews, public complaints, and inspections over the 18 year creation and development of our aerial program. What lessons did we learn from over those 18 years? We believe it was the correct decision to have our own aerial program, which has increased service and operational efficiency, and that the district must continue to progress in that direction. Our staff has collected documentation and evidence for the Board and related organizations after a comprehensive study and fiscal analysis over several years. We have learned from and consulted with our peers in mosquito control programs. Our staff has educated elected officials



Figure 6. Dana Smith received the leadership award from the Governmental Technology, AT&T, November 2021.

and the public regarding the aerial program, presented the pros, cons and options, and above all learned patience. The district conducted public education and invited public involvement. We regularly conducted program reviews and evaluations by our staff or independent agencies. We believe it is important to hire the right persons to do the right jobs. The district feels strongly it must follow all rules, regulations, policies, and keep good records.

AMCD plans to continue to develop and expand its aerial capability for larviciding and adulticiding both hotspots and large areas, and will conduct further studies on the efficacy and efficiency of barrier aerial spraying for larviciding and adulticiding.

We will continue using a contract service for large-area emergency spraying. AMCD's future plans include purchasing drones and hiring a drone pilot for surveillance and larval control of salt marsh mosquitoes in 2023.

### ACKNOWLEDGEMENTS

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### REFERENCES CITED

Holt JA, Xue RD, Moeller JJ, LeBlanc G. 2011. A five year customer satisfaction survey analysis of Anastasia Mosquito Control District. *Wing Beats* 22:17-21.

Weaver JHR, Phillips JD, Gaines MK, Xue RD. 2013. An analysis of Anastasia Mosquito Control District's service requests over the past 8 years. *Wing Beats* 24:34-39.

Weaver JHR, Xue RD. 2015. Major impact of ground application of larvicides at Anastasia Mosquito Control District. *Wing Beats* 26:11-15.

Weaver JHR, Xue RD, Gaines MK. 2020. Population outbreaks of mosquitoes after Hurricane Mathew and Irma and the control efforts in St. Johns County, Northeastern Florida. *J Am Mosq Control Assoc* 36:28-34.

Xue RD. 2009. Operational programs of the Anastasia Mosquito Control District of St. Johns County, Florida. *Buzz Words* 9:19-22.



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