Region 1 FY 2011 Invasive Species Control Program Proposal

Refuge/complex name: **Johnston Atoll NWR, Pacific Remote Islands Marine National Monument, Pacific Reefs NWR Complex.**

Project title: **Eradication of Yellow Crazy Ants on Johnston Island**

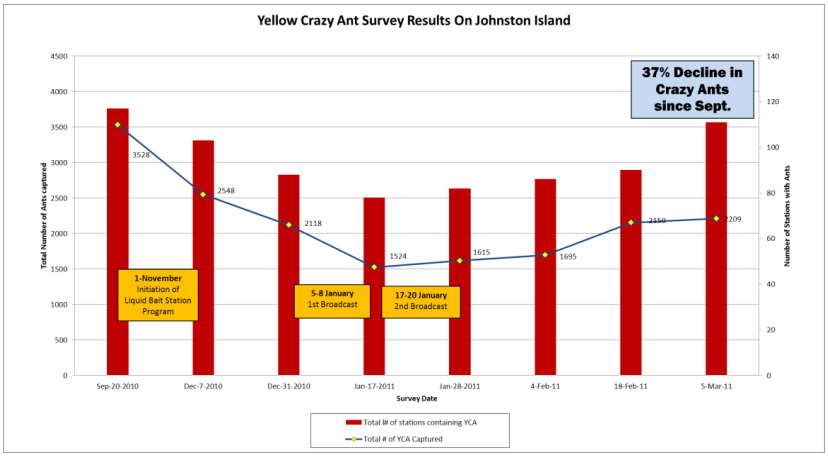
Comment [BFW1]: Cost of camp is $170,000 & cost of 1-way trip to island is $170,000 for a total of $340,000. FY2011 Secured Funding (as of 21Apr2011) = $70,000 from ISST, $40,000 from ES, $25,000 from USGS (for travel to island for USGS Tsunami Warning System). No luck acquiring Air Force Legacy Funds (because not an active base and because no proof of detrimental impacts to federally listed species). Lee Ann Woodward did write white paper on "Potential impacts to green sea turtles", which are not successfully nesting but could be in the future. Air force not responding to "future issues". USDA trying to find funding. Applied for ISWV funding, but too much for that small pot of funds.

Project description:

While on a research and monitoring cruise that visited Johnston Atoll in late January 2010, USFWS employees found an infestation of *Anoplolepis gracilipes*, or yellow crazy ants (YCA) affecting approximately 40 of 260-hectare Johnston Island. The YCA is a successful "tramp" species which has spread through Oceania and the Tropics hitchhiking on human transport. They form large, multi-queen "super colonies" that disperse mainly by budding. The rate of expansion for new colonies is startlingly fast, with infestation growing as rapidly as 0.1- 3.0 meters per day. This project is to continue eradication efforts of the YCA from Johnston Island, including deployment of phase II- a FY2011 6-month field camp.

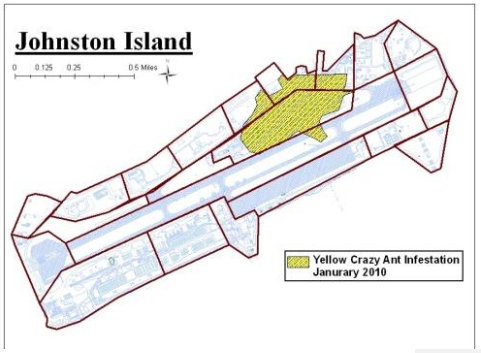
Early Detection and Rapid Response (EDRR)

The threat of the YCA spreading across the entire island and completely displacing ground nesting seabirds was a critical conservation issue and as a result a strike team was put together. Trials for bait palatability and efficacy were conducted on YCA on Oahu. Based on trial results and consultation with ant experts, the Crazy Ant Strike Team (CAST) was deployed to Johnston in August 2010 with the primary mission of eradicating the crazy ant population before it could displace native seabird species.



After intensive eradication operations, monitoring showed an initial downward trend in the ant population. While the number of monitoring stations with ants present has decreased by 37%, the total number of ants collected had decreased by 57% since September. However, although the effort has had notable results, it has taken more than 5 times longer than anticipated to reach this point. There is also evidence to suggest the bait applications were spaced too far apart to effectively reach all colonies. Additionally, the effort has expended 3 times the anticipated amount of bait. The relatively lower effectiveness of the baits to YCA as compared to the other ant species on the island has shown the need to try additional baits that have been specifically formulated to the Johnston Island YCA population. Palatability trials are being conducted to best target the YCA. Based on these results, baits will be tested in small plots to assess efficacy of formulations. Monitoring of effects of baits on other species of ants will continue to be assessed.

IPM measures include: Quarantine protocols are established and enforced to prevent spread and new introductions. Baits will be formulated to be most attractive to the YCA. Efficacy trials will insure that the least amount of formicide necessary to kill the ants will be used. Formicides will be hand broadcast or placed in secured bait stations near the shoreline to prevent drift into the lagoon. We will continue to evaluate the effects of YCA on wildlife within and outside the infested area before and after ant control efforts.



