ECO-Drone

Environmentally Conscious Operations

*This mission of **ECO-Drone** is to advance and encourage **E**nvironmentally **C**onscious **O**perations of drones to protect and limit disturbances to marine resources.*

The rapid expansion of technically capable and inexpensive Unmanned Aircraft Systems (UAS) has tremendous potential to assist marine researchers and resource managers in monitoring and protecting our ocean and coastal marine wildlife. At the same time, these systems pose a unique challenge to marine wildlife as commercial off-the-shelf systems become more widespread and user-friendly. Whales, dolphins, seabirds, seals, and sea lions that have enjoyed some protection from aircraft overflights and other human interaction due to the remote nature of their habitats, now face the potential for increased disturbance as every recreational and commercial vessel can become de-facto "aircraft carriers" and even the most rugged coastline and remote environments become accessible by ever more capable drones.

Oceans Unmanned, Inc. is a 501c3 nonprofit established to protect and conserve our ocean and coastal marine resources by facilitating the use of unmanned technologies and promoting their safe and environmentally conscious use, has developed the ECO-Drone program to partner with federal and state marine resource managers, consumer drone manufactures, and education institutions to develop and communicate "best practices" to minimize or eliminate resource disturbance issues due to scientific and recreational drone operations.

ECO-Drone Goals:

- **Increase public awareness of existing marine resource protection regulations and policies that may apply to recreational drone use**
- **Engage and educate recreational drone operators to respect ocean wildlife**
- **Encourage federal and state marine resource management agencies to modernize and refine existing policies and regulations to address the potential disturbance of recreational drone use**

http://ECO-Drone.org

While the policy and regulatory environment lags behind, it is important that statutes such as the National Marine Sanctuaries Act, Marine Mammal Protection Act, and Endangered Species Act are utilized to address this emerging issue. In addition, a robust, focused education and outreach partnership program working with resource agencies, non-profits, and drone manufactures is required to limit the potential impacts to marine wildlife and develop "best practices" for recreational and commercial operators. This is mission of **ECO-Drone** - to advance and encourage **E**nvironmentally **C**onscious **O**perations of drones to protect and limit disturbances to marine resources.

ECO-Drone Projects and Partners:

- **Oregon State University**: ***Utilizing UAS to locate Marbled Murrelet nests***
- **DJI**: ***Developing point-of-sale outreach materials***
- **US Fish and Wildlife Service**: ***Sea Otter surveys utilizing UAS***
- **Dart Drones**: ***Incorporating ECO-Drone concepts into UAS training***
- **National Marine Fisheries Service**: ***Mapping salmon habitat utilizing UAS***
- **UCSB**: ***Mechanical Engineering Capstone Project to improve small UAS capabilities***
- **TBNMS**: ***Utilizing UAS to search for submerged cultural resources***
- **DJI**: ***Integrating wilderness areas and zones into DJI mapping and control software***
- **FKNMS**: ***Utilizing UAS to map seagrass habitat***
- **Seabird Protection Network**: ***Developing outreach strategies to minimize seabird disturbance from recreational drones***

ECO-Drone Strategies:

- **Create a marketing campaign utilizing social and traditional media, conference presentations, and partnerships to promote ECO-Drone goals**
- **Develop a single website portal to consolidate all relevant information regarding the safe, legal, and environmentally conscious operation of drones in the marine environment**
- **Partner with consumer drone manufactures to develop a point-of-sale promotion to include materials in packaging off-the-shelf systems**
- **Inspire federal and state political leaders to work proactively to address drone disturbance issues**
- **Partner with commercial drone training providers to incorporate an ECO-Drone component into standard curriculum**
- **Promote and facilitate the inclusion of wilderness areas and zones into commercial drone navigation software and applications**