What is potential for eradication of the invasive species?
Johnston has been celebrated as being rat-free for decades. However, in October 2010, one week after an illegal visit by a vessel, a rat (*Rattus rattus*) was caught on a camera trap. We have expanded the monitoring to include chew blocks. The rat has not been seen again, but the devastation that could be caused by even one pregnant rat necessitates close monitoring to catch any increase as early as possible. We will continue monitoring for rats and if detected to deploy traps and bait stations in the area. We will continue to work with the Coast Guard and sailing associations to stop the illegal trespass by private vessels.

The potential to eradicate the YCA is high because there is a discrete population on the island. While it is challenging to deliver bait to the large numbers of individuals, the formulation of more highly favored bait palatability matrices and use of slower acting toxicants would support successful delivery to all the workers and queens. The established monitoring grid and protocols will allow us to closely evaluate the effectiveness of bait treatments. Ant specialists worldwide are engaged and advising on Johnston CAST project. Due to the remote location, the ability to quarantine the island, and the containment of the ant invasion in one mapped area on an island; if ever an eradication can be devised and implemented it is here. Lessons learned from this project will be transferred to ant projects worldwide.

Does the project support achieving the refuge purpose?
Johnston Atoll NWR was created 85 years ago (June 29, 1926), "…as a refuge and breeding ground for native birds." Johnston Atoll is the only land available for seabird nesting in 750,0000 sq miles of open ocean. If the YCA are not eradicated, Johnston Island, and ultimately, all the islands in the atoll will be unsuitable as a refuge and breeding ground for birds. This is tragically illustrated by the photo of the red tailed tropicbird that while sitting on its nest was blinded by YCA spraying formic acid into its eyes.

Does the project support biological integrity?
In 1934, administrative jurisdiction and control of the island was transferred to the Department of Defense (DoD). During DoD's residency, most seabirds were prevented from nesting or rooting on Johnston Island. Since the DoD abandoned the atoll in 2004, seabirds have been moving onto Johnston Island, en masse. The former golf course is now a sooty tern colony, the trees at each end of the island support are filled with nesting red-footed boobies and great frigate birds, and the overgrowing shrubs that surrounded the now-gone buildings sheltered to a burgeoning population of tropicbirds. If the ants are allowed to remain and expand, the islands would be useless for seabirds. Discussions are underway to return administrative jurisdiction to FWS. It would be a tragedy that when the refuge is finally returned after 77 years an invasive ant has destroyed the habitat

Will the project involve support from partners?
U.S. Geologic Survey, Global Seismograph Network: Our on-island personnel assist in maintenance of the seismic detector, a crucial link of the tsunami detection network for the Pacific. USGS has contributed satellite use for communications. **U.S. Department of Agriculture, Agricultural Research Service**, is developing a consortium of USFWS, Department of Defense, USDA, and a bait manufacturer; to study and assist the eradication. **Marine Corps Base Hawaii** natural resources staff worked with the Service on several initial trials on bait palatability and efficacy of various baits and hopes to use methods and baits developed on Johnston for their YCA infestations. **U.S. Air Force Natural Resource** personnel are following our trials for potential use in Guam. Several island refuges (**Midway Atoll NWR, Laysan Island, Hawaiian Islands NWR**) plan to apply methods developed on Johnston for ant infestations on their refuges. Ant researchers in **Australia, the Republic of Kiribati, Hawai`i, Florida**, are part of an informal committee that supports the project with peer review information, analysis, discussion, and suggested strategies. **Bayer Chemical** assists with expert ant killing advice and sample baits. Discussions are underway for several **university seabird researchers** that are conducting Pacific basin project on seabird foraging to contribute funding to the camp in exchange for monitoring for study birds. **Volunteers and students** are receiving training in ant eradication/scientific investigation techniques; GIS; seabird, sea turtle, and ant monitoring; care and maintenance of a remote camp; and confidence and self-reliance. **Stefan Kropidlowski**, USFWS STEP employee and CAST Leader will use the project and data collected as the basis of his **University of Hawai`i** MS thesis.

What monitoring will be used to evaluate the project?
Monitoring survey of the YCA infestation area consists of 269 monitoring stations spaced at 50-meter intervals through the 61.5-hectare treatment area (infestation area + buffer). These stations would continue to be monitored every 2 months. Monitoring of the entire island 50-meter grid (>6,000 points) would continue to occur every 6 months. A 2.5-meter grid will monitor the trial plots. Rat monitoring stations will be checked weekly. Before, during, and after ant control efforts we continue to evaluate the effects of YCA on wildlife within and outside the infested area.
Criteria for Project Success: Eradication of *Anoplolepis gracilipes* from Johnston Island, 260 hectares: None detected in monitoring stations for 6 months. Return and success of nesting birds in infestation area. No rats are detected for 6 months.

Budget: We are requesting all or any portion of the budget. [Please note, this is not a comprehensive budget as transportation (est. $170,000 each trip) and logistical costs are not included.]

MAY 2011 JOHNSTON ATOLL CRAZY ANT STRIKE TEAM BUDGET			
Pesticides			**70,000**
Personnel	GS7 & 3 volunteers		**45,000**
CESU Salary	0.75 GS7/1	35,000	
Volunteers	Travel and PPE	10,000	
Food	$25/person/day		**20,000**
Equipment & supplies			**20,000**
Communication &utilities	Water,power		**20,000**
		TOTAL	**$175,000**